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The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

ON THE
HORTUS
SANUTATUS

PAYNE

HERBALS
OF THE
15TH • 16TH
CENTURIES

SCHREIBER

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BIBLIOGRAPHICAL SOCIETY.

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ON THE
"HERBARIUS" AND "HORTUS SANITATUS."

by
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of Physicians.)

Read 21 January, 1901.

The object of this paper is to describe the earliest printed books in European literature devoted to the illustration of Natural History; to fix the date and order of the several works known by the names of "Herbarius" and "Hortus Sanitatis"; to show their connection with one another, and with some other works of the same class.

The materials for this essay have been mainly derived from actual inspection of the books themselves; but as some of the editions

are inaccessible in this country, I have had to refer to standard bibliographical works such as those of Hain, Pritzel ("Thesaurus Leteraturae Botanicae"), Proctor, and others. A special acknowledgment is due to the valuable work of Dr. Ludwig Choulant, entitled: "Graphische Incunabeln fur Naturgeschichte und Medecin. Geschichte und Bibliographie der ersten naturhistorischen und medicinischen Drucke des XV und XVI Jahrhunderts, welche mit illustrirenden Abbildungen versehen sind". Leipzig, Weigel, 1858. (Reprint from Naumann's "Archiv fur die Zeichnenden Kunste, Jahrgang III.) This learned and most accurate writer was a physician, a botanist, and a bibliographer. His work is the only one which gives a full account of the history and bibliography of the works in question, of which he first established the true order and relations; and as regards the books which he had himself seen, his descriptions are absolutely trustworthy. To this work the present memoir is largely indebted.

The books of which I am about to speak originated, and were nearly all printed, in Germany, the editions printed in other countries being copied from productions of the German presses.

There was, however one small book with

botanical figures, printed in Italy, which has no connection with the German "Herbals", but which it may be desirable to speak of first, as its history may perhaps throw some light upon that of the German books. I refer to the "Herbarium" of Apuleius Platonicus, printed at Rome, probably soon after 1480, by Philipous de Lignamine. It is a small quarto beginning with a dedication, in some copies to Cardinal F.(or D.F) de Gonzaga, in others to Cardinal Giuliano de Ruvere. This, with a Table of Chapters, occupies four leaves (in my copy; perhaps there should be six). On the leaf is the title, in this form:-

"Incipit || Herbatium || Apuleii Plato || nici ad Mar||
cum Agrip || pam"; these words being surrounded by a garland of classical design. Then follow 131 chapters each with a figure of a herb; occupying 101 leaves, ending with a register of the quires and a blank leaf, In all 107 (or 108) leaves (see Hain, 1322). [Choulant's other bibliographical works, viz.: his "Geschichte und bibliographie der anatomischen Abbildung," 1852; "Handbuch der Bucherkunde für die ältere Medicin" (2nd ed., 1841); and "Bibliotheca Medico-historica" 1842, are still the standard works in their respective subjects, but do not aim at the minute

detail of the "Graphische Incunabeln".]

It has no date or imprint properly so called.

The editor and printer, Joh. Philippus de Lignamine, was ~~was~~ physician to Pope Sixtus IV. He found this book, he says, in manuscript, in the library of Monte Cassino, and thought it worth printing, with figures evidently copied from those of the original MS. As to its date, Mr. Proctor refers the book to the second press of Joh. Philippus de Lignamine, of which dated examples were printed about 1482 and later. The dedication to Cardinal de Gonzaga may perhaps throw some light upon the point. There were several Cardinals of the Gonzaga family; this particular one is said to have died in 1483; [Choulant, "Bücherkunde für die ältere Medizin, 2nd ed, 1841, p. 213.] though I do not vouch for the date. If so, the book must have been printed before 1484, which is the date assigned by Hain, and would be a little earlier than the first German work with figures of plants, dated 1484, of which I speak later. Possibly de Lignamine, after Cardinal Gonzaga's death, dedicated the remainder of the impression, or a new imprint, to Cardinal de Ruvere, for in my own copy as in that in the British Museum, both of which have

Ruvere dedication, the printing of the preliminary matter is very confused.

The text of this work, without figures, was reprinted by Wechel at Paris, folio, 1528; in the Aldine collection of Latin medical writers, 1547, and several times elsewhere.

The name Apuleius Platonicus is possibly fictitious. Nothing is known of the writer (who must not be confounded with Apuleius Madaurensis, author of the "Golden Ass"), but the composition is believed by some to go back to the fourth or fifth century, though it may be much later. The earliest known MS. appears to be of the ninth century.

The chief interest of the book lies, however, in its figures. There are numerous Latin MSS. of the work, chiefly in Italian libraries, but two in the British Museum. It exists, translated into Anglo-Saxon, in the splendid Cottonian MS. of the Museum, printed by Mr. Cockayne in his "Anglo-Saxon Leechdoms." All these MSS. so far as I know (and I have examined several in the Laurentian Library at Florence, as well as in the British Museum) contain the same series of coloured figures, which were the originals of de Lignamine's rude cuts. Now the Anglo-Saxon

MS. is of the eleventh century, and must have been translated from a still older Latin codex, so that the original figures go very far back. There are similar, though not identical, figures in old Latin MSS. of a treatise, "De Herba Vetonica", attributed to Antonius Musa, in others bearing the name (evidently fictitious) of Dioscorides, and similar works in late Latin literature.

These figures again have a general resemblance in style to, though no identity with, those of the celebrated MS. of Dioscorides at Vienna (5th century), a few specimens of which have been printed. [See Daubney's "Lectures on Roman Husbandry". 1857, p. 231.] Some interesting figures of this class, from early MSS., have been lately published in the fine work of Sig. Piero Giacosa, "Magistri Salernitani nondum editi", Torino, 1901.

All these constitute a school of botanical illustration coming down certainly from late Roman art; but to which it would be dangerous to assign even an approximate date.

The characteristics of this school are:-

- 1.- The figures of plants are formal, generally drawn with complete bilateral symmetry.

Thus they occupy square or oblong spaces, and have a decorative rather than a naturalistic effect.

2.- They have the appearance of not being taken directly from nature, but rather of being diagrams, drawn by an artist who generalized his knowledge of the object.

3.- Serpents and other animals, and in the grander MSS. human figures, are sometimes introduced, being often drawn with much grace and vigour, though not naturalistic. Most of these figures are of the venomous animals against whose bites or stings the herbs were useful

4.- Comparing different series of figures, we see that one was copied from another, and degraded in the process. The original, till it lost all likeness, and became in some cases absolutely false. Mr. Cockayne thus explains an extraordinary figure (in the frontispiece to "Anglo-Saxon Leechdoms") of *Saxifraga granulosa*, a plant with bulbous appendages on its roots. Originally, the roots with their bulbs were represented as under a piece of earth to show that they were underground.

An ignorant copyist, not understanding this, inverted the picture, and drew the plant as if its roots were growing in the air, with their bulbs like fruits. In the printed Roman "Herbarium", the transformation is carried further still, the original bulbs having become little round flowers like daisies.

This school of plant-illustration may be called the school of classical tradition, or shortly, the classical school. Originally, no doubt, it displayed some of the grace of Greeco-Roman art; but on the most favourable view it would show that the classical artists had a notion very different from ours, of how natural history objects ought to be represented. They would have produced a graceful and harmonious, but formal picture, founded on general knowledge rather than on the "impression" of the moment, though doubtless recognizable. Such figures, passing through the hands of a hundred copyists, became more and more conventional, till they reached their last and most degraded form in the rude cuts of the Roman "Herbarium", which represent not the infancy, but the old age of art. Uncouth as they are, we may regard them with some respect, both as being

the images of flowers that bloomed many centuries ago, and also as the last ripple of the receding tide of Classical Art.

Of the execution of the cuts it is not necessary to say anything, except that Weigel, an eminent expert, regarded them not as woodcuts, but as rough cuts in metal, excavated in the manner of a wood block. On this point I express no opinion. I have dwelt on the origin and artistic character of these figures because they have a special bearing upon the early German "Herbals", of which I shall have to speak.

THE GERMAN HERBALS.

- 1.- "Herbarius", also called "Herbarius in Latino, Aggregator de Simplicibus, Herbarius Moguntinus, Herbarius Patavinus, Etc."

This is the first work printed in Germany with woodcuts of plants. The edition of Mainz, 1484, was certainly the first printed in Germany. The question of its priority to an edition printed in the Low Countries will afterwards be discussed.

It is a small quarto, having on the first leaf, recto, the title in three lines, thus:-
"Herbarius, Ma | guntie impressus | Anno 76LXXXiv."

Below this ^{the} well-known double red shield of Schoffer hanging on a branch. On leaf 2 recto, begins the preface, of which I quote the first lines, as they identify the book in many editions.

"(R)ogatu plurimorum inopum nummorum egentium apotecas refutantium occasione illa quod necessaria ibidem ad corpus egrum spectantia sunt cara simplicia et composita, nummisque plurimis comparanda." The author goes on to quote Arnold de nova Villa and Avicenna as to the merits of simple medicines; and after a few lines occur the following words:- "Ob id presens opusculum suam sumpsit denominationem Aggregator practicus de simplicibus".

The work is therefore sometimes spoken of as "Aggregator", but I cannot find that this word was ever used as the actual title in any edition.

The author divides his work into seven parts:-

- 1.- De virtutibus herbarum.
- 2.- De simplicibus laxativis et lenitivis.
- 3.- De simplicibus confortativis.
- 4.- De fructibus et seminibus et radicibus.
- 5.- De gummis et eis similibus.
- 6.- De generibus salis et mineris et lapidibus.
- 7.- De animalibus et provenientibus ab eis.

Leaf 3a begins an index, "Capitula herbarum",

on two leaves.

Leaf 5a begins the series of herbs arranged alphabetically, occupying 150 chapters on 150 leaves, each with a number above a woodcut on the recto., ending leaf 154a.

Leaf 155a begins the remaining six parts of the book without figures occupying 20 leaves.

Leaf 156 blank. Ends leaf 174b.

Quarto, 174 leaves of 32 lines. Gothic letter. No signatures or numbers. The initials left blank.

This edition must be rare. There is no perfect copy in the British Museum. The only one that I have seen is ⁱⁿ the Library of the Royal Gardens, Kew.

There are
possibly
4
editions
or variants

This work was thus intended to treat of cheap and homely remedies for the use of the poor, such as could be found in the woods and meadows; and by far the greater part is taken up with herbs. These are all native German or garden plants, and have thus a German as well as a Latin name (the only possible exception is No. 130, "Scicados arabicum, which is simply called "Von Arabien", there being apparently no German name). No exotic plants are described; but in the latter part of the work, foreign drugs, such as Aloes, Mann, Rhubarb, Myrrh, etc., are mentioned without

without being described.

The book was very popular, and there were numerous editions, of which I will speak later.

In the meantime, two questions arise about this work:-

(1) Its authorship. (2) The origin of the figures.

1.- The work is, of course, anonymous. It is a compilation from mediaeval writers, with some classical and Arabian authors, the latter doubtless quoted from translations.

The chief authorities are:

Pandectarius, i.e., "Pandectae medicae" of Matthaeus Sylvaticus (died 1342) Printed 1480.

Serapion (the younger). End of 11th century. Printed 1473.

Platanius ("circa Instans"). 12th century. Printed 16th century. 5

Mesua (the younger). 10th or 11th century. Printed 1471.

Albertus Magnus (once only?). 13th century.

Macer Floridus (once). 10th or 11th century. Printed 1477.

Nicolaus Prepositus. 12th century. Printed 1471.

Bartholomeus Anglicus, or Glanville. 13th century. Printed 1480.

Arabians: Avicenna and Averroes.

Classics:- Dioscorides and Galen (not frequently).
Pliny and Aristotle (in later chapters).

It will be seen that the writers quoted mostly wrote before 1300, and one only, namely, Mattaeus Sylvaticus, belongs to the fourteenth century. There is, therefore, no author quoted who might not have been known to a writer about the middle of the fourteenth century, or say one hundred years before the "Herbarius" was published. It is noticeable that none of the late Latin writers on herbs, Apuleius Platonius, Antonius Musa, etc., are ever quoted.

It seems, therefore, that the book itself supplies no evidence that it was written at the time it was printed, or with a view to publication. It might have been written a hundred years before; and it seems quite possible that the printer, Peter Schoffer, might have found an old MS. from Monte Cassino, he first committed to the press. It is also quite clear that the work was of German origin.

Choulant has observed that the later portion of the work (that without figures) need not be by the same writer as the descriptions of herbs; and it seems to me probable that the two parts were not by the same author.

The figures of plants in "Herbarius" have certain notable peculiarities. Many of them show the same stiff drawing and artificial symmetry which we have observed in the figures of Apuleius. Even those which have not this character, seem rather like diagrams than drawings from nature. That is, they are rather representations of the artist's conception of the plant, derived from previous knowledge, than his direct impression of the object he was drawing. The essential forms of flowers and leaves are generally indicated in such a way that they can be recognized, but there is hardly any attempt to maintain the proportions of the parts. The flowers are generally greatly exaggerated in size, and the roots, where shown, are conventional in form. In fact, we derive the same impression of a traditional and borrowed art, copied by one artist from another, that we get from the old classical figures of plants. This is the more remarkable when we know what vastly superior pictures of flowers and herbs are to be found in a number of mediaeval MSS. In most copies the figures are rudely coloured.

It seems to me, therefore, quite possible that the figures, as well as the text, may have

been much older than the date of printing, and may have been copied from some older MSS. now unknown.

This is, of course, only a conjecture. I cannot adduce any instances of such figures, though there are mediaeval MS. books of plants with very rough drawings. The figures of "Herbarius" are not borrowed directly from the classical tradition represented by Apuleius. No one can be shown to be identical in the two series. The MSS., if any, on which "Herbarius" was based, could only be discovered in German libraries, and I am not aware that any such have been brought to light, though I should still expect the discovery of some transitional figures.

Nevertheless, the fact remains that there is nothing, either in the text or the figures, to show that both may not have been considerably older than the date of publication.

EDITIONS OF HERBARIUS.

The editions of this work are numerous, some of them are dated, most undated. Of the dated editions none is earlier than 1484; and in the undated editions there is nothing to show that they were printed before this date.

I will speak of the dated editions first:-

"Herbarius Patavinus".- In 1485 appeared an edition printed at Passau by an anonymous printer.

On Leaf 1, recto:- "Herbarius Pataviae
in pressus Anno domi 7cete // ra" LXXXV.

Leaf 2, recto:- [R]ogatu plurimor / Iopu
nūmor egētū apotecas re//

The preliminary portion is precisely the same as in the "Moguntinus", and arranged in the same way. On folio 5a begins the same series of 150 chapters, each with the figure of a plant, surmounted by a numeral. The book consists of 174 leaves (one f. 156 blank), usually 32 lines in a full page(f.5b 34).

The cuts are evidently copied from the "Moguntinus", but are slightly different, and usually reversed. They are numbered 1-150, but Nos. 28, 29, 30 are in different order from those in No. 1. No. 96 (*Nasturtium*) is printed upside down, and so is, in some copies, No. 148(*Utrica*). This edition may be known from the preceeding, even when the title is wanting, by the German names of the herbs, which are sometimes differently spelt, through dialectic variation, and sometimes quite distinct. I subjoin a Table of the first eight:-

Latin	H. Moguntinus, 1484.	H. Patavinus, 1485.	English Names.
1 Absinthium	Wermut	Wermut	Wormwood
2 Abrotanum	Stawortzel	Gartham	Southernwood
3 Altea	Ybiswortzel	Wildpapel	?Hollyhock
4 Acorus	Gellillilien	Gelschwertel	Yellow flag
5 Acetosa	Sueramprich	Sawer ampfer	Sorrel
6 Agrimonia	Odermenich	Hall Aller- welt	Agrimony
7 Alleum	Knobelauch	Knoblach	Garlick
8 Alkakenge	Boberellen	Indentockel	Winter cherry

Another point for identification is a misprint, "de fractibus" for "de fructibus", on the second page of the preface of the Passau edition, 1485. (Hain* 8,445. Pritzel 11,868. Choulant No. 6.) The fact that this edition was printed at Passau (or Patavia), and hence sometimes called "Aggregator Patavinus" led to its being confounded with a book connected by name with Padua (Patavium), and called "Aggregator Paduanus de medicinis simplicibus", the work of Jacobus de Dondis, a writer of the fourteenth century. The name "Aggregator" is the only thing common to the two books, which differ totally in contents and arrangement, as well as in size and appearance when printed. There ought to be no confusion, but as the "Herbarius" has been on this

account attributed to Jacobus de Dondis, the error must be mentioned. The printed edition of Jacobus de Dondis is a large folio without figures, with no date, place, or printer's name. It is notable as being one of the productions of the unknown printer who used a remarkable "R". (Hain, 6,395). I

Another edition was printed at Passau in the next year, 1486. *Herbarius Pataviae* in // pressus, Anno domini et ce // tera, lxxxvi, the title differing in the division of the word cetera (Hain 8,446, Pritzel 11,869, Choulant No.7). - I have not seen this edition. II

Another edition, described by Hain from an imperfect copy, * 8,447, is said also to have been printed at Passau. III
IV

UNDATED LATIN EDITIONS OF HERBARIUS.

There are several other editions of this work, some without printer's name, some without place, some without both, which it is very difficult to identify or discriminate. All are on small quarto, similar in arrangement, with the preface beginning "Rogatu plurimorum," referring to the name "Aggregator," 150 descriptions of plants, each with a figure, and supplementary chapters at the end, making 174 leaves when complete.

It is evident that the most distinguishing

mark ought to be, as in the dated editions, on the first leaf, but these books being often imperfect, such evidence may be wanting.

The comparison of types I am not competent to speak of, but it appears that though the printer may be thus indicated, it will rarely be possible to fix the date nearer than within a year or two. Moreover, it is difficult to carry out the comparison except in a large library where volumes can be placed side by side. Several of these editions are distinguished by the language in which the synonyms of the Latin names are given. German, Flemish, Dutch, and, in one instance, French Translations will be spoken of later.

The important question is whether any of these editions are, as supposed by some bibliographers, earlier than the Mainz edition of 1484. This seems to be, on internal evidence, most improbable, but the external evidence may be examined:-

The edition 8,443 Hain(not seen) is fully described by Choulant from actual inspection (No.2*). It has on leaf 1, recto, "Herbarius" as title. The rest of the book agrees with the Mainz edition, having 150 figures: a blank leaf in the same place as the other recto. It has only 172 leaves (instead of 174) of 33 lines. The figures, says Choulant,

are smaller and inferior in execution, but evidently copied from those of No. 1. The names are in Latin and German.

Another edition (Brit. Mus. I.A. 39,859) has French synonyms for thirty of the herbs, and must presumably have been printed in France. There is no leaf with a title. The usual preface and other preliminary matter occupy three leaves. After this begins the series of 150 figures of herbs - Sig. a, recto, "Absinthium - Asuyne," next leaf "Abrotanum - Aurone", and so on. The second part of the book is arranged as in other editions. There are signatures, but no numbers to the chapters.

Now it is clear that if any copy of the above-mentioned editions had lost the first leaf, or had a blank fly-leaf which was mistaken for a part of the book, it might be one of the dated editions, though described as without date or place.

Therefore, in the absence of further evidence, there is nothing to show that any of these editions was not copied from the Mainz edition of 1484.

There are several undated copies in the British Museum. That with press mark I.A. 288 (formerly 448. d.1), appears to agree in every particular with Schoffer's edition of 1484, except that the first leaf is wanting or replaced by a blank leaf, which

appears to me not to be a part of the book. [This copy from Sir Joseph Banks's Library has in the right hand top corner of the first page of preface the signature, Tho. More (part of the "e" cut off by the binder). It is well known that Sir Thomas More was a great gardener, and I presume that this was his copy. On the blank leaf facing this is the name "Jacobus de Dondis" as that of the author. Another MS. note says, "Herbarius Maguntiae impressus anno 7c LXXXIV," which I believe to be correct. A more modern note on the fly-leaf points out a typographical defect in the number xliij, above a cut, where the second "j" has no dot above it. The same defect is found in the Kew copy of the "Moguntinus".]

[It is notable that several editions, or at least copies, are described, of which the chief distinguishing mark is to have the first leaf blank; in other respect agreeing with copies which have an imprint on the first leaf. This suggests that the existence of a blank leaf need not, by itself, be the mark of a separate edition, but may show merely that in part of an impression, or in some copies, the imprint was purposely omitted. Possibly this was with a view to the introduction of the book into some other city or foreign country, where

foreign books were prohibited or subject to heavy duties, or to make it look more like a manuscript. I take for granted that the blank leaf has been proved to be a part of the book, either by examination of a copy in original binding, or by taking the book partly to pieces; otherwise it is easy to go wrong about a blank leaf.] The copy from which our facsimiles are taken (I.A. 289; Proctor 142) is a duplicate.

The only undated edition with respect to which the question of priority to the Mainz edition could arise, is one attributed to the press of John Veldener at Cuylenborch (Campbell 916; Proctor 9,299; Brit. Mus. copy, I.A. 49,335), which in its general arrangement precisely agrees with the other.

Leaf 1, recto.- "Herbarius" i Latino cū figuris, and an ornamental wood-block showing a shield with two lions as supporters in a frame.

Leaf 2, recto.- (R)ogatu plurimorum, etc.; i.e., the preface as in other editions, followed by the same preliminary matter, and 150 numbered chapters each with a figure of a plant, the Latin name and synonym in Dutch and Flemish? The second part of the book also agrees with other editions; total - 174 leaves of 27 to 30 lines. The figures are nearly all the same as in the Mainz edition,

but reversed. But Cap.2. Abrotanum is from a totally different drawing, and one or two others differ. The whole book, except the first leaf, is so exactly like the "Moguntinus", that it is quite clear that either it must have been copied from that, or that must have been copied from Veldener's edition. By comparison of the two books alone, it would be very hard to say which is the true solution. The Mainz cuts appear to me to be slightly better in execution, but Veldener's have a little more work in the way of cross-lines. Some light is, however, thrown on the question by comparison with a Flemish translation, also printed by John Veldener, and dated 1484.

This is an extremely rare, but rather well known book, about which a good deal has been written. It is the earliest known translation. That it was printed by Veldener, at Kullenborg, is inferred not only from the types, but from two remarkable old woodcuts, found also in the "Spiegel onzer behoudnisse" issued by that printer in 1483, and traced, I believe, to a block book. The first (Tree of Jesse) is on verso leaf 1; the other (Fall of Man) on verso of the last leaf. On leaf 2, recto, is "Dye prologhe de oversetters uyt den latyn in dyetsche". The figures are mostly the

same as in the "Moguntinus", reversed, but some much altered; that of Abrotanum is quite a different design. The chapters are not numbered, though the figures mostly are so, and the arrangement of the book is quite different from the Latin editions. It has 208 leaves (Brit. Mus. copy) without signatures. The colophon has "Ghemaeckt int jaer ons heerl" Mcccc. en LXXXIiiij.

The British Museum pressmark for this edition is C. 14. a. 13 (2). (Proctor, 9,158; Campbell, 918; Hain, 8,449).

Comparing the figures in this with those of Veldener's first Latin edition, we see that, in the former the cuts appear somewhat black and coarse, being printed on very soft paper; but the blocks are apparently the same, but more clearly printed. However, several of them show signs of wear, that of Acetosa, for instance, showing a serious defect which is not in the Dutch edition. There are also imperfections in other blocks (e.g. Ameos) of the Latin edition. From these facts we should infer that Veldener's Latin was printed after his Flemish edition, though probably in the same year. But on the other hand the Dutch edition is avowedly a translation from the Latin. Therefore it must have been translated from some other Latin edition,

not Veldener's - that is from the Mainz edition of 1484, from which also the cuts were ~~cuts were~~ copied, and this retains its position as the editio princeps.

The sequence of events would seem to be, that John Veldener obtained a copy of Schoffer's Mainz edition, and had the figures copied (reversed) on new blocks, with one or two substitutions. He also had the text translated into Dutch, and published the translation first. Afterwards he brought out the Latin edition with the same blocks. Veldener printed still another Latin edition with same blocks, but different types, after his removal to Louvain (see Campbell). This edition has the first leaf blank, but otherwise agrees very nearly with that described above. It has equally no name of place or printer; but is referred as above on good grounds by Campbell and others. [The copy of this edition described by Campbell is now in the University Library, Cambridge.] (Campbell \$17.) [Since writing the above, I have consulted a paper by the late Mr. Henry Bradshaw "On the Fifteenth Century Books in the Meyer Collection," Note E (Collected Papers, Cambridge, 1889, p.227), on the editions of the "Herbarius" printed by John Veldener. I am glad to be confirmed by Mr. Bradshaw's

authority in the belief that the Dutch translation of "Kruidboeck" was printed before the Latin editions by the same printer, and that the latter were copied from the Mainz edition of 1484. Mr. Bradshaw does not appear to be in agreement with Campbell as to the sequence of the two Latin editions, since he places that with a printed title and Veldener's device (Ed. B) later than that with the first leaf blank (Ed. A); while Campbell arranges them in the reverse order.]

EDITIONS PRINTED IN ITALY.

1491. - Vicenza, by Leonard of Basel and William of Pavia. (Hain, 8,451; Pritzel, 11,870; No. 9, Choulant).

Leaf 1, recto, blank. Leaf 2, recto, woodcut frame with two figures, sitting; under which Arnoldi de Nova Villa; Avicenna | Incipit Tractatus de virtutibus herbarum; then Prologue.

5, recto; begin figures with descriptions of 150 plants; end 146, with Usnea Finiunt [sic] *hiber vocatur* [sic] herbolarium de virtutibus herbarum. Impressum Vincentiae per Magistrum Leonardum de Basilea et Gulielmum de Papiā socios Anno salutis Mccccclxxxxi, die xxvii mensis Octob. Deo Gratias. Leaf 155 recto, *leaf 156, blank* Particula secunda. / Leaf 172, verso, FINIS, Deo Gratias (4^o, r. ch. c. s. et. ff. num.). Ff. 172,

with signatures.

The figures are for the most part copied from some one of the editions printed in Germany, but two or three are different. They are certainly recut, being finer in execution and the lines more delicate.

1499. Venice. 4^o., by Simon of Pavia, called Bevilaqua.

Choulant No. 10 (Hain, 1807, as by Arnold de Villa Nova).

Leaf 1, recto. Incipit tractatus de // virtutibus herbarum.

Leaf 2, recto. No woodcut as in 1491. At top of page Arnoldi de nova villa Avicenna // Below this the preface, "Rogatu plurimorum," etc.

Leaf 5, recto, begin figures. etc., of herbs to 154 verso.

Leaf 155, recto. Particula secunda. Ends 171 verso.

FINIS Finiunt [sic] liber vocatur [sic] Herbolarium de virtutibus herbarum // Impressum Venetiis per Simonem Papiensem dictum Bevilaquam. Anno do mini Iesu Christi 1499 die xliiij Decembris. Register, round letter, Sigs. A, a-x, 171 leaves, 28, 27, 37 lines. No German names. Order of plants as in "Herb. Mag." Figures neatly drawn

and tolerably natural.

Choulant No. 11. Another edition. Venetiis 1502.

4^o., per Christ. de Pense (Pritzel, 11,871). *for L. A. Scuderi*

Choulant No. 12. Another edition. Venetiis 1509

4^o., per Io. Rubeum et Bernardinum Fratres

Vercellenses (Pritzel, 11,872).

1510

These editions, printed at Venice, have given rise to the error of attributing the "Herbarius" to Arnold de Nova Villa, physician of the thirteenth century, who never wrote any such book. In the original preface the names of Arnold de Nova Villa and Avicenna are quoted, which induced the printer of the Vicenza edition of 1491 to place on his first leaf a large cut of these two philosophers with their names underneath. In the edition of Venice, 1499, these figures are wanting, the printer apparently not possessing the block, but the names were allowed to remain, and thus appeared to be those of the authors; or, the name Avicenna being regarded as a sort of title, it appeared in the misleading form given by Hain, "Arnoldus de Villa Nova de virtutibus herbarum seu Avicenna". The error of attributing the work to Arnold is peculiar to the Latin editions printed in Italy (not the translations), and appears to this day in the catalogues of Italian booksellers.

ITALIAN TRANSLATIONS.

There are several editions:-

Venice. 1522. 4°. by Alessandro di Bindoni.

Venice, 1536. Sm. 8°. by Francesco di Alessandro Bindone e Mapheo Pasini.

Venice, 1539. By Giovanni Maria Palamides. Pritzel 11,874.

Venice 1540. Sm. 8°. by the same printer.

All these are in the British Museum. I describe the last.

Leaf 1, recto. Title as follows: Herbolario // volgare Nel quale le virtu de le herbe & molli altri simplici se dechiano^{an}, con alcune // belle aggiunte novemete de latino // in volgare tradotto. Woodcut, S. Cosmo S. Damian.

Leaf 1, verso: Alli lettori salute (preface of translator).

Leaf 2, recto (sig. a-ii): Prologo de lo Autore. // Mosso da priegi, etc. (translation of "Rogatu plurimorum").

Leaf 3, recto (aa iii): Tabula ordinata per alphabeto; ends F 6 recto.

Leaf 6, verso: Delicate Italian wood engraving of Annunciation, like those in some Aldine books (and not unlike Mallerini Bible), enclosed in an ornamental frame of different and rougher work.

Leaf 7, recto (sig. A), begins series of 151

Woodcuts; ending fol. 158 (sig. T-8); verso:

Finesse la prima parte.

Leaf 159 (sig. V 1) begins second part of 16 leaves, ending on fol. 174, verso: Finisse lo libro de le virtu de le herbe, etc.

Leaf 175, recto: Tabula . . . a ogni egritudine on eleven pages, in two columns; ends fol. 180, recto: Fenisse qui Lerbolario volgare, etc. Stāpato ne la inclita citta di Venetia con accuratissima diligentia per Gioanni Maria Palamides Nell' anno M.DXL. Registro.

The text is a close translation of the Latin "Herbarius", but there are two additional chapters - Mele, Honey, and Vino e Aceto. The order of herbs is also nearly the same, but begins with Aaron, and has Mele instead of Matricaria at cap. 89.

The cuts, however, are copied, rather coarsely, not from "Herbarius", but from some Latin edition of "Ortus Sanitatis". Honey is represented by two tree trunks with bees, and Wine, No. 151, which is an addition, is illustrated by a view of a cellar with casks. These cuts belong to the Latin "Hortus Sanitatis" and not to the Latin or the German "Herbarius". Thus the artists of the Italian translation did not copy the figures of the Latin editions printed in Italy. It is evident also that the Italian artists did not in any way improve

upon the rough German originals. [A figure of S. Cosmo and S. Damian is found in an edition of the German "Herbarius" printed by R. Beck, Strassburg, 1521; from an old block used in Gersdorff's "Feldbuck der Wundarzney", 1517, and other Strassburg books, which may have suggested to the Italian artists the idea of introducing these two patron saints of surgeons into a "Herbal".]

II.- HERBARIUS ZU TEUTSCH,

or the German "Ortus Sanitatis" (called also the "smaller Ortus").

This book, which was the foundation of the numerous publications called "Hortus Sanitatis", was printed at Mainz early in 1485. The name of the printer is not given, but the double red shield of Peter Schoffer at the end assigns it to him. Appearing the year after the "Herbarius", issued by the same printer, it has been regarded by some authors (e.g., by Jackson and Chatto, "History of Wood Engraving", and others) as a second edition of that work in German. But really, neither the text nor the illustrations of the two books are the same (though one part shows some resemblance), and as the newer work was completed on the 28th March, 1485, and must have taken a long time to prepare, it would have been hardly possible in composing it,

to make much use of a book printed in the previous year.

The wide circulation and the celebrity of the later Latin "Hortus" and its successors, has tended to obscure the peculiar and unique position occupied by this fine folio, the publication of which forms an important land-mark in the history of botanical illustration, and marks perhaps the greatest single step ever made in that art. It was not only unsurpassed, but unequalled for nearly half a century.

Postponing the precise bibliographical description, I will give a general account of the book.

It is printed in Gothic character, in long lines, the language German.

The recto of the first leaf is blank. On the verso is a large woodcut occupying the whole page, showing a group of thirteen figures, surmounted by a sort of arch decorated with foliage and conventional ornaments. From this hangs a blank shield. A date palm and an orange tree appear in the background. In the group three central figures are prominent. In the middle is an old man with a long beard, richly dressed, in the manner in which mediaeval artists were wont to adorn an ancient sage. His right hand is on a "closed" book

his left raised in exposition. On his left is another bearded figure, with a turban, dressed in a sort of doctor's robe, holding a plant in his right hand, and resting his left on a "closed" book. On the right of the central figure is another seated, close shaven, with a simple cap or biretta, and dressed in voluminous robes, but not precisely those of a doctor. He holds an "open" book, and is listening attentively ^{to} at the exposition. His face is not conventional, as are the other two, but looks like a portrait. The ten figures behind have various head-dresses and garments, and appear to represent Arabs, Jew, ecclesiastics and others in mediaeval costumes, mostly listening, some appearing to add something to the exposition.

I should conjecture that the central figure is meant for one of the fathers of Greek medicine, either Hippocrates or Galen; the turbaned personage for Avicenna, and the third principal figure, which looks like a portrait, and whose book is "open", for the author. The remaining figures would bear no special identification. In the foreground are some plants very carefully drawn.

On the recto of second leaf begins the preface, in these words: (O)fft und vil habe ich by mir selbst betracht die wundersam werck des schepfers

der natuer", etc. These words identify this book in the German editions, and in a Latin version are found in all editions of the later "Hortus Sanitatis".

The preface is throughout so interesting in its matter, and so beautiful in feeling and language, that I should like ^{to} translate the whole of it.

On the second page of the preface occurs these words: "Und nennen diss buch zu Latin Ortus Sanitatis; uff teutsch ein gart der gesuntheit!" (Call this book in Latin "Ortus Sanitatis"; in German, a garden of health.")

On the fourth leaf, recto, begins the series of Herbs and natural objects. A large woodcut of *Arthemisia* occupies the greater part of the page, with name below and description. There are 435 chapters, of which 379 have figures, 56 have none, most of the chapters, i.e., 382, treat of herbs, 25 of animals (among which are Ox, Beaver, Cantharides, Fox, Hare, Elephant) or animal products, 28 of inorganic materials or compounds, such as Bole Armeniac, Terra Sifillata, Butter, Lime, etc. All are arranged in one alphabetical order.

The third part of the book, an index of drugs according to their uses, is arranged like a corresponding

part of the "Herbarius", and may owe something to it.

The fourth part is a short treatise on "the Colours of Urines" and their significance, the first leaf has a well-drawn woodcut of a physician inspecting a glass of urine, while a female patient with a basket awaits his verdict.

The fifth part is a long index of diseases, with reference to the chapters containing medicines appropriate to them.

An alphabetical index of the herbs and other objects concludes the work.

The colophon, in red, states "Disser Herbarius ist czu || mencz gedruckt und geen || det uff dem xxvii j dages des || mercz. Anno M. CCCC LXXXV."

It is to be noted that though the name "Ortus Sanitatis", or Garden of Health, is given in the preface, this was never used as the actual title of the German work, which is always called in the colophon (where one exists) "Herbarius", while later editions (Augsburg, 1488, 1493, 1496, 1499, etc) have as a title on the first leaf the words "Herbarius zu teutsch". Moreover, in two copies which I have seen with old binding, this is lettered on the outside "Herbarius". It is, therefore, more correctly called "The German Herbarius", not "Ortus

Sanitatis".

Now to deal with different parts of the work;
we first speak of the preface.

In this the originator of the book states that observing the wonderful works of God, and His benevolence in providing natural remedies for all the ailments of mankind, he thought he could perform no more honourable, useful and holy work than that of bringing together in one book the virtue and nature of herbs and other ^{pl}reated things, and portraying them in their natural forms and colours. For this purpose he caused a master learned in medicine to compile from the great masters, Galen, Avicenna, Serapion and others, a book on the virtues of these medicines. But while he himself was engaged in having them drawn and copied, he noticed that there were many noble herbs which did not grow in German lands. He accordingly interrupted his work till he prepared himself for a pilgrimage to the Holy Sepulchre. And that others beside himself might profit by this journey he took with him a wise and skilful painter. In his company he undertook a long journey ~~to~~ through Italy, ^{to} Greece and other countries to the Holy Land, thence to little Arablia, Mount Sinai, Babylonia, and by

Alexandra into Egypt. On his travels he observed the various herbs growing there, and had them portrayed in their natural form and colour; and on his return completed the work which he calls the Garden of Health, for the use of physicians, laymen, and especially apothecaries.

What appears ^{now} ~~them~~ is that the originator of the work was presumably a rich man, apparently not a doctor, who had made long travels in the East, partly for the purpose of studying botany and bringing home drawings of plants. Also that the medical portion was compiled under his direction by a learned physician.

The identity of this scientific traveller cannot be established. One thinks of Bernard von Breydenbach, who travelled in the East accompanied by an artist, Erhard Rewich, and published an illustrated account of his journey in 1486. But ~~of~~ ^{for} various reasons, too long to enter upon, it could not be Breydenbach or any of those who accompanied him on his travels. Doubtless such a pilgrimage was not ^{so} ~~vey~~ uncommonly undertaken by those who possessed the necessary means.

Some have thought that Schoffer, the printer, might be speaking in his own person; but in the

preface to the later Latin "Hortus" the originator
 is spoken of as "nobilis dominus". The physician
 who compiled the medical portion was probably one
 Johann de Cube, who names himself in chapter 76,
 speaking of "eyn gewisse artzney dicke mail
 versuecht an vil enden von mir Meister Johan von
 Cube." This doctor is identified with Dr. Johann
 Wonnecke, of Caub or Cube, who was town physician
 of Frankfort at the end of the fifteenth century.
 Nearly fifty years after, in 1533, the Frankfort
 printer Egenolph, brought out a "Kreutter Buch" by
 Eucharius Rhodion, which, in answer to a charge
 of plagiarism by Johann Schott of Strassburg, he
 declared to be based upon an old book by Dr. Johannes
 Cuba, of Frankfort. [the title is:- Kreutterbuch
 von allen Erdtgewachs. Anfenglich von Dr. Johan
 Cuba zusammenbracht ietz widerum new corrigirt ***
 durch Euchaeius Rhodion** Christian Egenolf,
 Frankfurt am Meyn 1533 (British Museum). But an
 edition or editions appeared without the name of
 Cuba.] The documents have been published, and
 clearly show that in the sixteenth century Johann
 de Cube was regarded as the author. Choulant throws
 doubt upon Cube's authorship; but it seems probable
 that he at all events took part in the compilation.

[Choulant, "Graphisch Incunabeln", p.39.] It is hardly necessary to say that Johann de Cube had nothing to do with the earlier Latin "Herbarius".

THE ILLUSTRATIONS

The woodcuts of this edition are very remarkable. They form a marked contrast with the rude cuts of the Latin "Herbarius", being in many cases evidently direct studies from nature, and drawn with much skill. Such figures as the Yellow Flag (*Acorus*), the Winter Cherry (*Alkekengi*), and the Dodder, climbing on a plant with flowers and pods, show this clearly enough. They formed the basis of nearly all botanical figures for nearly half a century, being copied into all succeeding editions with ever-increasing badness and degeneration. It has not been sufficiently noticed how far superior are these fine cuts to all those found in later works in German, French, Italian, or English, till a new period of Botanical illustration began with the work of Brunfels, published in 1530. Some of them, representing native plants, are quite comparable to those of Brunfels for fidelity of drawing, though very inferior in wood-cutting.

It will naturally be asked whether the botanical travels of the anonymous originator of the

work have left any trace in the illustrations.

There are several figures representing foreign plants, chiefly (if not all) those growing in Egypt, Syria, and the Levant; but it cannot be said that most of them bear any evidence of being drawn from nature, having generally no resemblance to the plants they profess to represent (e.g., Scammony, Rhubarb, Storax).

But there is one of an exotic plant, viz., Senna, brought to Europe chiefly from Egypt, which had to me the appearance of being drawn from the object. But as eminent botanists have drawn the opposite conclusion, I submit to their judgment. It might possibly have been taken from dried leaves and pods, put together in an ignorant manner. Whether the complete herb was then an article of commerce I am unable to say. The figure of Ginger (Zingiber) seems as if it were taken from a growing plant, and is correct enough as a diagram. It grows in Egypt. There is also a figure of an elephant, which must have been taken from life. Other animals (musculus, musk-deer) are clearly fabulous. The figure of the Balm Tree profess to show the manner in which the balsam was collected in little cups. *Cassia fistula* (125), has some suggestion of the right kind of plant.

On the whole we must conclude that if there was ^{the} travelling artist who drew plants in the East, he ~~neither~~ did not know their right names or was a very poor draughtsman. Possibly he was altogether a mythical person.

THE TEXT

This is arranged on a different plan to that of the Latin "Herbarius". First are given a good many synonyms, Greek, Latin and Arabic. Then follow statements from "the masters" about the virtues of the drug. The country from which foreign plants come is often mentioned, such as Arabia, Babylonia, etc.; but these statements are borrowed from old authors, and do not profess to be based on personal knowledge. More authors are quoted than in the Latin "Herbarius", but none more modern. It was evidently the compilation of a man of some learning in books.

LATER EDITIONS.

The later editions are very numerous. [It is noteworthy that no later edition appears to have been brought out by the original printer, Schoffer, at Mainz. The same remark applies to the first Latin "Herbarius" (so far as I have been

able to trace), and also to the Latin "Hortus". Probably, as there was no copyright, and these works were immediately printed in other places, there was not much inducement [of the original printer to reproduce his own work.] In the same year, five months later, a reproduction was printed at Augsburg.

It is a large folio (379 leaves), chiefly in long lines, a few pages only having double columns. The large woodcut of the philosophers is roughly copied and reversed. The blank shield of the Mainz edition is filled with a pine cone, the badge of the city of Augsburg. The figures are roughly copied and somewhat smaller, but essentially the same, occupying often a good part of the page. Most are reversed.

The colophon of this edition has: Hye hat einend der Herbarius in der Keyserlichen statt Augspurg Gedruckt und vollendet an montag nechst vor Bartholomei nach Christi gepurt M CCCC LXXXV. (August, 1485).

This edition has been assigned by Hain and others to Anton Sorg, but by Mr. Proctor to John Schonsperger. I am incompetent to speak of types, but must note that it is very different from the

subsequent editions printed by Schonsperger, which are all in double columns. The British Museum copy in old binding, is lettered outside "Herbarius". [Hain,*8,949; Pritzel,*11,885; Choulant No.2.]

1486. In this year Schonsperger printed an edition in his own name, differing from the two previous editions in being in two columns. It was the first of a long series of editions by this printer, all very much alike.

The large woodcut is reduced to five figures from the old group of thirteen, these being the foremost. The background is occupied by an apothecary's shop, with a young man pounding something in a mortar. The figures of plants are much smaller, so as to come into one column, and worse executed; a few new figures are introduced. The colophon has: Gedruckt und volendet dieser Herbarius durch Hannsen schonsperger in der Keserglichen // statt zu Augspurg an sent Bo // nifacius tag Anno Mcccc und // in dem Lxxxvi jare. (June 5th, 1486.)

It is said to have 257 leaves of 42 lines, with signatures. I have not seen a copy, but it closely agrees with later editions which I have seen. [Hain,*8,951; Pritzel,*11,887; Choulant, No. 6.] Later editions were printed

by Schonsperger in 1487 ~~1488~~, 1488, 1493, * 1496, 1499, one of which I have.

There are also other undated editions which I cannot here describe. [It has been supposed that some of the undated editions were printed earlier than 1485, and they have been referred to about 1476, or 1473. Dr. Copinger in his "Supplement to Hain" refers to the British Museum copy of an undated edition of the German "Herbarius" (546, i. 6), which is, I think, clearly copied, though indirectly, from the edition of 1485. The group of personages on first leaf is a rough copy of the original, and reversed, but some are from quite different designs. They could not, however, have been directly copied from the 1485 edition for the following reasons. The blocks have the number of the chapter cut in wood, which is not the case in the original. Moreover, in the first twenty or so cuts, these numbers are written backwards, showing that so as to appear correct ⁱⁿ the impression (this precaution would not be necessary with the figure itself). After Cap. 22, the numbers read correctly. It is barely possible that the artist copied from blocks which already had the numbers upon them. In this case it would not be the first

or the second copy (in which the figures would have come out "not" reversed), but a third copy, or fourth edition at the earliest. The origin of the supposed date, 1473, or "circa" 1476, appears to be as follows. On the first leaf is written, in an old hand, A^o 1473. But this treatise is the first in a volume lettered on the back "Tractatus Medici", containing several treatises, the last of which is "Metlinger de Infantum Morbis", which has, in the colophon, the printed date 1473. Evidently the possessor of the volume, wrote it on the first leaf; hence the mistake. When or where this edition of "Herbarius" was printed I cannot say, but it is not one of Schonsperger's double-column editions, and does not precisely agree with any entry in Hain. Mr Proctor refers this edition to the press of ^{no} J. Reinhardt, or Gruninger, of Strassburg (No. 497). "See" Dr. Copinger's "Supplement ot Hain", Part II, 3178.]

TRANSLATIONS OF THE GERMAN HERBARIUS

This work was frequently copied and translated into other European languages, and became the most widely distributed Herbal, having a greater popularity than either its predecessor or its successor.

FRENCH TRANSLATIONS.

The earliest known is called "Arbolayre",
the word being evidently a corruption of Latin
Herbolarium, or Italian Herbolario. The first
edition is an exceedingly rare book, ~~supposed to~~
~~have been~~ printed at Lyons. ^{Besancon by Neffinger} A copy lately occurred
for sale in London, of which I made a hasty inspec-
tion. It is said that the only other copy known ^{there are 8 copies}
is in the Bibliotheque Nationale at Paris. The
title is "Arbolayre contenāt la qualitey et virtus
proprietey des herbes, gōmes, et simēces extraite
de plusieurs tratiers de medicine cōment davicene,
de rasis, de constatin de ysaac, et plateaire,
selon le cōnu usaige bien correct." It is a folio,
gothic letter in double columns, of 39 lines
(? number of leaves). No place or name; said to
be printed by M. Husz at Lyons "circa" 1485;
probably later, but most likely before 1491. ^{Neffinger, 1486}

On verso of title is a good copy of the large
group of botanists from the German "Herbarius" of
Mainz, 1485. ~~It is essentially a translation of~~
~~that work, but taken from a later edition.~~ The
cuts are generally the same, but smaller. The
chapters are not numbered. Some of the cuts, at
all events, must have been printed direct from
German blocks, as they have a number in roman

figures printed on the block itself; but the earlier cuts are mostly not numbered. This fact shows that the "Arbolayre" was not copied from the original "Herbarius" of 1485, nor from any of the Augsburg dated editions. It would only agree with editions without place or printer's name, one of which is described by Hain (8,947), and Pritzel (11,883), and Choulant (No. 4.); another by Choulant (No. 3.). The latter writer gives a full description, and mentions the peculiarity I have noted. Choulant describes another nearly identical edition from the Royal Library, Dresden. On the whole, the Straasburg edition mentioned above — *Yes* (Proctor 497) seems as likely as any to have been the original. *Bruninger for the cuts.*

However, the work evidently has no originality, the text being translated, and the blocks, many, if not all of them, cut in Germany. Perhaps the only mark of individuality is that the French translator rejects the story that the male and female species of mandrake resemble man and woman respectively. He says that figures like these are made artificially. Accordingly, he gives no figure of the female mandrake.

There were probably later French editions with the title "Arbolayre", but I have not been

no
able to see any. Essentially the same work appeared, however, in many editions with the title "Le Grand Herbar". This title would be chosen to distinguish it from the little Latin "Herbarius", which, though never translated into French, was, [?] as I have said, once printed in Latin with French synonyms. ^{? French edition Paris, 1485, Jean Bonhomme}

Many editions of the "Grand Herbar", some in folio, some in quarto, are mentioned in books. I have not seen any, except a late quarto edition which I possess. The title (in red and black) is:-
"Le grant Herbar en frācoys contenāt les qualitēs Virtus, et pprietez des Herbes, Arbres, Gōmes, Semēces Huylles et pierres precieuses Extraict de plusieurs traictez de medecine, Comme de Avicēne Rasis, Cōstantin, Isaac, Plataire et ypocras selō le commun usage. Iprīme nouuellemēt a Paris.
47. xxxlx. (Two woodcuts).

On les vend a Paris, a lenseigne saint Jehā baptiste En la rue neufve nostre dame Pres saīcte Geneviefve des ardans. #

This could not have been first printed in 1539; but where or when the first edition appeared I cannot say. The title differs from the title of "Arbolayre" only in adding Ypocras to the list of authorities, and introducing oils and precious

stones. The two latter are enumerated in the alphabetical order of plants, as in the old German "Herbarius".

The colophon states (fol. CLXXVI): "Cy finist le grāt herbier translate de Latin en Francoys. Auguel sont contenues les qualitez vertus et proprietez des herbes, Arbres, etc
imprime a Paris par Jehan Janot Imprimeur et Libraire jure en luniversitr de Paris, " etc. . .

On the verso of this last leaf is the printer's mark of Jehan Janot. (1) "On les vend a Paris a lenseigne saïct Jehan baptiste en la rue neuve nostre dame Pres saïcte geneviefve des ardās."

The prologue is not the same as in the old German book, and the words translated from Latin show that something was borrowed from the Latin "Hortus", but the main part of the work agrees with the "Arbolayre", though the descriptions are much longer, and no authorities are quoted. The figures are small, and appear to be reductions of those in the Latin "Hortus" rather than those of the German "Herbarius", but the names are often inaccurately applied.

It thus appears that we have the old German "Herbarius" with matter borrowed from the Latin "Hortus".

This work was the foundation of the English
"Great Herbal", printed in 1526 and 1527. *1529 + 1561*

THE LATIN "ORTUS SANITATIS."

This fine book, the prototype of most of the later editions in Latin, or other languages, was first printed at Mainz by Jacob Meydenbach, 23rd June, 1491. There can be no reason for placing any undated edition earlier.

This book is often regarded as a Latin translation of the German "Herbarius" or "Ortus", but this is not strictly correct. It is much larger than that, and consists of the following parts:-
(1) Prohemium, for the most part a translation of the preface to the German work; (2) a treatise on herbs in 530 chapters; (3) a treatise on land animals in 164 chapters; (4) a treatise on birds in 122 chapters; (5) a treatise on fishes, etc., in 106 chapters; (6) a treatise on stones and minerals in 144 chapters; (7) a treatise on urines; a long therapeutical index of diseases referring to each division of the book separately, and an alphabetical index to each part. It concludes with an epilogue by the printer, Jacob Meydenbach, in which he claims for himself the credit of producing this book, and for the city of Mainz the

credit of the invention of printing.

It thus appears that the section on herbs is the only one which could have been borrowed from the German work, and even this, as we shall see, owes very little to it.

The Latin work has on recto of the first leaf the title "Ortus Sanitatis", being the first book in which this name is actually used as a title. On the verso is a full-page cut, showing a group of nine figures, surmounted by an arch, roughly copied from the group of thirteen in the German work, with two small blank shields in the corners. The palm and orange tree are in the background, and the other decorations are rudely imitated. The three principal figures are the same as in the old cut, but reversed; and six other figures from the original group are added.

The next page (A1j recto) begins: "Incipit prohemium presentis operis;" and then in first column the preface beginning: "Omnipo || tentis eter ||
nique dei || tocius naturae cre || atoris opera mi ||
rabilia admirā || daique mecum vici || bus iteratis
crebrius percogitando revol || vi" - a translation of the sentence Vil und offt etc. This exordium distinguishes all (or nearly all) the later Latin

editions.

The rest of the preface is much like the German, but differs in the way of speaking of the originator of the work. It says: ad idem aggrediendum nom minus me movit, sed et permaxime nobilis quidam dominus qui regna terrasque varias peragrando videlicet Alemaniam, Italiam, Hystriam, etc. (nearly as in the original) de sepe dictis herbis, animalibus, lapidibus ceterisque ad confectionem medicinarum necessariis, et propter raritatem incognitis magnam accepit experientiam, earum virtutem describens ac earum similitudines sublineamentis convenientibus certisque coloribus effigiare procuravit.

That is to say, the origi^{na}tor was the same noble^{ly} person who had compiled the first book, whose travels are described, but not quite accurately, and who is now said to have collected drawings of animals, stones, and other drugs, which the original author does not state. The list of authorities referred to is somewhat longer. The book was to be called "Ortus Sanitatis", and to be divided into eight parts. The exordium of the German preface is somewhat shortened. We learn here that the original learned traveller was a noble person, which he himself, naturally, does

not say; and that he interested himself in this new undertaking.

Whether this was literally true, or whether the reference to the noble author was merely a bit of advertisement, it is imposible to say.

On the verso of this leaf the series of chapters on herbs begins, numbering 530, each with a woodcut. The original had only 379 figures of plants, so that 151 are added. This portion occupiess 248 leaves, with signatures A-X and a-m. The cuts are much smaller, occupying half a column (the book being in double column) about 4 in. by 2½ in. Those copied from the original are altered for the worse, though sometimes finer in cutting, and often misunderstood. Thus in the first figure, Arron or Arum, there is in the original a slight ambiguity in drawing, which makes the spadix appear as if it were double. Accordingly in the succeeding versions of the cuts there appears a regular double spadix; a botanical impossibility. In the fine figure of the Yellow Flag of the original, the way in which the leaves wrap round the stem is beautifully shown; this character is quite lost in the copy, and so on. The differences are sometimes such as to suggest that the figures were not

copied direct from the 1485 edition, but some intermediate copy in a later German edition. A few are reversed, but most are not so, as compared with the 1485 edition. The new draughtsman, even if clever, was an ignorant copyist. Of the new figures, some are of native plants, and roughly like; others of exotic plants, which appear fictitious; and others, such as Arbor Vitae and Narcissus, are plainly fabulous.

We have, however, some curious cuts of the kind called "genre bilder," that is, figures of men or objects illustrating the subject. Under Starch ("Amidun"), we have a man pounding something in a mortar. Under "Acetum", a cellar with casks; under "Aqua", a fountain, with a grotesque monkey on the top; under "Caro", meat, a butcher, and so forth.

One peculiarity of some cuts is that there is a combination of the white line on black, with the black line on white (e.g., 38, 43, 54, 77, 138). The cutting is chiefly in outline, with occasionally a little shading - never cross hatching.

On the whole, though there may be some advance in the art of wood-cutting, these figures show a grave deterioration in the art of botanical

illustration, as compared with the German "Herbarius" of 1485, which remains the high-water mark in figures of plants up to 1530.

The text of the Latin book is very different from that of the German. Each chapter begins with a description of the plant, its synonyms, and often something about its geographical origin, taken from various authors. The medicinal virtues are described in a separate section headed "Operationes," and divided into paragraphs headed by letters of the alphabet, at much greater length than in the older work. There is little resemblance, except in the synonyms; but of course the same authorities are often quoted in both works. In two places at least (Mandragora, 275, and Paeonia, 338) there is a definite quotation "ex herbario", which does not mean the German "Herbarius" or the Latin "Herbarius Moguntinus," but the "Herbarium" of Apuleius Platonius, in the corresponding chapters of which the quotations may be recognised. This shows that the later compiler had the work of Apuleius before him. The Latin text, if printed separately, would be three or four times as long as the German.

It follows that though Johann de Cube may

have been the compiler , or joint compiler, of the German "Herbarius", he was in no sense the author of the Latin "Ortus Sanitatis".

The part relating to animals begins (on recto of Sig. n.l.) with the title in large letters: "Tractatus de animalibus // vitam in terris ducentium"(sic). On the verso is a full-page woodcut, representing a doctor discoursing with two bearded men, and a group of animals. On the next page begins the treatise on animals, with an interesting cut to illustrate "Homo," of a doctor demonstrating the form of a naked man. This cut is not reproduced in any later edition.

The figures of domestic animals are tolerably good; those of foreign beasts less so; the old elephant of the German "Herbarius" appears again, now perched in an uncomfortable position on the top of a mound. But the purely fabulous character of many of the beasts named, allows the artist's imagination free play.

The treatise on Birds begins (on leaf preceeding sig. v.l) with the title "Tractatus de Avibus," and on the reverse a full-page woodcut showing the doctor in conversation with another person, and also a number of birds. The figures of real birds have a good deal of character, but

there are many fabulous. Some good genre figures, such as a falconer, a woman with a basket of eggs, and so on, are introduced.

The treatise on Fishes begins on aa, preceded by a full-page cut of fishes and marine monsters, about which two persons, the doctor and some ancient sage, are conversing. In the figures of fishes, mythology, as might be expected, holds an important place, curious stories being borrowed from Albertus, Isidor, "Phisiologus," and others.

This part ends on folio ee ij, and on the other side of the leaf is the large cut which serves as frontispiece to the "Treatise on precious stones". It shows how two doctors or philosophers in consultation, with other figures of dealers in gems seated at large tables, and their customers. Since the actual gems and minerals do not readily lend themselves to pictorial representation, each chapter is illustrated with some genre figure, such as lapidary with a table before him, or a miner, or a housewife putting coals on the fire, or a man extracting the precious jewel which the toad carries in his head. These lively scenes make this the most amusing part of this delightful old mediaeval picture-book.

The last treatise is on Urines, "Tractatus de Urinis," and is considerably longer than, as well as different from, that of the German "Herbarius". It is introduced by a full-page cut, showing doctors examining specimens and pronouncing opinions upon them, while patients and servants fill up the scene. At the end of this treatise is a full-page woodcut, showing three doctors and several patients - one in bed. This is evidently a summary of the whole work.

Then follow the two indices, and finally the epilogue and colophon of Jacob Meydenbach, from which I must make a quotation:-

"Quem quidem librum omni diligentia collectum et elaboratum intelligibili caractere propriis impensis Jacobus Maydenbach civis moguntinus luculentissime impressit summanque adhibuit diligentiam operamque maximam ut singule herbe et singuli flores suos naturales colores et animalia ipsa volucres pisces denique et alia in hoc praecellarissimo opere descripta suas sicuti eas natura produxit haberent effigies et figuras. Hoc modo lectitanti prodesse ac intuentem oblectare impressor ipse Jacobus voluit. Impressum est autem hoc ipsum in inclita civitate Moguntina, que ab antiquis aurea Moguntia dicta, ac a magis id est

sapientibus ut fertur primitus fundata, in qua nobilissima civitate et arte et scientia hec subtilissima characterisandi seu imprimendi fuit primum inventa. Impressum est inquam sub Archipresulatu Reverendissimi et Dignissimi principis et domini domini Bertoldi archiepiscopi Moguntini ac principis electoris cujus felicissimo auspicio graditur, recipitur et auctorisatur. Anno salutis Millesimo Quadringentesimo Nonagesimo primo. Die vero Jovis vicesima tertia mensis Junii."

The whole consists of 453 leaves of 47 lines in double columns, gothic letter, with seven full-page woodcuts, and about 1,066 (as nearly as I can make out) smaller cuts.

The signatures are A-Z, a-z, aa-ll, i, v, A-E.

This is, therefore, the most complete edition, and the central one of the whole series of books called "Hortus Sanitatis". It is far more complete than its German predecessor, and was the model from which all later editions were copied.

As to its authorship, it is anonymous; and, indeed, such a work could hardly have a single author. It had no doubt an editor, who was probably the printer himself, and the book must therefore be regarded as a publisher's enterprise.

The doctors, draughtsmen, and wood-cutters - probably several of each - who co-operated are never named, and Meydenbach evidently claims all the credit for himself.

LATER EDITIONS.

These ^{are} numerous, but probably all the Latin editions can be enumerated. No second edition was printed by Meydenbach himself.

First we place an edition, No. 8,941 Hain, without date, name of place or printer, which has been generally supposed to have been printed at Strassburg, but which Mr. Proctor refers to Cologne. I have no knowledge of types, but would observe that the "large" woodcuts which it contains are of the Strassburg school, and are found in other books printed by Johann Gruninger, showing a peculiar physiognomy with long hair, and (in one at least) a chequered pavement. They are :- a large cut (verso of the first leaf) of a doctor and three scholars; a rough figure of a skeleton (leaf 203, verso) and the interior of an apothecary's shop with two figures (leaf 333, verso), which replaces the frontispiece to the Treatise on Urines in the 1491 edition. The impressions from these blocks

are quite fresh and brilliant.

F1, recto: "Ortus Sanitatis" || De Herbis et
plantis || De animalibus et reptilibus || De Avibus
et volatilibus || De Piscibus et natatilibus || De
lapidibus et in terre venis nascentibus || De Urinis
et earum speciebus || Tabula medicinalis cum directo
rio generale per omnes tractatus ||

F 1, verso: Large woodcut of doctor and
three scholars.

F 2, recto (Sig. A2): Prohemium [o]mnipotentis ||
eternique dei || totius natu || F 360 recto at end:
Finis. Folio. Goth: char, 2 columns, 55-54 lines.
360 leaves. Signatures.

(Choulant, 15; Hain, 8,941; Pritzel, 11,876.)

My copy of this edition has the inscription
in MS.: "Anno Domini M cccclxxxviij, xii. Kalend
Novembris. Regnante Inclito Principe Augustino
Barbadiense. Empt. 2 guld, 10 pfenn."

Therefore it must have been printed between
1491 and 1497.

The woodcuts of natural objects are evidently
copied from the edition of 1491, somewhat altered;
the animals with more shading, and sometimes with
the addition of a background. Most of the animals
are enclosed in a frame. The chapters on herbs

end fol. 202 recto. Fol. 203 recto., "Tracatutus de Animalibus; 203 verso, skeleton.

The large cut at the beginning is found in editions of the "Distillirbuch" of Hieron. Brunsschwick, printed by Johann and afterwards by Bartholomew Gruninger, and the block was used in the Gruninger press up to at least 1532. The same is true of the cut of the apothecary's shop.

The block of the skeleton is found in Laurentius Phriesen's "Spiegel der Arznei" (Strassburg, 1519. ^{(and} earlier), and in some editions at least of Brunsschwick's "Surgery".

Some of the woodcuts of plants were also used in early editions of Brun sschwick's "Distillirbuch".

It is, therefor, evident that the blocks originated in Strassburg, and if they were taken anywhere else on loan, were brought back again.

Another edition (Hain, 8,943; Choulant, 16; ^{not the same} Pritzel, 11,878), which I have not seen, appears ^{is 8942} to differ chiefly in the title, where the word "directorio" is not divided. [Choulant refers to a copy of his No. 16, in the University Library at Leipzig, which has the MS. note - 1500 Dedi pro isto libro 1j. fl. Rhenanos. In Halberstadio 1500,

Veneri xxxi er ultima Hanuarii; the price agreeing very nearly with that in my copy.]

There is again a third edition (Choulant, No 17), closely resembling these, which I have seen in London, in which the large woodcut of the apothecary's shop, which comes before the Treatise on Urines in the two last-mentioned editions, is placed at the beginning of the book, though repeated later. The title is somewhat differently printed: "ORTUS SANitatis", etc. After the Herbs, on leaf 203 recto, the title Sequuntur alii Tractatus; and below this four small cuts, one from each of the remaining divisions of the work: beasts, birds, fishes and stones, with titles. The woodcut of the skeleton follows. Before the Treatise on Urines (leaf 303 recto) is a large woodcut representing a patient in bed, with three other persons, which is found in several other Strassburg books. On verso, the first woodcut repeated. The smaller figures are mostly from the same blocks as the editions last mentioned, but evidently more worn - some are different. They generally resemble the two other editions, containing 360 leaves of 55 lines, with signatures (not in Hain or Pritzel; Choulant, 17).

The three editions above mentioned are evidently closely connected, and probably came from the same press, the woodcuts, large and small, which they contain, being well-known products of the Strassburg school, though the printing is referred by Mr. Proctor to Cologne. *Proctor*

1511. The edition of the Latin "Hortus" printed at Venice in 1511 deserves mention on account of two very fine large woodcuts of the Italian school which it contains. There is also the rude figure of a skeleton, copied from the German editions. The small figures are rough and inferior copies from German blocks. If German blocks were used they must have been from some edition which I have not traced, but I feel sure they are copied from one of the editions above mentioned. It is striking that the art of the Italian draughtsmen and engravers added nothing to the natural history figures, which are worse than in previous editions.

Title. ORTUS SANITATIS, etc. "Colophon":
Impressum Venetiis per Bernardinum: Et || Joannem
de Cereto de Tridino alias da Tacuinum. || Anno
domini M cccccc xl die xl Augusti, || Regnante
Inclyto Duce Leonardo Lau || redano Venetiarum

Principe. Laus Deo Registrum.

1517. Another edition has this date, but
Rundelbeck, Strassburg.
no indication of printer or of place. The title
is printed in red and black, within a frame in the
shape of an arch. The woodcut is of an entirely
different type to those of the Strassburg school,
and is decorated with foliage and figures.

The title is in twelve lines, red and black
type: Ortus Sanitatis // De Herbis & Plantis // De
Animalibus et Reptilibus // De Piscibus et Natatali-
bus // De Lapidibus et in terre ve // nis nascentibus //
De Urinis et earum speciebus // Tabula Medicinalis //
cum Directorio ge // nerali per omnes // tractatus
Anno M D XCII. Sigs. A-Kk vil. Double columns,
59 lines.

The smaller cuts closely resemble those of
the undated editions. Choulant thinks they are
from the same blocks as his No. 16; but, if so,
they are a good deal touched up.

The above are the only complete Latin editions
known to me, but very likely there are others. We
may now say a word about the translations.

There is not, so far as I know, any complete
translation of the Latin "Ortus Sanitatis" into
German; but for the confusion of mankind, a portion

of it was thus translated and frequently published with the title "Gart der Gesundheit; zu Latin Ortus Sanitatis", or some similar title, but comprising only the portions relating to animals and stones, wanting in the "Herbarius" of 1485, without any herbs. These imperfect editions were, no doubt, meant to supplement the German "Herbarius", which, as we have seen, treats only of plants; so that the two together might make a complete "Hortus", like the Latin edition of 1491.

A work thus composed of the German "Herbarius" and a German translation of the later parts of the "Ortus Sanitatis", was first published by Johann Priess, of Strassburg, in 1507-9. It began with the preface of the old "Herbarius", "Oft und vil," and gives the same number of chapters of plants. There is a figure of the skeleton taken from later Latin editions of the "Ortus Sanitatis".

An edition of 1529, by Joh. Gruninger, Strassburg (which I have not seen), called "Ortus Sanitatis", states distinctly that the chapters relating to animals and stones are translated from Latin into German, and that the herbs were added "aus dem Herbario."

Hence we have the singular title "Ortus Sanitatis; Gart der Gesunteit, von allen Tieren, Foglen, Fischen, und edlem gestein," etc.

The title of the Strassburg edition, printed by Apiarius in 1536, is to the same effect. The so-called "Garden" includes no plants, but only beasts, birds, fishes, and precious stones. My copy is lettered on the binding "Garth der Gesundheit".

The translations of a so-called "Hortus Sanitatis" into lower Saxon, Flemish, or Dutch all refer to translations of the German "Herbarius" or smaller German "Hortus" (1485). [I have lately seen, through the courtesy of Mr. Tregaskis, a Flemish translation entitled "De grote herbari 'met al sijn figure der Cruyden || om die crachten der Cruyden onderkennen"*** Gheprint Tantwerpen. Bi mi Simon Cock 1547. Folio, Gothic letter, double columns. The text is that of the "Herbarius zu Teutsch," with the addition of two short treatises by other authors. The figures are chiefly from the "Herbarius", some from the Latin "Hortus", some new.]

The only real and complete translation of the Latin "Hortus" was into French, a fine book,

printed by A. Verard, at Paris, about 1506, in two volumes. It is described by Mr. Macfarlane in his recent monograph on Verard, page 70, from Henry VII's copy in the British Museum. A good copy was recently sold in London, which I had the opportunity of inspecting.

1250 to
A. R. W.
Paris

The first volume includes Herba, the second Beasts, Birds, Fishes, and Stones, and the Treatise on Urines. On leaf 1, recto, is the title "Ortus Samitabis", translate de Latin en francois. On the reverse, a large woodcut of an ecclesiastical person seated in a char, and several other figures. It is reproduced in Mr. Macfarlane's monograph, Plate xxlv, from another work. At the beginning of the Treatise on Urines (on verso of title) is the well-known woodcut of an apothecary's shop, found in many editions of "Ortus Sanitatis". The woodcuts of plants, animals, and other objects are all taken from the German, with one or two exceptions. It is difficult to prove a negative for a book containing more than a thousand cuts, but I do not think any new drawing of a natural history object is introduced. One curious exception is in the chapter on milk (which comes among the "herbs", as in "Ortus Sanitatis"!). The

German artist had illustrated the subject with a picture of a cow being milked. Verard, for some reason, not having this cut, introduced a rough block slightly hacked about, giving a mere shapeless black mass in the impression. The block may have been a mere stop-gap but the strange thing is that it was printed again in the second edition of this work by Philippe le Noir.

Mr. Macfarlane states that some of the woodcuts of beasts are in the same style as others used in some of Verard's books, except the first frontispiece (a stock illustration) is entirely German, and the French artists contributed nothing to the art of natural history illustration.

It will be asked whether the borrowed figures are from German blocks or re-cut in Paris. This question is not easy to answer, because there are so many German editions. The blocks are not the same, nor directly copied from those of the Latin "Hortus" of 1491. They greatly resemble those of the so-called Strassburg or Cologne editions. Some blocks might possibly be the same; some look as if they had been touched up; some are quite different. On the whole, I should say that if they are German blocks, they were not used in any

edition I have seen. The skeleton and apothecary's shop blocks are also very nearly, but not quite the same as the Strassburg blocks.

The French translation appeared again, printed by Phillippe le Noir, in a book ~~without a date,~~ *dated 1539* but referred by Brunet to the year 1539.

The title is :- Le jardin de sante // translate de latin en fran // coys nouvellement Im // prime a Paris (1) On les vend a Paris en la rue saint Jacques a l'enseigne de la Rose Blanche couronnee.

The second volume has the title, Le traicte des bestes, // oyseayix poissons, pier // .res presie-uses, et urines // du jardin de sante.

The colophon states that it was printed at Paris by Philippe le noir, whose mark occurs at the end of the treatise on herbs. *with date.*

It is in two volumes, usually bound together, inferior in typography and appearance to Verard's edition, but having nearly the same illustrations. The cuts of plants and animals re-appear with few exceptions, also the skeleton and apothecary's shop, borrowed by Verard from the Strassburg press. But there are two interesting decorative cuts which are here reproduced.

That on the title is quite new and interesting,

as the first attempt to give a picture of the "Garden of Health," a German conception, embodied by the imagination of a French artist.

On the verso of the title is a wood-cut of much historical interest. This block, first used, as we see by Verard, in 1485, is evidently partly copied from the title page of the "Herbarius" zu Teutsch" of 1485. The king is surrounded, not by conventional courtiers, but by the figures of Hippocrates, Avicenna, a man of Jewish physiognomy, and other figures like those of "Herbarius".

Evidently it was designed for a book of the same kind, possibly for a translation of "Herbarius", since it only partly agrees with the subject of the book in which it apparently first appeared.

~~[I should conjecture that Verard may have brought out such a translation, under the name of "Arbolayre" or "Herbier", since there are editions of these works, of which the printer is not yet identified. But so far as I know, no such edition is recognised as Verard's]~~ ho

The smaller cuts are nearly all from Verard's old blocks, the black mass again does duty for milk. Others are substituted, and curiously enough, some of them are old blocks of Verard's,

much the worse for wear, from such books as the "Prouggitz Champetres", which Verard did not use in his own "Jardin de Sante". There are some purely conventional trees from the same source, and some conventional ornaments. The cuts of plants are terribly degenerated by copying. I have given a figure of Senna, to show how, after being copied a dozen times, it has been degraded and even falsified from the figure of the German "Herbarius".

This was the last appearance of the true *line missing here - 2nd volume* "Hortus Sanitatis", and given, I hope, a general account of the bibliography of the subject. But I am conscious of the many imperfections of the paper, which must only be regarded as a rough sketch, which may be supplemented hereafter. As a rule, I have been sparing of minute bibliographical descriptions, which would occupy much space and are rather suited for reference than for perusal. In most cases the descriptions in the standard books are adequate for those who wish to go more minutely into the subject. But I would venture to remark, that in literature such as this, a consideration of the subject-matter of the books, and the artistic character of the illustrations is

quite ^{as} necessary as minute bibliographical details,
to give an accurate history of the ^{se}quence of
different books.

The whole subject forms a chapter in the
history of Botany, and a chapter in the history
of Wood Engraving, as well as an episode of biblio-
graphy. I only express the hope that others better
acquainted with those subjects than I am, may
devote themselves to clearing up some of the points
which still remain obscure.

In conclusion, I have especially to thank
our indefatigable Secretary, Mr. Pellard, for the
great pains which he has taken in reproducing the
illustrations of this paper, and for his kind help
in other ways.

THE END.

The Herbals
of the xvth and xvith Centuries.

"Die Kräuterbücher des XV. und XVI. Jahrhunderts."

by

W.L. Schreiber.

Amongst the ancient Germans the belief was predominant, that illness either came about by magic or was sent as a punishment by the Gods. Therefore, they turned to priests or wise women, the so-called "Walen", to make them exorcize the magic or counteract it by suitable witchcraft. Accordingly these wise women attempted cures mainly by magic spells and formulas, sacrifices and similar witchcraft, and only occasionally used herb-draughts, ointments and dressings. When the Christian faith was established, the wise women were of course liable to be persecuted, but actually, up to the end of the middle ages, only very little was changed in the practice of healing. Most people, when sick, still turned to old women, Jews, executioners, tramps and similar persons who, according to the prevailing views, were supposed to be more or less familiar with witchcraft. Christian monks took the place of the pagan priests, where the craft of healing was concerned, however, as we shall see in a moment, with a sincere attempt at finding out remedies with real healing power. At the same time the thought, that epidemics were a punishment sent by Heaven, remained unshaken. On the so-called "Pestblätter" (plague-leaflets) there were pictures of God shooting his arrows of plague down on humanity, and innumerable Saints were called upon to turn away the danger by their intercession.

In 1150 the first scientific school of medicine was founded at Salerno, followed in 1160 by a second one at Montpellier. However, as actual experience was small, recipes and prescriptions dating from ancient Greek, Roman and Arabian doctors were used, which, naturally, only

mentioned herbs to be found in the East, which were very difficult and expensive to get.

While the universities kept to the old prescriptions, only trying to increase their number, the medical persons outside academical circles were intent on finding native herbs with an effect similar to that of the foreign ones, or else on growing the exotic herbs in their own countries. And it is in this way that convents gave an admirable example of work. Already at the foundation of the monastery of St. Gallen, in the beginning of the IX. century, a garden was started, in which 16 different medical herbs were grown, and Walafrid Strabo, abbot of Reichenau, who died in 849, in his Latin poem "Hortulus" already described the healing powers of 25 herbs, grown by him in the garden of his convent. When, in addition to this, "Macer Floridus", a treatise on 65 native and 12 exotic herbs, written by a French doctor, became known in the XI. century, practically all the convents and hospitals established their own herb-gardens, and later on the apothecaries followed their example.

Even if the number of doctors graduating from universities slowly increased, so that from the XIV. century onward almost every decent-sized town had its official town-physician, doctors were almost non-existent in smaller places and in the country. Also confidence in physicians, who at the time were called "magister" or "master" (the term "Doktor" only begins to become familiar at the end of the XV. century) was none too great.

Under these circumstances it was a good idea, that Peter Schoeffer, who by his relations with Gutenberg had become so famous, should publish in print a medical herbal for autodidactic use under the title of "Herbarius". This book was a small quarto volume and was entitled:

The Latin Herbarius

"Herbarius. Mag- / guntie impressus. / Anno etc. Lxxxiii. /", underneath there is the Schoeffer printer's mark in red. The second leaf contains the preface, the third and fourth an index. The backs of the first and fourth leaves are empty.

The actual text begins on the fifth leaf, and, as the unknown author obviously intended to be of service to the poor, it is limited to herbs, that either grew wild in the fields or were to be found in herb-gardens (in privatis locis). On the whole he describes 150 of these plants in alphabetical order, with one leaf for each of them. On the front of each leaf there is the page number at the top, underneath it the picture of the plant without any framing lines; the height of the pictures is between 92 and 97 mm, their breadth between 40 and 88 mm. These pictures are mostly drawn from the living plant, sometimes however from dried ones; in the latter case sometimes only a single stem is pictured, without the root, occasionally even without the flower. The drawings are somewhat stiff, but all the same clear and accurate. Usually only the outlines are drawn, hardly any shading is used. Underneath the pictures there is first the Latin and German name of the plant in large, thick type, then, in a smaller type, a description of its healing powers, usually 9 lines of it on the front, while the rest is placed on the back of the leaf. As there are 150 plants, this main part fills 300 pages. Added to these are a further 40 pages, on which 96 laxatives, spices, roots, hairs, salts, minerals and animal products, which could be purchased at the apothecaries', are dealt with shortly and without illustrations.

Though, owing to its Latin text, the book was hardly accessible to the general public, but was mainly of service to the apothecaries and

monks, -all the more, as it was at the same time an instruction for setting up a herb-garden and a medicine-chest, - it was a ^{great} ~~full~~ success. Schoeffer himself was able to publish two new editions, and apart from these a whole flood of reprints appeared.

While the first edition, described above, had probably been printed by Schoeffer in a considerable number of copies (I know about 14 copies still existing in public libraries), he apparently published a far smaller number of the later ones; of the second edition I have only found 3 copies (Hamburg, Leipzig formerly Klemm, London B.M.), of the third one only one copy (Frankfurt a.M.). I shall therefore add the points, in which the three editions differ:

Original Edition: Figures 42 and 48 have been interchanged; figure 75 has the erroneous number lxxij.

Second Edition: Has no title at all, consequently place and date of publication are missing. Figures 42 and 48 are in their right places, whereas the printing error in figure 75 is the same as in the original.

Third Edition: Title page, place and year of publication are also missing. Figures 42 and 48 are, as in the original, interchanged; however in figure 75 the number has been corrected ~~into~~ to lxxv.

The Reprints. Already in the same year, in which Schoeffer brought out his first edition, a reprint was published by Joh. Valdeker at Kuylenborch. The text, however, had been translated into Dutch, probably to give the book a wider circulation amongst the general public. The woodcuts were done by a very clever artist, who often succeeded in improving the picturesque effect by a few strokes of shading and whose cuts are often so well done, that one is tempted to believe they are originals. A second hand, who helped him with his work, however, only commanded very mediocre

skill. Almost the whole lot of the pictures have been copied in reverse, except figures 44 and 59, in which the drawing is half done as in the original, half in reverse, and figure 2, which has been changed completely.

1484 + 4 1485/6

Later on Veldener printed two more editions with Latin text. In these the text corresponds exactly with that of Schoeffer's edition, except for the names, which are in Dutch instead of German. In the first of these two editions figures 148 and 149 have been interchanged.

The second reprint, which appeared at Passau, makes a much less favourable impression, and yet the printer succeeded in publishing also three editions. The illustrations, just as in the previous reprint, have been copied in reverse and are generally of the same size as those of the Mainz edition, the "artist" however seems to have been a clumsy craftsman, who reproduced the stems of the plants in a coarse and shapeless way and often grossly spoiled the outlines. But the most important characteristic of this edition is, that the German names in many cases differ from those in the Mainz edition, just as even nowadays many herbs have different names in the various parts of Germany. The unnamed printer (there was however only a single one, named Johann Petri, in Passau at that time) seems to have consulted a physician or an apothecary for substituting the names that were unfamiliar in Bavaria by others, and his expert apparently committed the error of translating "Arnoglossa" as well as "Cicorea" by "wegret". These changes of names are the only thing, about which the printer really was careful, and at the same time the very thing that gives this edition some value from the point of view of cultural history.

To mention some more differences: The root in figure 21 shows six black spots, while in the original they are more like sprouting leaves. On figures 11, 28, 41, 49 etc. the flowers are drawn with tiny horizontal

lines, a technique used only once in the Mainz edition (figure 11), but which seems to have induced the Passau artist to imitate it for reasons of laziness. Apart from that the three editions differ from each other in the following way:

First edition: The title is "Herbarius Patavie ^vim-
pressus Anno domī & cetera/ ra.lxxxv./ 1485

Second edition: The title is "Herbarius Patavie im-
pressus Anno domini et cetera/ tera lxxxvj/. 1486

Third edition: The first leaf is empty, so that there is no title at all. The text begins on the second leaf with the words () O g a t u
p l u r i m o r' / i n o p u m n ū m o r' e g e n t i u m a p p o t e /
c a s - The printing is less good and the type is very much used.

Of all three editions several copies have been preserved. I know
13 of the first, 8 of the second and 6 of the third edition. (27)

Of the third reprint, of which there are again three editions,
neither printer nor place of publication are mentioned, but the book was
printed in 1485 in the so called " typis Reyserianis " of Johann and Con-
rad Hist at Speyer.

The pictures are not accurate copies, but free adaptations. The
stiffness of the Mainz edition drawings has been left behind and the first
quarter of the book impresses any laymen very favourably, though perhaps
an expert would be less satisfied with them. Unfortunately the carefulness
of the drawer and wood-engraver seems to have been flagging soon, - pos-
sibly because, as it can be noticed in other printed works, the printer
urged him on to produce the blocks more quickly -, so that the second
half of the book is far from coming up to the standard of the beginning.

This carelessness is not only limited to the pictures, but can be noticed almost more easily in the nomenclature. In order to prevent the mixing up of the blocks for the woodcuts, the numbers of the chapters as well as the names of the plants were cut into the blocks. Following the Mainz edition, the wood-engraver had placed underneath the pictures the Latin name at the left, the German one at the right side. If the space happened to be too narrow, he cut as many of the letters of the German name as the block would take, leaving it to the printer to add the rest of the word in his type on the second line. In figure 6 for instance the woodcut contains the names: "a g r i m o n i a o d e r m e", whilst the last syllable "nich" has been composed in printer's type on the next line. Further on however, in order to get through his job more quickly, the wood-engraver only cut into his blocks the Latin name, leaving the German name to the printer.

In this edition too the figures are mostly copied in reverse, the actual picture of the plant hardly ever is higher than 75 mm and broader than 70 mm, though frequently smaller than that. As a special characteristic of this reprint it has to be mentioned that instead of number 29, by a printer's error, we find xix. Apart from that one is struck by a few examples of congruence with the Passau reprint, which must have been at the printer's disposal; on figure 21 there are similar black spots, and the flowers in figures 101 and 103 have been drawn in the same way as in that edition. The German names however, except for a few slight changes, are the same as in the Mainz original.

Of the three editions:

the first and second show the same title "H e r b a r i u s" cut in wood, the third edition, which probably was published in 1490, has no title.

Of this reprint fewer examples have been preserved than of the

Passau one. As far as I know, there are 5 of the first, 3 of the second, and only 2 of the third edition still existing. (10)

In Italy some more reprints were published, but not with the title "Herberius". They began with the line "Arnoldi de nova villa Avicenna" and ended with the words: "Finit liber qui vocatur Herbolarium de virtutibus herbarum". The edition which was printed in 1491 at Vicenza by Leonardus Achatius de Basilea and Guil. de Papia seems to be the oldest one. An other one, published in 1509 by Joannes and Bernardinus Rubeus at Venice, differs only slightly from the German editions in text and general arrangement, whilst the illustrations, though approximately of the same size as the Mainz ones, have been drawn entirely anew. In certain cases the German original can still be traced, generally however, the figures seem to have been drawn from nature with considerable skill; the technique of the woodcuts however can hardly be called particularly praiseworthy.

A similar work, but at the same time distinctly different from our "Herberius", was published in ¹⁴⁹¹~~1493~~ by J. Ph. de Lignamine in Rome, under the title of "Herbarium Apulei Platonicum". Its size is more or less the same as that of the "Herbarius" and it spends even more care and trouble on the curative powers of the plants. It contains 131 woodcuts, measuring 100 x 70 mm, shockingly crude, remarkable by the fact, that on the roots of the plants very often black, snake-like winding worms have been pictured.

The preceding paragraphs give proof of the extraordinary interest, with which this sort of herbal was met by wide circles of the population. Particularly in the beginning the book seems to have been sold very rapidly, considering that Schoeffer was encouraged to venture, already in the beginning of next year's spring (March 28th, 1485), on the publication of a similar, but more extensive book, the "Hortus sanitatis of Johann von Cube". As this book is an exact facsimile of it, the work, usually called "Kleiner Hortus sanitatis", (Small Hortus sanitatis), needs no detailed description. Comparison with the "Herbarius" and the re-prints still to be mentioned ought to be sufficient.

To begin with: at that time the terms "Herbarius" and "Hortus sanitatis" had the same meaning. The preface says: "We call this book in Latin Ortus sanitatis, in German a Garden of Health" ("Und nennen diss buch zu latin Ortus sanitatis uff teutsch ein gart der gesuntheit"), whilst the final paragraph mentions: "This Herbarius has been printed at Mainz etc." ("Disser Herbarius ist zu menez gedruckt etc.")

While the earlier Herbarius had been limited to 246 remedies, the work we are considering now contains in 435 chapters almost the complete arsenal of medicines known at that time. 382 chapters deal with plants, and of these only 14 are not illustrated; the remaining 33 chapters, in which animal and mineral remedies are treated, only show 11 illustrations.

It is noteworthy, that none of the wood-blocks have been taken over from the Herbarius, but they have all been produced anew. Whereas the earlier pictures had an average height of 95 mm, the new ones were cut 155 - 170 mm high (in some cases only 120 mm) and between 70 and 115 mm broad. Apart from a few exotic herbs, which seem to have been pictured according to descriptions, the plant illustrations were drawn true to

10

nature from fresh or dried plants. From an artistic point of view they are not much superior to those of the Herbarius. *They are!*

Compared with the Herbarius, the most important change is, that the text was not written in Latin any longer, but in German, a fact which allowed to count on a wider public. Added to it there was ^{added} a treatise on urine, a very important matter, as at the time the inspection of the urine was considered to be one of the first postulates in diagnosing any illness. Finally, at the end of the book, there is a detailed index, arranged according to the various diseases, giving references to the remedies mentioned in the text. This gave the book its practical value, as the owner simply had to look up the index to find the remedy for the illness in question, and was then able to choose whichever remedy he most trusted or whichever he could get most easily. And there was hardly any disease of the body, which was not mentioned in the index.

It is not without interest to read through some of the prescriptions. There is hardly a single chapter, which doesn't move one to a smile by its ingenuoueness. So for instance, that cheese is indigestible, that periwinkle protects against the devil and witchcraft, that with the stone "Gagated" (agate?) one can find out, whether a girl is still virginal or not, that young hens are good to eat etc. It seems particularly funny, that the author even for the most trivial statements, refers to a famous "master", and this rather comical incongruousness is still greater, when, as it is the case with the copy kept at Berlin, the owner, according to the customs of that time, underlined with ink any passages that seemed specially important to him or even marked them by drawing on the margin a hand with a pointing index.

The author of the text was Johann von Cube, the town physician of Frankfurt. This is not only evident by one passage in chapter 76, which runs "a certain medicine of team and in various cases tried out by me Master Johan von Cube", but is also proved by a botanical work, which appeared 50 years later. In its preface, dated March 20th, 1533, Eucharis Rösslin, then town-physician of Frankfurt, says: "So I have sorted and combined the contents of the old Herberium or herb-book, originally written by the well experienced Doctor Johan Kuba, who was then town-physician here at Frankfurt." That by this he could only mean our book, and not possibly the Herberius mentioned before or the "Grosse Hortus", which shall be considered later, is clear, if one looks at the sequence of the plants, which in both works is exactly the same, except for the fact, that Rösslin on purpose left a few ^{out} ~~may~~. The real name of our author was Johann Wonnecke; the term "Cube" only means, that he originated from the town of Keub on the Rhine. According to the Frankfurt city records Johann Wonnecke von Cube was appointed as town-physician ("steds Arzt") on September 7th, 1484; he remained in office until September 1503.

To suit the bigger woodcuts Schoeffer had chosen for the "Kleiner Hortus" folio size, but this caused a disadvantage, which he does not seem to have calculated with in the beginning, and which highly increased the expenses of publication. The woodcuts often were so big, that hardly more than about 6 lines could be added on the same page. And yet, the text was so long, that the back of the leaf usually was not sufficient to hold it, so that nearly always a third page had to be used for it. But as soon as this third page had to take more than 6 lines, it would no longer leave enough space for the next picture. So nothing else remained but to leave

~~xxxx~~ the rest of the page empty. To-day we do not mind finding an illustration a few pages off from the text passage it refers to; at that time however it was the rule to put the illustration at the head of the chapter, and Schoeffer did not dare to break with this convention. Though he soon noticed his mistake, he found no other solution but to let the illustration, if possible, overlap into the lower free margin of the paper. Even this way out however was only practicable, when the text wasn't longer than 15 lines, so that quite enough pages still had to stay empty in one half or even two thirds. Only when about three quarters of the book were printed, having possibly used up the paper quota meant for the whole book, he decided to apply more ruthless measures. He now no longer reserved for the picture the whole breadth of the paper, but moved the woodcuts to the left and began to print the text at the side of the picture, i.e. in the same way as space is left for initials. He even went as far as to exaggerate his saving of space by arranging the picture in chapter 402 horizontally instead of giving it the usual upright position.

The book caused much excitement by its big and numerous woodcuts, but it was not Schoeffer who drew most of the profits, but a reprinter at Augsburg, with whom I shall have to deal presently. Schoeffer himself did not undertake a reprint, but sold the woodblocks to someone at Basel, where a printer, as we shall see further on, published a new edition with the Mainz figures in 1491.

The Reprints. Schoeffer's original, which was dated March 28th, 1485, was already followed by a reprint on August 22nd of the same year. It contains the final paragraph: "Here ends the Herbarius, printed in the imperial town of Augspurg and finished on Monday before St. Bartholomew's after Christ's birth M-cccclxxx.v." ("Bye hat ein end

der herbarius in der keyserlichen statt Augespurg Gedruckt und vollendet
 an montag nachst vor Betholomei nach Christi gepurt M-cccclxxx.v.") The
 printer does not mention his name, but to judge by the type, it undoubtedly
 was Hans Schoensperger.

One might think, that any expert ought to have drawn a lesson from
 Schoeffer's edition and moved, in order to save space, the illustration to
 the side, beginning with the text beside it. Schoensperger however, was
 in a difficult situation, as he had only one type, which was considerably
 bigger than the Mainz one. Whereas Schoeffer, taking the height of his
 columns at 190 mm only, was able to fit 41 lines into a page, he could
 not get more than 36 lines into a page, though he increased the printing
 space to 215 mm. Of course the numerous half empty pages were some help,
 but even so the space very often was insufficient, so that he had to cut
 off bits at the bottom of the woodblocks, which were copied in reverse
 in the original size.

The big picture of a doctors' meeting (276 x 185 mm) at the back
 of the first page was also copied accurately, only the coat of arms, han-
 ging down from the top in the middle, was filled with the city-emblem of
Augsburg, a fir-cone.

The most remarkable fact is the quickness, with which this reprint
 was produced in less than five months. After all at least a few weeks had
 to elapse, before a copy of the original arrived at Augsburg from Mainz.
 Of course Schoensperger had employed simultaneously several compositors on
 various parts of the book, a proceeding which was not so very difficult,
 as each chapter of his edition took up just as many pages as in the ori-
 ginal (only for the terminal passages he used ten ~~pag~~ leaves more). Still,
 this brilliant achievement could only be possible by very skillful coopera-

tion of woodengraver, composer, corrector, printer and papermill. While printing was going on, Schoensperger seems to have understood, that he could not manage any longer with his one big and unhandy type. So he acquired a smaller type, which for the first time he used on a smaller work, which appeared on August 17th, i.e. five days before completion of the *Hortus sanitatis*.

It was now however, that a new rival appeared, who with the sharp look of an expert saw the mistakes of his predecessors. It was the Strasbourg printer Johannes Grüninger, whose real name was Hans Reinhard.

In its outward appearance his reprint, which bears neither place nor year of publication nor the printer's name, is marked by the fact, that the text is no longer, as it was in the previous editions, set in one single column, but has been divided into two columns, each 65 mm in breadth. It begins with the words "Often and much have I considered to myself the wonderful..." { (O)ft vnd/ vil habe ich/ by mir selbst/ betracht dy wū/ dersam; } This book could hardly have appeared as early as 1485, but possibly in the first months of 1486.

On the title-picture (260 x 167 mm), which has been copied in reverse from the Mainz one, only ^{3 + 9} 12 masters are represented, but the coat of arms is also empty. The rest of the woodcuts are considerably smaller, on the average 100 mm high and just as broad as the text-columns (65 mm). They produce a more pleasing impression than the originals, as the artist frequently added a bit of rolled up bark at the end of the stalks, a trick which considerably softened the stiffness of the earlier editions. Unfortunately the new figures are much less true to nature, some of them even mutilated in a quite incredible way. For instance in the original the oak was represented by a stem with a few leaves and acorns. The new artist, who

had not the slightest idea of botany, added roots to the stalk, leaving the reader to imagine an oak tree in this caricature. On the other hand 5 new illustrations were added (in chapters 37, 50, 142, 143 and 144) to the text, so that there are 364 of them now, also in the end a further figure, representing a physician who holds in his right hand a urine glass and beside him a woman with a longshaped basket on her arm (97 x 64 mm). To keep the woodblocks from getting mixed up, they bore the numbers of the chapters they belonged to (similar to those of the Speyer Herbarius reprint). On the first 22 woodblocks the numbers are in reverse, having apparently only been cut subsequently; further on up to chapter 414 the numbers are put in the right way, usually in the lower lefthand corner. They are only missing in a few cases, when the same woodblock had to serve for the illustration of another chapter as well; in the last 21 chapters however, there are no numbers, presumably because the composing of the type was done more quickly than the wood-engraving, so that the completion of the latter had to be hurried as much as possible.

Owing to the smaller type and figures it was possible to bring down the contents of the book, which in the Mainz edition had taken 360 leaves, to 223 leaves only, so that more than one third of the paper was saved. Consequently the book was much more handy than the earlier one and could also be sold at a smaller price.

Now Schoensperger was not the kind of man, who admitted himself as easily defeated as Schoeffer, but without hesitating he decided to embark on the publication of a completely changed new edition. Apparently he wanted to surpass his rival, and actually he was successful as far as the illustrations were concerned, while in the matter of type, which after all would have been his real concern, he gave way to a most shocking carelessness

ness. He seems to have been so proud of his new work, that he mentioned his name in the final paragraph, which runs: "Printed and completed this Herbarius by Hanns ~~abhoensperger~~ in the imperial town of Augspurg on Saint Boniface's day (June 5th) Anno M.cccc.vñ in the lxxxvj. year." ("Gedruckt vnd volendet diser Herbarius durch Hannsen schoensperger in der Keyserlichen (!) statt zu Augspurg an sant Bonifacius tag (5.Juni) Anno. M.cccc.vñ in dem .lxxxvj.jere." - (The (!) obviously draws notice to a printing error, as the word probably ought to be "Keyserlichen". E.H.) - The text begins with the words: "Often and much have I considered to myself the wonderful.." (())fft vnd vil hab/ ich bey mir selbs/ betracht die wu/ dersamen...")

He had the woodblocks made approximately in the same size as the Strasbourg ones, i.e. 96 x 60 mm. As however he very well knew, that these were less true to nature than the old Mainz ones, he arranged to have the figures of his own old edition as models; only in a few cases the Strasbourg figures have been copied. The picture of the doctor and the woman was cut in reverse (90 x 70 mm) and shifted to the beginning of the 4th part; at the same time the number of chapters newly illustrated by Grüniger was further increased: Gold (chapter 38) and silver (39) are illustrated by a cup, mercury ("Köcksilber") by a pail, starch -flour (42) by an apothecary's box with the Basel coat of arms, ammonia (44) by a box with the Nördlingen coat of arms, arsenic (48) by a half open box, vinegar (49) with a jug, red chalk (76) by a pedlar, so that the number of the pictures in the text is 394 now. Also the title illustration has been completely changed; it now shows five physicians, sitting in a circle in the foreground of an apothecary's shop, size 197 x 121 mm.

Much as his efforts at improving the illustrations must be appreciated, his supervision of the text was very negligent. As we already know, he had meanwhile got hold of a smaller type, which allowed him to compose the text in two columns; though it still used up more space than the Strassburg ones. So he ordered, that in the titles of the chapters the Latin names should be omitted and only the German ones kept. This however, owing to the thoughtlessness of some composers, led to quite incredible mistakes. In the earlier editions the Latin name used to be on the left, the German one on the right; if there was no special German name, but only a repetition of the Latin one, this was left out and instead of it there appeared the explanation "a herb (or fruit or root) thus called" ("ein kraut (oder frucht oder wurzel) also genant"). Even a superficial reflection ought to have told the composer, that in these cases the Latin name had to be taken for a title; but instead of it he calmly put "A gum thus called" ("Ein gummi also genant") or even only "Thus called" (also genant). In chapter 269 the original has as a title only the word "Mumia" without a German explanation; the composer, faithful to his orders, left out the Latin word, and as there was no German one, he was content to make the title simply "Chapter cclxix." ("Des cclxix Capit.")

There is still another point that has to be mentioned: by rights the pictures ought to have been coloured to make search for the ^{plants} easier in woods and fields. Comparing a coloured copy of Grüninger's edition with one of the Schoensperger edition now under consideration, we find that in the former the colours are applied in an individual way, mostly in agreement with reality, while the colouring in the Augsburg edition was done with mere craftsman's routine and without any consideration for the various shades which sometimes are quite obviously wrong.

Of course the short time, which they took to prepare the edition for publication may have been at the root of most of these defects. Its outward appearance anyhow left a very favourable impression, and from now onward Schoensperger dominated the market. To be accurate, there were three more different editions, but, as we shall see, they did not lessen his profits, but in spite of them he was able to print only with short intervals new editions again and again, and we shall have to deal with these first in their chronological order.

The first of them appeared already nine months after the one just treated. It bears the name of the printer and place of publication and is dated "On the Wednesday after White Sunday (7th of March) 1487" ("an der mittwochen nach dem weysen suntag(7. März) 1487 "); it begins with the words: "Often and much have I considered to myself the wonderful....."
((O)fft vnd vil/ habe ich bey/ mir selbs be/ trachtet die/ wünderame/..)

Pictures and text are the same as those of the previous edition, but two new items have been provided, which were to allow a still lower price for sale. In the previous editions the spaces for the initials had been left empty, so that in fact the copies ought to have been completed by an artist's hand; to spare the buyers this expense, he now printed the initials in a small antique type. At the same time he no longer had the plant illustrations coloured by hand, but used stencils for this purpose, a process which he probably had adopted from his fellow-countrymen and colleague Erhard Retdolt, who at that time had been called back to Augsburg by Bishop Johann von Werdenberg.

Now he had beaten any rivals, as, including initials, colouring, and possibly even the binding, he could sell his copies at the same price.

other printers had to ask for the mere printing. The following editions therefore are only different from this one by the fact that the paper became more and more thin and cheap. However, this was hardly noticeable from the outside, as he seems to have sold only bound copies, and the thick wooden covers then in use were apt to hide any differences in the strength and weight of the paper.

The first one of these new editions must have appeared in the beginning of 1488. It begins with the words: "I have often and much to myself considered the wonderful..." ("Ich hab oft/ vnd vil bey/ mir selbs be/ trachtet die/ wundersame/..."). Any mention of printer, place and year of publication is missing. This does not seem to have been kept secret on purpose; it is merely that the index completely filled the last leaf. So he would have had to add another sheet for the final paragraph, which probably did not seem worth while, as anyhow he had to fear no rivals.

The next one appeared "on Monday before Saint Thomas' day (December 13th) 1488" ("am montag vor sant Thomass tag (15. Dezember) 1488"). It is the first one to bear a real title, i.e. "Herbarius in German and about all sorts of herbs" ("H e r b e r i u s z u t e ü t / s c h v n d v o n a l l e r / h a n d t K r e ü t e r e n"). and it contains four leaves more than the previous ones.

The third one was completed on "The Monday after Tyburcij (August 13th) 1493" ("an den aftermontag nach Tyburcij (13. August) 1493"). The title now is "Herbarius in German and about all sorts of herbs." ("H e r b e r i u s z u t e ü t / s c h e v n d v o n a l l e r / h a n d t k r e ü t e r e n"). (Note the signs on the u-s, which are different. E.H.)

The fourth one is dated "On the Monday after our Lord's ascension (May 10th) 1496." ("am aftermontag vor vnsern herren auffart (10. Mai)

1496.") It bears the title "Herbarius in German and about all sorts of herbs." ("H e r b e r i u s d e u t s c h / v n n d v o n a l l e r h a n d t / k r e f t e r e n /") (Note the signs on the u-s, which are mostly missing and the nn instead of n in vnd. E.H.)

The fifth one, which dates from "The Monday after our Lord's ascension (May 13th) 1499" ("am Montag nach vnnsers Herren hymelfart (13.Mai) 1499"), apparently bears no title, but begins: "Much and often have I considered by myself the wonderful.." ("(U)ll vnd offt/ habe ich bei-/ mir selbs be-/trachtete die/ wundersa-/men..") The title illustration also has been changed, showing now a professor with four students listening to his lecture (size 185 x 137 mm). This woodblock had been ordered by Schoensperger for his edition of Brunschwig's "Chirurgie", printed in 1497, and it was just a copy of Grüninger's original edition of that book.

In 1508 still another new edition appeared with the same pictures, coloured with stencils, but it was printed by Hanne Otmar at the expense of the "careful Mr. Johann Reynmann" ("fürsichtigen herrn Johann Reynmann").

As I have already mentioned, some other reprints were undertaken by other printers soon after the publication of Grüninger's Hortus, and it is to these we have to turn now.

The oldest one is a terribly crude edition, bearing no date of publication or printer's name, beginning with the words: "Often and much have I considered to myself the wonderful..." ("()Eft vnd/vil habe/ ich bey mir sel/ best betracht/ dye wunder-/sam...") Presumably it was printed at Strasbourg by Thomas Anshelm or some other printer in 1487 and it is an almost exact copy of Grüninger's edition. On each page there are the same pictures, the same words of text, the same empty spaces, only the figures

are partly copied in reverse, partly the right way. But these 384 copies of the woodcuts are so deplorable, that even at that time, when worthless copies were produced in masses, one could not - fortunately - have found anything like them very easily. On the title-picture there are, as in the Grüninger edition, twelve physicians and an empty coat of arms (266 x 167mm). The type and the printing too are far from perfect, and the titles of the chapters on the upper margin are simply miserable: often they are ~~shli~~ slanting and crooked, some of the letters are dug into the paper, whilst others are hardly visible.

Compared with it the edition, which was published "on the Saturday before Judica (March 31st) 1487" (An samstag vor Judica (31. März) 1487") by Conrad Dinckmüt at Ulm, creates quite a favourable impression, though its woodcuts are bad enough. In general Dinckmüt took as a model for his edition the one by Schoensperger of 1486, taking over from it the stupid titles like "A root, thus called.." ("Ain wurtzel also genant") etc; on the other hand he must also have had at his disposal Grüninger's edition, which is evident not only from certain plant illustrations, but mainly from the following facts: In chapter 37 aloe-wood is pictured as in Grüninger's edition, while the figure in Schoensperger's copy shows a bridge-gate; in chapter 50 there is a draw-well as in the Strasbourg edition instead of the threefooted brass jug of the Augsburg reprint; also chapter 76, as with Grüninger, is without illustration, whilst the Schoensperger edition shows the figure of a red-chalk dealer. Finally the title-picture does not contain Schoensperger's apothecary's shop, but the meeting of the twelve physicians with the coat of arms bearing the emblem of Ulm (size 243 x 166mm). On the other hand the figure of the physician and the woman with a basket on her arm is placed (size 90 x 60 mm), as with Schoensperger, at the head of the fourth part. The height of the text illustrations is between 90 and

100 mm, their breadth between 60 and 65 mm. The text begins with the words: "Often and much have I considered to myself the wonderful.." ("()fft vñ vil hab/ ich bey mir se/ lbe betrachtet/ die wundersamen/..") Finally there is the reprint of the first Mainz edition, of which this book is a facsimile. As I have already mentioned, Schoeffer gave up the fight quite early and sold his woodblocks. With these a new print was made, without mention of place and year of publication, but quite doubtless it was produced by Michael Furter at Basel in 1491. It begins: "Often and much etc." ("()fft vnd vil/ habe ich bey mir sel-/bet betrecht die wun-/deram..") and agrees page after page with the original edition, only each chapter begins with a woodcut initial, consisting of an antique letter on black background, ornamented with white leaves.

In other countries too, particularly in Holland and France, a number of reprints appeared, until late in the XVIth century, however all of these editions I have seen, were quite insignificant. "Le grant herbier en francoys Contenant les qualitez, vertus & proprietez des Herbes etc.", bearing Jehan Petit's printer's mark, for instance, is almost worse than the worst of the German reprints. The space has been used up with extreme economy, the pictures have been reduced to a size of 65 x 60 mm and are badly cut, often repeated or mixed up, the alphabetical order is incorrect and the Latin titles are full of grammatical mistakes.

The Great Hortus Sanitatis. It was probably after Schoeffer had sold the woodblocks of his Hortus to Basel, that at Mainz, under the title of "O r t u s s a n i t a t i s", a still more extensive work appeared, which, to distinguish it from the previous one, is usually called "The Great Hortus sanitatis" (Grosser Hortus sanitatis). In fact it is only an extended edition of the first one, but it seems, that the

unknown author intended to combine with it Konrad von Megenberg's "Book of Nature." (Buch der Natur.), which was frequently read at that time. The language, as in the original Herbarius, is Latin again, and the very lengthy and boasting final paragraph shows, that the work was completed: "Dis vicesima tertia mensis Junij 1491 by (von) Jacobus Meydenbach civis Moguntinus".

The number of plants has been increased by about ^a hundred, on the other hand several of those described in the Small Hortus were left ^{out} ~~away~~. The most important difference is, that remedies originating from animals, minerals and metals were treated separately in special sections and that, without exception, all the chapters are illustrated. The whole work contains 330 plants, 164 mammals, 122 birds, 106 water-animals and 144 precious and semi-precious stones. (Since the Frenchman Marbodius had published in the XIIth century his instructive poem: "De gemmarum lapidumque pretiosorum formis, natura et viribus", curative properties, just as important as those of the plants, were attributed to stones.) Added to these 1066 pictures, each of them 100 - 110 mm in height and 50 - 65 mm in breadth, there is a special title-picture for each of the seven sections in folio size.

These title-pictures represent: 1. A conference of 9 physicians between two trees; at the top arcades with two empty coats of arms (260 x 167 mm). - 2. Three scientists in a zoological garden (216 x 140 mm). - 3. Two scientists at the gates of a city, surrounded by many birds (215 x 130 mm). - 4. Two masters on the banks of a river (215 x 130 mm). - 5. Four goldsmiths sitting at their working tables and advertising their produce, in the background two scientists disputing together (218 x 135 mm). - 6. Two apprentices fighting together in the presence of three spectators, in the background four physicians in an apothecary's shop (216 x 138 mm). -

7. Two physicians between six patients (218 x 135 mm).

The illustrations in the text seem to be the work of various hands and are by no means of the same standard. The least remarkable are the ones in the section of the water-animals; they represent mostly fabulous creatures, copied from some old illustrated manuscript. A better impression is created by the plant pictures, which are mostly copied from Schoeffer's *Hortus*, usually in reverse; the same applies, as far as it was possible, to the mammals. The best effect is produced by the illustrations of the inorganic and similar remedies, which have been treated by the artist in a quite successful ornamental manner.

These pictures have often been attributed to the "Hausbuch-Meister" ("Master of the Housebook"), it is however far more probable, that they were done by an artist who imitated him, as the master himself would not have needed to copy himself, nor to borrow certain animal-pictures from the playing cards of the so-called "Spielkarten-Meister" (Master of the Playingcards). The earlier hypothesis, that the "Hausbuch-Meister" worked at Mainz seems to have been quite generally discarded. Already years ago I had drawn notice to the fact, that the text of the "Hausbuch" obviously shows Swabian dialect-forms, also I know a number of small woodcuts by his hand, which quite unmistakably were coloured at Augsburg. By others it has meanwhile been conclusively proved, that he worked for the illustration of books at Ulm, so that we have to regard Swabia as his home. - This of course need not be a certain proof in this case, as it is by no means sure, that the illustrations of the *Great Hortus* were cut at Mainz. As it happens, some of them show considerable damage, which is quite unusual in a first edition; apart from that, there are on leaf K k j two very badly drawn and roughly cut figures, which have nothing in common with the rest. So one must take

into account the possibility, that the woodblocks may have been cut in some other place and may have been damaged during transport to Mainz, two of them to such a degree, that they had to be entirely replaced by new ones.

The composition of the text, as in the later editions of the Small Hortus, is in two columns. The text very often is just a translation of Johann Cube's descriptions, but many other sources have also been used by the author. He kept more carefully to the alphabetical order and with each plant, the curative powers attributed to it have been collected into a separate passage, entitled "Operationes", a new item, which subsequently was almost universally accepted.

Though Keydenbach's book was very pleasing, it was not more of a success to its publisher than the Small Hortus had been to Schoeffer. Just as he was cheated of the fruit of his labour by Schoensperger, so Keydenbach had to suffer from the concurrence of a reprinter at Strasbourg, and he had no chance of printing a second edition. Mainz, which up to now had been leading in the publication of works on natural science, has to give up its position, which is now taken over by Strasbourg.

The Reprints. It was apparently in the year 1497 that a new edition appeared, bearing no mention of the printer and beginning with the title, printed in 9 lines: "O r t u s s a n i t a t i s / D e h e r b i s e t p l a n t i s / ... C u m d i r e c t o r i o ...". There is no doubt however, that it was printed by Johann Peyer at Strasbourg.

Pictures and text are an exact copy of the original, but it has been produced with the utmost economy in all respects. First of all a smaller type has been used, which allowed 54 lines to the column, while Keydenbach's only had 48, so that the reprint is concentrated into 360 leaves instead of 453 in the original. The number of the pictures was the same, but new blocks

H. 8943 has Oo... Sa... so is not this one

In K49 there are 4 big wls Dec & Apr (peper bark/ox
Arms), Skellor, & packed in bed after rep Dec & Apr

apparently were not cut for each figure, so that some of them had to do for two or three illustrations, if the pictures were similar; also, whenever possible, the woodblocks were produced somewhat less high than the original ones.

Instead of the seven title-pictures for the various sections, which were not copied at all, Pryss borrowed three woodblocks from his colleague Grüniger, produced by him for Brunschwig's "Chirurgie", which had just appeared. They are: 1. A professor and four students (184 x 137 mm), 2. a human skeleton (229 x 148 mm) and 3. a doctor giving his instructions to an apothecary (180 x 133).

The most interesting and peculiar feature are the genre-pictures, as in these the artist has taken the liberty of changing much, specially where clothing is concerned, which he adapted to Alsatian taste.

A second edition, differing only by a few insignificant changes in the composition of the title, which runs: "O r t u s S a n i t a t i s / D e h e r b i s & p l a n t i s / ... C u m d i r e c t o r i o / ... " and not containing mention of the printer either, has also been printed by Pryss, probably in 1499.

~~no~~ In a third edition, formerly attributed to the XVth century (H. 9/43, Pr.1449), but more probably published some time round 1503, which bears the title: "O R t u s S A n i t a t i s / d e h e r b i s & p l a n t i s / ... C u m d i r e c t o r i o..", the woodcuts already are very much damaged and partly replaced by new cuts. Also the three big pictures have been changed: The one which formerly was the third (doctor and apothecary) is now the first, the second one has remained in its place, and the third one is now a patient in bed, being treated by a doctor in the presence of his parents. This too has been taken from the "Chirurgie".

In a 1509 edition (Göttingen University Library) Prusse for the
first time mentions his name. - This edition, incidentally, served as a
model for the "Hortus sanitatis", printed in 1511 at Venice by Bernardinus
Benzelius and Johannes de Tridino alias Tacuinus. ^{K. 49}
^{Imprimatur 1538} Most of the figures were
copied exactly, but slightly smaller, so that they hardly ever are higher
than 95 mm. Some genre-pictures however were adapted to Italian standards,
so that e.g. in chapter 382, instead of the women selling bread and cakes,
we get two women busy making bread, while a third one is carrying on her
head a tray with buns.

The Low German Garden of Health. In 1492 Steffen Arndes at Lübeck
published a Low German edition, beginning with the words: "Hir heuet an
de lustighe vnde/ nochlighe Gærde der suntheit/.." (Approximately; "Here
begins the amusing and varied garden of health..") As a foundation for its
first and largest part Schoeffer's Small Hortus of 1485 seems to have ser-
ved; added to that there is a translation of the treatise on stones of
Meydenbach's edition; and the end part is formed by the treatise on urine
by Johann von Cube. Seven eighths of it therefore are just the Small Hortus
in Low German dialect, and one is tempted to think, that Arndes was going
to publish a complete translation of it alone, when Meydenbach's Great Hor-
tus appeared, giving him the idea, that he might borrow its part on the
minerals and add it to his book. In particulars he seems to have proceeded
in the following way:

He first had the big illustrations of Schoeffer copied in the same
size and astonishingly carefully, that partly they look even better than
the originals; only now and then, when a picture was definitely too big,
he left away a bit of the stem or an unimportant leaf. He did not waste

his paper as thoughtlessly as Schoeffer, but profited from the experiences Schoeffer had made while printing, placing the woodcuts, like initials, at the side of the text, extending at the same time the breadth of his text-columns from 12 to 14 cm. Following the plants beginning with one letter in Schoeffer's edition, he always added these, which were new in Heydenbach's Great Hortus, enlarging the corresponding figures to the size of the others. In the same way he also enlarged Heydenbach's pictures to illustrate any chapters of Schoeffer's not containing an illustration. Whenever a chapter happened not to be illustrated in either of these models, he left it away altogether. As I have already mentioned, a certain number of plants described and illustrated by Schoeffer, had been discarded by Heydenbach; so Arné's edition is richer in contents than either of his predecessor's, as it holds 542 plant ~~xxx~~ chapters. (Actually some mistakes occurred in the numbering: chapter 323 is missing, while on the other hand Iperis (following chapter 258), Ueppesulle (after 529) and Yaopns (following 338) have not been provided with chapter numbers.) The treatise on stones has not been illustrated, which however does not impair in the least the usefulness of the book. There is no title-picture, but a new illustration has been added in the end, showing a doctor who holds up against the sun a glass with the urine of an invalid standing before him; three empty roles of parchment float in the air (size 216 x 151 mm).

On the whole this edition leaves a quite presentable and uniform impression. It did not need any special artistic attention, as every chapter already begins with a profusely adorned initial. The translator and editor too seems to have been an expert, who did not lack carefulness; he did not only keep the Latin names, but frequently gave even two Low German names, where the original had been content with one High German one.

In 1610 Arndes was able to publish a second, and in 1620 a third edition. The latter was printed on obviously inferior paper and the initials are all different; the rest has been left as it was. Only in the beginning a woodcut of no particular merits, showing nine physicians consulting together, has been added (size 175 x 161 mm) and preceding the treatise on the stone another illustration with a jeweller (size 205 x 145) appears. Apart from that, the figures going with chapters 1 and 541, have been substituted by new ones and the woodblock belonging to chapter 64 has been cut down a little on the left.

Utilization of the old woodblocks at Strassbourg.

Grüniger had in his possession, as we know, the woodblocks of his reprint of the Small Hortus, published in 1486n while his colleague Pryse had the re-cuts of the Great (Latin) Hortus. Both of them now helped each other out with their material for illustrations, printing new works with the old illustrations.

The beginning was made by Grüniger, when printing the "Libellus de art et dictilendi" by Hieronymus Brunschwygk, a famous physician of many interests, in 1500. The second part of this book dealt with herbs. First the printer used his own woodblocks, cutting off most of the chapter numbers and framing the blocks with thin ornamental lines, which were about 110 mm high and 70 mm broad. But, as he wanted to illustrate every chapter and as his own woodblocks were not sufficient for this purpose, he borrowed from Pryse part of the woodblocks belonging to the Great Hortus, which can easily be recognized by their height, which is 35 mm less. Even now however he hadn't got quite enough woodcuts, so some of them had to be used twice; e.g. the "engerling schwamm" and the "pfifferling" (two different kinds of mushrooms, E.H.), the "opffel" (probably apple) and

the "wilde affolter" (crab apple?), the "lattich" (lettuce) and the "kriemisch Kol" (some kind of cabbage) had to be content with the same picture. Also several instances of mixing up of the woodblocks occurred. Though this kind of carelessness and lack of consideration regarding the illustrations were a quite common feature in the production of books at that time, Brunschwygk didn't agree with it at all. In a special postscript he criticised the mixing up of the woodblocks and then continued: " therefore not only the figures have to be watched carefully, but the text, and notice has to be taken by reading and not only by looking at the figures, as the figures are only meant to please the eye and instruct those who can neither read nor write." ("derum ist nit zu achten allein vff die figuren, sunder vff die geschriff vnd dar erkennen durch die gesicht vnd nit durch die figuren, wan die figuren nit anders synd denn ein augenweid vnd ein anzeigung geben ist die wed-er schriben noch lesen künden.")

K.33

In 1507 Fryse decided to publish the Small Hortus also, under the title: " In this book there is the Herbarie: or herb-book: called the garden of health.." ("In disen Buch ist/ der Herbarie: oder krüterbuch: genant der gert/ der gesuntheit..."). Though the pictures of his Great Hortus would have been almost sufficient for this purpose, he only used about half of them and borrowed Grüniger's woodblocks, which were already much the worse for wear, to complete the set. Two years later he printed, as a second part to it, the latter half of the Great Hortus, which deals with animal, metal and similar matters, in German and with his own figures under the title: " In this book is the garden of health..." ("In disen Buch ist/ der gert der gesuntheit"). While the first part was fitted out with 452 woodcuts, this second part contains 3 big and 538 small pictures.

In 1511 Reinhard Beck took over Fryse's printing shop, and he and

Grüniger seem to have divided up between them the old blocks that belonged to the latter. Grüniger only kept those, which he needed for new editions of Brunschwygk's book on distillation, while with the rest, together with Prys's set of pictures, he illustrated his various editions of the Hortus. Of course the old figures got more and more unprintable, but in spite of that some of them were used by both printers until the beginning of the thirties. Once Beck had some blocks which had grown too much used replaced by new cuts, but then he shrank back from further expense and simply left part of the chapters without illustrations.

Probably, when Beck and Grüniger shared the woodblocks between themselves, they made some kind of contract, as during Beck's lifetime they don't seem to have got into conflict with each other. This however changed, when Balthasar Beck took over his father's printing business. He printed in 1529 the "Gart der gesuntheit" (Garden of Health), i.e. the second part with the animals etc., with Prys's woodblocks, of which however more than a quarter had succumbed to old age. Almost at the same time Grüniger published a rival edition under the title "Ortus sanitatis", which also limits itself to animals and stones, except for a few pages at the end, which contain an extract from the plant part. Though in this appendix only some hundred herbs are enumerated, each only mentioned with its name and a short instruction, as e.g. "This root washed and placed on an inflamed limb immediately soothes" ("Die wurtzel gewaschen vnd geleit vff ein entzung glit leschet das zu hand") a passage at the end of the index very boastfully says: "Don't forget to find at the end of the book the best bits taken from the Herbario, which formerly were not contained" ("Mit vergiss hinden im buch zefinden die besten stück us dem Herbario gezogen, vordem nit darby gesin"); which seems, by the way, to prove, that the terms "Herbario" and "Hortus sanitatis" no longer had the same meaning at that time.

Grüninger's edition could hardly be called superior to that of Beck, which had no special merits either. The former contained even less illustrations than the latter. The pictures were copied direct from Fryx's old ones, but with very thin, weak lines, producing an unpleasant effect. Apart from that, some of them, for reasons of paper-saving, had been reduced to a height of 35 of 40 mm only, and many of the blocks had to serve for the illustrations of several chapters. The appendix about plants only contained 21 figures, most of them done with the Hortus-blocks, which originally had been meant to illustrate some other plants than the ones they were used for now.

Grüninger's old woodcuts, produced in 1496 were used for the last time in "Das neue Distillir buoch" ("The new book on distillation"), printed by him in 1531. On comparing this edition with the first one, which appeared in 1500 and was also illustrated with woodblocks taken from other works, the impression is a very unfavourable one. This is even worse, if the text is considered. The young Bartholomaeus Grüninger, who in the following year printed a new edition of the book on distillation, in a preface gives the following opinion about it: " And though my father, Hans Grüninger, - God bless him -, in his time printed the book several times, partly in the lifetime and presence of the said Hieronimus Brunschwick, it was printed with so many errors and mistakes, that there is no comparison between these editions and the present one. In order to improve the work, I have, with money and good words, got some learned people, who are experts in medicine and Latin, to correct this book..... as there were no fewer than 5000 mistakes in it." ("Und wiewol mein Vetter Hans grüninger, dem Gott gned, vorzeiten etlich mal das buch getruckt hat, auch in bywesen vnd leben genante Hieronimi Brunschwicks, so ist es doch mit so viel mercken vnd falern getruckt worden, das es gegen diesem truck gar kein buch zu

gleichen ist gewesen. Uff das ich aber diess truck besser, Wobe ich mit
bitt und ion dazu vermoecht galert lent, Sie der Artzney und des lateins
kündig gewesen seind, die diess buch corrigiert haben.... dann es sein nit
minder denn sechs tausend irrthuch daraus kommen.") In spite of these
6000 eliminated errors, young Gröninger's edition makes, outwardly seen,
an even worse impression, as the section about herbs is not illustrated
at all, while the rest only contains a few pictures, more than 30 years old,
of distillation apparatus and medical instruments.

Not only the woodblocks copied from the two Hortus editions had a
considerable span of life at Strasbourg, but also the pictures of the Her-
barius were given new life there, in particular those, that were in the
edition, produced by Johann and Conrad Rist at Speyer. We meet them in a
work by Petrus de Crescentis, entitled: "Von dem/ nutz der ding die in We-
ren gebuvt werde..." ("About the usefulness of things that are planted in
fields..") In the first edition, which the printer Johann Knoblauch made
his colleague Johannes Schott print in 1518, the chapter numbers, which I
have mentioned earlier, were still visible on most of the woodcuts; in the
second one however, which Hans Knoblauch the younger printed in 1531, the
numbers have all been eliminated.

II The beginning of scientific research.

Whereas up to now our impressions of Strasbourg have been rather unfavour-
able, we shall now see this town as the place, at which a thorough change
in botanical science took its start. At the same time at which Beck, Grö-
ninger and Knoblauch still offered their readers illustrations that were
between 30 and 45 years old, their colleague Hans Schott published the
herbal of Otto Brunfels, which in text and illustrations is far superior
to all its predecessors.

Brunfels and his publisher were two interesting persons. The latter had originally limited his activity practically only to printing, to turn more and more to publishing, so that already in 1517 he had published a significant medical work, the "Feldtbuch der Wundtartzney" ("Field-manual of surgery") by Hans von Gerssdorff. - Brunfels came from Mainz, and perhaps he owes his liking for botany to the herbaria that were printed there. First he entered a Carthusian monastery, but later he converted to protestantism and became a preacher and teacher at Strasbourg, so that medicine and botany became merely a side-line. In spite of this, the plants in his herbaria are no longer classified alphabetically, but according to families. Also a difference has been made between male and female specimens of plants, so that he can be regarded as the first one who might claim with right the name of a botanist. At the same time he did not neglect the medical effects of the herbs, but added to the description of each plant a special passage, called "Krafft und Artzeney" ("Powers and medical properties."), in which, apart from Dioscorides, Galenus and other famous physicians of the antiquity, he also mentions as an authority Hieronymus von Braunachweig.

Brunfels' work first appeared under the title "Herbarum vivae icones" in Latin, containing 2 fat volumes, which probably only reached the public in 1532, though the preface of the first volume is dated 1530, that of the second 1531. Both volumes together contain 100 full page (approximately 350 mm in height) and 75 smaller illustrations, drawn, as the preface mentions, by Hans Wditz. They are quite well drawn and carefully cut, but only give the outlines without any shading. - In 1532, under the title "Contrayt Kreuterbuch" (Illustrated Herbaria), a German translation appeared, which was much more handy than the Latin one, as, though it contains the same pictures, it only holds 332 text pages and 6 columns of index.

The preface of the German edition is composed of 33 short chapters. In the twentieth of them Brunnfels gives his opinion about the older herbals. He begins by telling, that "manuscripts" with painted plant-pictures have been much asked for and well paid for during the last 30 years; then he mentions the printed editions with the following words: "Others have undertaken to print them, and we have seen many and various specimens of them, but as they wanted to save expense and also perhaps were inexperienced in the true art, they were all spoiled and nothing decent, so for instance the figures, which were only copied (?), and the text, which to the greater part is wrong and taken from careless, despicable books." ("Die anderen aber haben solche in dem Truck vnderstanden, wie wir derselbigen vilfaltig vnd mancherley gettung gesehen, aber dieweil sie den kosten gespart vnd villeicht auch der waren kunst nicht bericht, alle verhimpelt vnd nichts rechtschaffenes worden, so der figuren halb, die blösslich gefyssiert, so der beschreibung, welche des mertheyl felsch vnnnd auss nochgültigen verachtlichen bücheren gezogen.") - Much as this hard judgment may have been justified as far as the Strasbourg reprints were concerned, it was rather unjust with regard to the old Mainz editions, as those had attempted the greatest possible perfection and completeness, while Brunnfels himself limited his work to the native herbs, leaving away all doubtful exotic plants. Also the painters had, during those 40 years, made a certain amount of progress in observation and reproduction of nature, a fact ~~whisk~~ from which his book benefitted.

In spite of all its advantages, Brunnfels' work wasn't ^{to} much of an asset to its publisher, and it is easy to see why: The big illustrations, which only showed the outline, may have been sufficient for the expert, but couldn't possibly satisfy the general public, for whom the pictures

ought to have been coloured, a process which increased the cost considerably. Accordingly, the publisher was able to produce a complementary volume, left by the author, who meanwhile had died, illustrated with 65 full-page and 40 small pictures, with Latin text in 1537, also to reprint the first two volumes in Latin in 1539 and 1540 respectively, but the German edition sold so badly, that the complementary volume was not published in German at all.

This lack of success was possibly partly due to certain rivals, particularly Christian Egenolff at Frankfurt am Main, who, with his popular publications did considerable damage to the sale of Brunnfels' and other botanical books, which I shall mention later. But whereas Schoeffer and Meydenbach had been defenceless, when their publications were copied word for word and picture for picture, Schott quickly lodged a complaint against Egenolff with the famous "Reichskammergericht" (court of justice) at Wetzlar, though there was no question of having had his text copied by others, but only a few of his illustrations had served as models for the Frankfurt books.

The change in the general outlook on reprints occurred surprisingly quickly round 1520, probably in connection with the Reformation. At least Luther several times attacked the practices of reprinters. It is wellknown, that Dürer had no means of proceeding against the Strassbourg painter Hieronymus Greff, who in 1502 simply copied his Apocalypse, while in 1528 his widow successfully prevented the reprinting of his "Büchlein von der Proportion" ("Little Book about Proportion"), which had been planned by Beham.

When in 1514 Ludwig Dietz wanted to start a printer's shop at Lübeck, these endeavours for protection were in their initial stage and he/ asked

the city council:" that the books and writings which I shall print, may not be reprinted by anyone in your honour's city within/ the next year." ("dat de Boke vnde schryfften, so yck drucken würde, nycht nhagedrucket scholden werden von Jemandt yn J.E.stett bynnen dem Jere der agest.") So, while to him protection during one year only was sufficient, 20 years later publishers were not even content with a period of protection/ five times as long and in fact they soon succeeded in getting it extended.

In consequence of Schott's complaint, Egenolff had to appear before a court of justice, when the indictment was formulated in the following words:" Though we have provided and endowed him (i.e.Schott) with Imperial privileges, so that during the time named no one should be allowed to re-print, advertise or sell his books, at a penalty of 10 Mark of pure gold, (on the title-page of Brunnfels' German edition however the particulars are: " not to be reprinted during five years, at a penalty of 5 mark of pure gold"), you are said to have nevertheless copied all the herbs, which Hans Wyditz, painter at Strasbourg, had drawn for him originally or copied from others, having them cut, engraved and printed stroke after stroke." ("Wiewol wir ihn hievor kaiserlicher Freiheit begnadet und begabt, also dass ihm keiner seine Bücher in einer benannten Zeit bei 10 Mark lötigen Goldes Strafe ("vff fünf jar nit nachdrucken & bey der pen fünf mark lötige gold") nachdrucken oder feil haben oder verkaufen soll, so sollst du doch dawider ihm alle Kräuter die ihm durch Hans Wyditz, Mehler zu Stressburg, ... abconterfeyt, als ein neu Werk... auch viele conterfeysch figuren haben nachreisen und nachschneiden, von Strich zu strich verjüngen und in Druck ausgehen lassen.") Egenolff replied, that the complaint was entirely unfounded, that his work had been borrowed from an old book, which had been assembled, written and painted some 30 or 40 years ago by a Doctor Johannes

Cuba. Even if one tried to put the two works side by side, one should find, that they were neither in figures nor in text the same; in his Herbario there were more than 50 herbs, which the other party had not got; more than 100 herbs in both works did not even allow an attempt at comparison and that even the rest always showed some little difference at least.

This shows us, that the book, which roused Schott's anger, must have been the one, that was published by Egenolff in 1533 under the following title: "Kreutterbuch von allen Erdigewächse, Anfanglich von Doctor Johan Cuba zusammengebracht.... Mit warer Abcounterfeitung aller Kreuter. Distillierbuch Hieronymi von Braunschweig. Durch Eucherius Rhodion (grüßet aus Rüsselin), Bethartst zu Frankfurt." ("Herbal of all plants of the earth, Originally assembled by Doctor Johan Cuba... With true pictures of all herbs. Book about Distillation by Hieronymus von Braunschweig. By Eucherius Rhodion (Greek for Rüsselin) spa-physician at Frankfurt.") This work, containing apart from 241 plant illustrations more than 200 other pictures, was of course no rival for Brunfels' Latin edition, but all the more so for the German one, to which it was similar in shape and bulk. On comparing the pictures of the two books with each other, we find, that Egenolff's defence was quite right. The artist, who drew his plant pictures (it may have been Hans Sebald Behem) possibly used some of Schott's illustrations as models, - just as in some cases the old Hortus seems to have been his source-, the greater part of the pictures however have doubtlessly been drawn from nature. Unfortunately the verdict of the court of justice has not been preserved, but there is no doubt, that Schott's complaint was refused, as Egenolff, already in 1535, published a second edition of Rüsselin's book under the title: "Kreutterbuch. Von aller Kreutter, Gethier, Gesteine vund Metel natur, nutz vund gebrauch" ("Herbal. About the nature, properties and use of

all herbs, animal, stoner and metals"). It was quite just, that the indictment should not have been accepted, as the success of Rösslin's book did not depend on these few copied woodcuts, but was due to its whole contents. The small woodcuts, which are cleverly shaded, show more or less the same standard as present-day school text-books and did not need colouring. Their height is between 70 and 135 mm, their breadth 30 or 60 mm, i.e. one half or the whole of the breadth of a column. The text was intended by the author to be suited to the general public: "I was driven by the wish, as much as the short time allowed, to give a home-medicine-cupboard and medicine-book to the common man, who may live far from doctors and apothecaries". ("Hat mich auch also der lust getrieben, weil diser hurtzen zeit hat sein mögen, dem gemeynen man, so etwen den Artzten vnd Apotekern entzessen ein Haußapotecck vnd Artzneibuch zugerichten.") Added to it was a section about animal and inorganic remedies, as well as the book on distillation, which gave instructions for making medicines, all matters that seemed very important to the public but were missing in Brunnfels' book, so that any non-medical person would quite rightly prefer the Frankfurt herbal.

I shall turn back later to the further editions and adaptations of Rösslin's book. At the moment I have to mention a certain edition of Brunnfels' herbal, which seems to have been published as a rival to Egonolff's work. In 1546 at Hermann Mulferich's at Frankfurt a reprint of the German edition of Brunnfels' book appeared, containing pictures in the reduced size of 96 mm in height, cut very skilfully, but without any shading. The first part holds 197, the second part 58 illustrations, and the book creates a quite favourable impression; also it probably was cheaper than Rösslin's, as it is made with 115 leaves only. All the same, owing to the reasons mentioned above, it does not seem to have satisfied the general public and no further edition appeared.

Another competition arose to Sobott from an other side, though in a quite irreproachable way. It was at least as unpleasant as Eggencliff's rivalry. Leonhart Fuchs, whom Brunfels had himself called (in the German edition of 1532, page 136) "the well learned master Lienhart Fuchse, who is my Gracious Lord's, the Marggraf Jürgen von Brandenburg's, physician" ("der hochgelerete herr Lienhart Fuchse M.C. herren Marggraf Jürgen von Brandenburg Leibarzt"), decided to publish a herbal, which appeared in 1542 in Latin and the year after in German at Michael Isengrim's at Basel. Fuchs, who in 1535 had given up his post of physician in ordinary at Aushach, having been called as a lecturer to Tübingen, dedicated his work to Queen Anna, and if already Brunfels' book could be called a luxury edition, this applies even more to this new work. It is done in biggest folio size and contains 346 chapters with 513 numbered full-page pictures, up to 320 mm in height and 210 mm in breadth. Accordingly, the artists, who cooperated, did not miss to put in their portraits beside that of the author. The latter is represented in full figure, with a beret on his head and a little flower in his left hand, on the back of the title page (size 240 x 112 mm); the last page is divided in two halves, of which the upper one shows the two painters Heinrich Füllmauer and Albrecht busy drawing, while the lower one contains the wood-engraver Veit Radolff Speckle, in half-figure with a coat (size 133 x 113 mm).

Though the text, which does not only give name, ^{genus} ~~sex~~, figure, region and time of flowering, but also powers and properties ("krafft und würcung") of the plants, is considerably superior to any of the earlier herbals, and though pictures of this high standard were never produced before, the sale did not fulfil the hopes set on it. Probably the book in itself was rather expensive, and the huge plants, drawn only in outline, could only be appre-

dictated by experts, while to the general public they must have looked incomplete or even incorrect. The coloured copies however, which even nowadays give cause for admiration, were presumably beyond the means of the general public. Again Egenolff is made responsible for this miscalculation, and this time he really was guilty of a slight transgression, but certainly not of the unsuccessful sale of Fuchs' book.

Egenolff, who at that time had opened a branch at Marburg, printed there in 1543 an edition of the Dioskorides, a medical work which was very much in favour then, and for its illustration he mainly used the woodcuts of Rösslin's herbal, which we already know. Apart from those, a certain number of new blocks have been used, between 100 and 125 mm in height, striking one by their clumsy stalks and the lack of picturesque effect. Probably Egenolff had ordered a Marburg artist to produce the necessary illustrations and use Fuchs' pictures as a model, hoping, that, as in Rösslin's book, there would always be a little difference in them. The Marburg artist however was not skilled enough for this order, so he just reduced the size of the pictures in such a coarse and clumsy way, that anyone could see the mere imitation. Still, the small number of these copies were hardly worth mentioning, and probably no one would have bothered Egenolff because of them, if Isengrin and Fuchs had not had other reasons for being on their guard against him. The former of these two had published the year before an octavo edition of the Dioskorides without illustrations, and the sale of this work may well have been impaired by the new Marburg edition. Fuchs, on his part, was outraged by the fact, that the Strasbourg physician Walther H. Ryff (Rivius), who had corrected Egenolff's Dioskorides edition, had made some slighting remarks about him in the preface.

Fuchs, who anyhow seems to have been rather quarrelsome, answered

with a polemic pamphlet, bearing the grand title: "Apologia, qua refellit militiozus H. Ryffli, veteratoris pessimi reprehensiones, quae ille Dioscoridi nuper ex Egenolphi officina prodeunti attexuit". This booklet was printed in 1544 by Isengrin and sent to Frankfurt, so as to be sold there at the fair. Egenolff however had heard of this plan, and by an agent he bought up the whole edition. This of course increased Fuchs' rage and in 1545 he wrote a new leaflet, to which he gave the title: "Adversus mendaces et christiano homine indignos Christiani Egenolphi suiique architecti columnas Leonh. Fuchsii medici responsio". Now the Marburg professor Janus Cornarius stood up and directed three pamphlets against Fuchs, which appeared in 1545 and 1546 at Egenolff's. The first one bears the title "Vulpecula excoriata" (alluding to the name Fuchs = fox); it was followed by "Mitra ad Brabyla, pro Vulpecula excoriata asservanda" and later by the so-called "Fuchseides III", which, apart from the first two pamphlets, contained a final section with the title "Vulpeculae catastrophe, seu qui debet esse scopus, modus ac fructus contemptumum".

In spite of all these disputes, Fuchs really knew quite well, that the reason for the bad sale of his book was not competition by others, but its huge size and big price. So he made Isengrin copy the woodblocks in a smaller size, and these woodcuts, reduced to a height of some 120 mm and very neatly cut produce an excellent impression. They first appeared in pocket size in 1545, without text, only with their Latin and German names and arranged so that there was a separate page for each of the 316 plant-pictures. But Fuchs had to give vent to his rage and put in a preface, from which I quote, with some abbreviations, the following sentences: "Two years ago I published in print a new herbal. But as this herbal, because of its size, can only be used at home, I have produced this handbook

in a smaller size and shape. To this enterprise I have also been moved by the avarice of some printers and others, and their wanton intrigues, who won't stop from reducing our big illustrations to smaller shapes, copying and imitating them in an unlawful way. As for instance during the past year Ryff and Egenolph shamelessly did in their nice Dioscorides, also several others, who, as I am told, have the same intention." ("Ich hab vor zweyen iaren ein neüw Kreüterbuch im truck lassen aussen. Diaweil aber solich Kreüterbuch von wegen seiner gröss allein deheymen mag gebraucht werden, hab ich dis handtbüchlin in ein kleinere form vnd gestalt gezogen. Und zu solchem f'ürnemen hat mich auch nicht wenig bewegt viler diser zeit buch-trucker vnd auch anderer vnersettiger geitz vnd mutwilliger auffatz, die nicht auffhören vnsere grosse kreüter formen in kleinere form zuziehen, abzumalen vnd dieselbigen betrüchlich nachzumachen. Wie dann das vergangen jar Ryff vnd Egenolph on alle scham inn Jhrem H'upschen Dioscoride gothon haben, vnd auch etliche andere, wie ich bericht würd, noch zu thun sich vnderstehen wöllen".) This is probably meant to give a scare (for Rihel?), as the privilege granted to Isengrin dated from February 18th, 1539 and was only given for five years. ~~xxxxxx~~ We cannot help thinking of the fabulously rapid production of books in 1485, when we see in the document of privilege, that the printing of Fuchs' herbal took more than three years. There follows a special blow, probably meant for Ryff: "And may nobody be moved by the idle talk of some of our Doctors, who had better be called misers and rude asses, who say, that in my herbal I have not described as correctly and perfectly as some others before me the powers and properties of the herbs. I certainly should be glad to admit, that in my herbal I have not given place to so much idle talk." ("Und sol sich hie kheiner des vnnütz gewäsch etlicher vnserer Doctorn, die man billicher Filzen vnd

große eael denn Doctoras nennen sollt, lassen bewegen, die da sagen, ich habb inn meinem kraüterbuch die krafft vnd wirkung der kraüter nit so eygentlich vnd volkomentlich, als ettlich anders vor mir gethon, beschriben und angezeygt. Denn ich is gern bekennen will, das ich inn meinem Kräüterbuch nit so vil vnnütts geschwets gemacht hab.")

With the same smaller woodblocks a Dutch translation of Fuchs' herbal was printed, with the title "Den Nieuwen Herbarius"; though the preface is dated 1543, it only seems to have appeared after the separate print of the woodcuts which I have just mentioned. At the end of this edition Fuchs says: "So we shall close herewith the first part of this herbal and by and bye, if God helps, we shall also gave into print the other part, on which we are now working." ("Also willen wi hier de eerste deel van deesen Craydenboeck besluysten ende metter tijt, wilt God, ock dander deel dwelck wij onder handen hebben, in de printe laten vtgaen.")

However, the printing of this second volume never was undertaken, though a great part of the woodblocks meant for it were cut and kept during centuries at the Tübingen library. If the great edition had been too expensive, the small one was merely a picture-book, with which neither scientists nor ordinary people could do much; apart from that, in the next year Brunfels' and Bock's herbals also appeared with smaller pictures, so that there was rather an overflow on the market. Isingrin, again disappointed in his expectations, had now enough of this book and sold the smaller woodblocks to Paris, where already in 1543 a reprint was produced by Jacob Bogard, however without illustrations. Subsequently a whole series of editions, partly in Latin, partly in French translation, partly with no text at all, were produced in France with these woodcuts, during which process the name of the author assumed some weird shapes. The title-page of the edition,

which appeared in 1549 at Isaac Goussau's in Paris, for instance shows the following text: "Commentaires tres excellens de l'Hystoire des plantes, composez premierement en latin par Leonart Fousch (!) medecin tres renommé. Et depuis nouvellement traduizts en langue Francoise par un homme sçavant et bien expert en la matiere."

Fuchs, by the way, who, as we have just seen, was so much outraged by the avarice and intrigues of others, was by no means above the custom of that time of presenting important persons or public authorities with copies of his books. In the records of the Nuremberg council the following entry, dated April 25th, 1549 is to be found: "Ad doctor Lienhardt Fuchs, Ordinarius of Medicine at the university of Tübingen, has dedicated to our Honourable Council a book about medicines and apothecaries, written by Nicolaus Myrepsus Alexandrinus in Greek and translated by him into Latin, also bound by him in a graceful way and sent by his son, one of the councillors has taken it from him with thanks, has written a letter of thanks to him, making him a present of 100 taler (~~fl.~~ crowns?) and also giving his son 20 fl. to use on his way." ("Als doktor Lienhardt Fuchs, Ordinarius in Medicina auff der Universitët zu Tübingen, ein buch von Arzney vnd Apotheken, so Nicolaus Myrepsus Alexandrinus in griechischer sprach geschriben, in latein transferiert vnd ein Erbaren Rath alhie dediciert, auch zierlich eingepunden bey seinem Son zugeschickt, hute ein Rath von Im zu Denck angenommen, Im auch ein Dankbrief darumb geschriben vnd 100 Taler verert, auch sein Son 20 fl. zur zierung schencken lassen.") Considering the high value of money at that time, one must say, that authors, who had a few of patrons of this kind, were able to get quite a pleasant substitute for an author's fee, which usually was only paid, when a scientist had actually been called upon by a publisher to write a certain work. Of course it may

will be, that the fee in this instance of Nuremberg was exceptionally high. Lonicer, when we shall mention later, for instance, when dedicating the second part of his "Naturalis historie opus novum" to the Frankfurt Council in 1555, only received 10 Taler. But then he was in the service of the city of Frankfurt and may thus have had other presents occasionally from the Council. At any rate, noble Lords and public authorities, when presented with books, seem to have proved to be very generous. This probably explains, why Fuchs should have dedicated his book to Queen Anna, and why most of the herbals, still to be mentioned, were dedicated to some person of high social standing.

Though the immediate success of Fuchs' herbal was small, it all the same exercised a lasting influence. Practically in all of the later herbals we find illustrations, which are imitations of Fuchs' pictures, and even his text has been used right into the XVIIIth century (at Hamburg e.g. in 1602 "Fuchs' Krüderboek" appeared without illustrations). Special mention must be given to a work, fitted out with 58 woodcuts, which are so much like Fuchs' smaller ones, that I couldn't tell, whether they are recuts or prints of his own blocks, or whether the originals, after having been sold to France, had come back to Strasbourg. The work I am speaking about is the so-called Carrichter's herbal ("Carrichtersches Kräuterbuch"). It was first published by Christian Müller at Strasbourg in 1575 with the strange title: "Horn des heyls menschlicher blüdigkeit oder Kreutterbuch durch Philomusum anonymum, allen Liebhabern der Teutschen gewachsen durch Doctor Michael Toxites herausgegeben." ("Horn of salvation for human weakness or herbal by Philomusum anonymum, published for all lovers of German plants by Doctor Michael Toxites.") A second edition, printed by Antoni Bortram at Strasbourg in 1595, has the same title; a third one,

however, published by him in 1619, bears the title: "Bartholomaei Carrichter, Weilandt der Röm. Kay. May: Herrn Maximilian Hess andern Leib Medicus und Hoff Doktor, Gross Krütterbuch". ("Great Herbal of Bartholomaeus Carrichter, formerly physician in ordinary and court physician of His Majesty the Roman Emperor Maximilian II."). As Toxites, who was town-physician at Haguenau, mentions in the preface of the first edition, that a year before he had published the small herbal of Carrichter, there would have been no reason for hiding his name, had he also been the author of this work. So, apparently, the printer Bartram committed an error, and it is more probable, that a handwritten inscription in one of the copies at Berlin, mentioning that the "Philomusus anonymus" was really Melchior Schönsfeldt, is right. Incidentally, the book saw three more editions at Nuremberg during the XVIIth century and a further one in 1739 at Tübingen.

An other friend of Brunnfels', Hieronymus Beck, actually a theologian, who during 9 years had been a schoolmaster at Ewaybrücken, before he was called to be a Preacher at the neighbouring village of Hornbach, also is the author of a herbal, which appeared in 1539 at Wendel Rihel's at Strasbourg.

Apparently he knew, how little success was obtained by Schott with Brunnfels' pictures, so he thought to act wisely by leaving away the illustrations altogether. However this calculation proved to be entirely wrong, as he himself has to admit in a preface to the second edition, which he published in 1546 with imperial privileges for seven years ("mit Kaiserlicher Freiheit auff Siben Jahr"): "Ag I have found out, that the preceding herbal was frequently refused because it contained no illustrations, my answer first was, that I wanted to save my readers and the common man expense,

so that they should not have to go without the book because of the high price.... Having learned now, that everyone is eager to have such pictures, I have saved no cost, trouble and work, and, beginning three years ago, I have prepared the illustrations and now added them to the descriptions."

("Dieweil ich im vorausgegangenen Kreidbuch befunden, dass die selbige mit wenig hinderschlagen worden, durch das die abbildung der kreuter mit drinnen, habe ich geantwortet, das lesern vnd gemainen wann hierinnen zu versehenen, damit die selbigen seine nutzbarlichen Buche von wegen des etwas höher so gilt mit andern ansetzen.... Als ich aber befunden, das maniglich solcher abbildung fast begierig, habe ich auch den Kasten, mühe vnd arbeit mit versehenen vollen vnd für drei jahren angefangen die abbildung zuerichten, vnd jetzunder zu der beschreibung hinzugesetzt.")

This second edition, which isn't only more pleasing than the first, but also than all the later ones, forms a volume of considerable size, containing apart from preface and index 424 leaves and 330 woodcuts. Part of these show the letters .DK., the initials of David Kandel; most of them are only 142 mm high, whilst in breadth they are between 45 and 90 mm. In the section of "Shrubs, Hedges and Trees" (Stauden, Hecken vnd Bäume) he reverts to the ornamental genre-like style of the Great Herbar, adding, wherever possible, some living being, a process for which he found sufficient stimuli in the text of Bock, which is full of little anecdotes, describing the power and effect ("krafft vnd würcung") usually in two sections, one for "inward use", the other for "outward use".

On a branch of the hawthorn there is a blackbird, at the foot of the "Schweloche" (?) a hazel-hen is picking its food, beside the "Eschrüssel" (?) there are two children, in whom the purgative effect of the flowers is

noticeable. Near the medlar-tree, the fruit of which contain five indigestible stones each; there is a richly dressed lady, and in the text we find the following explanation:

"Kein Jungfrau ward nie so rein,
Esse sie drei Nespel
Sie gebe von jr Fünfzehn stein."

("Never virgin was so pure, that, having eaten three medlars, she would not pass fifteen stones.") - In the cherry-tree there is a peasant-woman, throwing down some cherries to her child; round the apple-tree a snake is winding; under the pear-tree the fox is conversing with the raven. Under the mulberry-tree Theseus finds Pyramus' body; beside the fig-tree a peasant is crouching, experiencing in a twofold way the effect of the young fruit; in front of the vine Noah is to be seen with his sons; under the oak-tree a swine-herd is resting, whilst the pigs greedily feed on the acorns, that have fallen down; round the lime-tree peasants are seen dancing to the sounds of a bagpipe etc.

From the preface, which Bock addresses to the "Hochgebornen Fürsten, und Herrn, Herrn Philippsen, Landgrauen zu Hessen usw." ("To His Highness, the Prince and Lord, Lord Philippsen, Count of H Hessen etc."), two paragraphs claim our interest: One of them seems to be meant as a blow against imitators as he asks the Count "to protect gracefully this book from all poisonous animals and all attacks by vermin, wolves and foxes, who could damage it." ("dass er diss Buch fürter vor den giftigen thieren vnd allen anlauff des ungeziffers der Wölff vnd Füchsen, so gern schaden thun, gnediglich wolle beweren.") The other one is addressed to the reader, entreating him "to avoid and shun all the foreign vagabonds, gipsies, Jews and mischievous fellows with their talk, old remedies and treacherous worm-cures." ("die fremde Landstreicher, Zygauner, Juden vnd lose Raben mit jrem geschwetz,

alten confecten vnd betrieglichen Wurzungen (Eischen vnd Leiden.)")

Owing to its popular text and illustrations, Beck's Book, unlike the works of Brunnfels and Fuchs, was produced in a whole series of editions, which followed each other within a short period; in 1552 there was also a Latin translation done, in which the name of the author was changed into Tregus. 1580 the German edition was revised by Melchior Sebastius and increased by a fourth part, which in 1555 Beck had published as a separate book under the title of "Speiskammer" ("Larder"), for which Tobias Stimmer had produced 19 illustrations. This latter edition seems to have been published in 1630 by W. Chr. Gleser at Strassbourg. By the way, part of Kandel's pictures had also been used for the "Anotationes in Dioscorides", which had been left behind by Valerius Cordus, when he died of an accident in Rome in 1544, and which was published by Conrad Gesner in 1561 at Josias Ribel's.

In 1554 a herbal appeared at Venice, published by Valgrisi under the title "Commentarii in Dioscorides", whose author was Petrus Andreas Matthioli, born at Siena, physician of the Roman King, later German Emperor Ferdinand I. This book, in which the woodcuts, - moderately but not excellently done, - measure some 120 x 70 mm, was uncommonly successful. It appeared in Italian translation in 1555 and 1556 in a second Latin edition, to which 133 pictures had been added, followed in 1559 by a third and in 1560 by a fourth edition. On the whole, up to the year 1563, as we are told by Georg Handsch of Lyons, editor of the German translation which is to be mentioned presently, 32.000 copies were sold ("zwei vnd dreissig tausent exemplar verhandelt worden"), which amounts to an average number of 5000 - 6000 copies for each edition. Apart from that, a Spanish edition had been printed in 1555 at Antwerp, while a Latin and a French reprint were produced at Lyon in 1562.

This extraordinary success moved Matthiolus to undertake the publication of a luxury-edition with bigger pictures, for which purpose he was given subsidies by the Emperor and other high personalities, so that the new edition, "at the expense of Georg Melantrich von Auentin and Vincenti Valgrisi, bookprinters of Venice" ("auff Georg Melantrich von Auentin und Vincenti Valgrisi Buchdruckers zu Venedig vnkosten"), appeared in 1562 in Bohemian, 1563 in German. The new woodcuts, on the average 215 mm high and up to 150 mm broad, are profusely shaded and partly show a really picturesque effect. No initials of the artist can be found, but, according to the author's statement, Georg Liberale and Wolfgang Meirbeck (probably the younger Meierpeck, as the elder one was at Zwickau in 1531, and later in Freiberg in Sachsen as the owner of a printer's shop) had taken part in producing the illustrations.

In spite of all the advantages of the book, its huge pictures don't seem to have pleased the German public, just as little in fact as those of Brunnfels and Fuchs. No further editions appeared. The woodblocks were sent to Venice in 1565, where they were used right into the XVIIth century to illustrate new Latin and Italian editions. On the other hand, the small woodblocks, more than one thousand of them, came to Basel at the end of the XVIth century, where they were used in 1598 for a Latin edition, revised by Caspar Bauhin (Matthiolus had died in 1577), which contains 273 other pictures, done, according to the editor, by artists living at Basel at that time. In this amplified version the book was edited once more in 1678 by Johann Koenig at Basel.

Before however Bauhinus revised the original edition, Joachim Camerarius had, quite on his own, produced a new edition, which appeared at Frankfurt and was illustrated partly with plant-pictures left by Geener.

I'll give more details about this edition in a later paragraph, where some other Frankfurt herbals are to be mentioned; for the moment I have to say a word about Conrad Gesner, who used to be called the German Plinius. The home of this excellent physician and scientist was Zürich, and originally he owes his reputation to his "History of the Animal World" (*Geschichte des Tierreiches*), of which the first instalments appeared in 1550 at Frotschauer in Zürich, whilst the last part was only published 20 years after his death. His herbal was quite unfinished, when he died at Zürich in 1565, but he left behind a lot of preliminary work on it. The significance and merits of this remarkable scientist were first appreciated by J. Sislser in a pamphlet, printed at Zürich in 1566, entitled: "Vita philosophi et medici Conradi Gesneri"; later part of the plant-pictures, left behind by him, were made known to the world, as I have just said, by Camerarius, but a complete edition of them only appeared in Nuremberg in 1754 at K.K. Schmeidel's. Gesner was the first person to classify the plants according to the peculiarities of their flowers and seeds into species and families, creating thus the first foundation for modern botany. He gave expression to this idea in his illustrations by adding enlarged pictures of flowers and seeds to each plant, a procedure which was imitated in most of the later herbals.

Publishers' activities at Frankfurt.

We now have to turn back a little to study the situation at Frankfurt. We already know, that Egenolff by no means had a monopoly there; all the same, we shall first consider exclusively his publications. Incidentally, F.W.E. Roth published in the XIXth volume of the "Zentralblatt für Bibliothekswesen" a bibliographical study about the various editions of Egenolff's herbals.

As we know, Egenolff had printed in 1533 Küsselin's herbal with great success. He seems to have promised himself even a bigger sale by making the text look more scientific, so he got the Warburg professor, Theodor Dorsten, to revise the book, using for this purpose the works of Brunnfels and Bock, which meanwhile had appeared. This new work appeared in 1540, under the title "Botanicon" in Latin, but was not as successful as Egenolff had hoped, so that no other editions were attempted. This lack of success was no wonder, as Egenolff had used for his illustrations Küsselin's woodblocks, so that for any newly added herbs the same blocks had to be used twice, if they were not simply left with an empty square space. So even a superficial inspection betrayed its incompleteness and must have influenced the prospective buyers against it.

After that it seems, that Egenolff took as his adviser for medical works the Strasbourg physician Walther Ryff (Rivius), who however does not seem to have brought more success. We already know, how the Dioscorides edition revised by him caused the quarrel with Fuchs. In 1545 this was followed by Ryff's "New Gross Distillierbuch wolgegründeter Künstlicher Distillation" (New Great distillation-book, about well-founded artificial distillation). It was fitted out with the same pictures as the Dioscorides and its text did not differ very much from that of the herbar. Ryff gave much space to the medical properties of the plants, usually describing them in two sections: "Useful for the inside of the body" and "to be used outside the body" ("innerhalb des leibes nützlich zu brauchen" "außerhalb des leibes zu brauchen"), as Bock had already done in quite similar fashion in his herbar.

In the beginning of the fifties Egenolff made the acquaintance of Adam Lonicer, who was to be of great importance for both of them. First

Egenolff printed in 1551 the first volume of Lonicer's "Hortus botanicus apud novus"; it was the second volume of this work which brought its author four years later the present of ten taler from the Frankfurt council, which we have already mentioned. When Rüssel, whose herbal had meanwhile appeared in seven editions, died in 1554, the vacant post of the Frankfurt physician was offered to Lonicer, and he got married to one of Egenolff's daughters, named Magdalene. He now turns his attention to the herbal written by his predecessor, which he edited in its old version (four times between 1527 and 1577) as well as in a completely revised version, which bore his own name. It was this latter work, which gave him some kind of immortality during two centuries. Having been published in seven of eight editions during his lifetime (he died in 1586), it was printed another twelve times up to 1763. It is particularly interesting, that even in the last editions there still are many plant illustrations taken over from the first edition (the woodblocks were taken from Frankfurt to Ulm, from there to Nuremberg and then to Augsburg), also some animal-pictures, which Jost Ammann had drawn for the "Tierbuch" (Animal Book), which was published by Feyrabend in 1569.

Egenolff, who had died in 1555, did not see Lonicer's herbal published; publication only was completed in 1557 by "Egenolff's Erben" (Egenolff's heirs), amongst whom Lonicer, being his son-in-law, was himself. For the illustrations use was mainly made of Rüssel's herbal pictures and of the rather inferior Marburg Dioscorides pictures. The latter however began to fade out already in the next edition and none of them were kept until the later centuries. Apart from these there are also some woodcuts, for which Beck's herbal must have been the model. Of course Randel's drawings were not simply copied, but his method was imitated and living beings were used to animate the drawings. So for instance we see beside the apple-tree Adam

and live as well as a deer, beside the peach-tree a monkey, a bird on the date-tree, and a squirrel with a certain kind of nut ("Pimpernaus"). In later editions a few similar pictures were added: e.g. a fox under the pear-tree, a man, evacuating his insides fore and aft under the fig-tree, and near the cerob-tree the figure of St. John Baptist (Carob is in German "St. John's bread" = Johannisbrut. H.R.) Generally, the pictures representing trees were by and bye substituted by new ones. On Egonolff's oldest pictures the trees, were, as in the old Hortus of Johann von Cube, only pictured by a single branch or twig; this however no longer satisfied the more realistic tendencies of that time, so Egonolff's heirs had new blocks made, which showed the trees in full figure.

One paragraph of Laxicer's preface merits special interest: in it he repeats Bock's complaint even more drastically, proving at the same time, that even men of high social standing didn't mind being given some rather strong language. It is addressed to the "Highly born Count and Lord, Lord Philipsean, Count of Nassau, Sarbrücken und Weilburg" ("Folgebornen Grauen vund Herrn, Herrn Philipsean, Grauen zu Nassau, Sarbrücken vund Weilburg"), to whom the book was dedicated: "As to medicine, it is a pity, that this excellent and divine art should have been subjected to so much misuse and contempt. It is entirely impious and unchristian, that the Jews, being the sworn enemies of Christian blood and kept from all other honest and divine business (except from profiteering), should be admitted to this free and divine art and that Christian people should let them deal with their bodies. And all that, while these said Jews never have studied at a High School and don't know, how to write a single medical term properly. Also they hand to the apothecaries prescriptions, that have been written by other, learned physicians. This is their whole art, as well as that of some other asses'

heads, so that they may readily cheat innocent people. I could say much more about it, but, for the sake of brevity, I had better close." ("Die Medicin aber belangend, ist zu erbenken, dass heutzutage diese treffliche Gütliche Kunst so gar in missbrauch und verachtung kompt. Das ist aber, der unglücklich und unchristlich, dass die Juden, welche Christliches blute erbfeind sind und sonst zu keinerley ehrlichen und Gütlichen handtierung (sondern allein das nuckel zu treiben) zugelassen werden, zu solcher freyen Gütlichen Kunst aufgenommen und von Christen menschen über jren laib gelassen werden. So doch gewisse Juden nie in keiner hohen Schuler studiert haben, wissen doch mit ein wenigem nach in der Medicin rechtschaffen zu schreiben. Bringen auch in den Apotheken die Recepten zuwagen, so andere gelehrte Medici geschriben haben. Und dies ist alle die kunst derselben und der dergleichen Heelcköpffe, damit sie die willigen leut billig bescheissen. Darum ich noch vil und mancherley zu sagen wüste, wils aber, kurtze halben, hienit beschliessen.")

Of herbs, appearing at other publishers' at Frankfurt, the edition of Brunnfels' herbal, produced in 1546 by Hermann Wulferich, which he have already mentioned, seems to be the oldest. The small woodblocks, but for this edition, were later used to illustrate several medical and botanical works in pocket-size. Unfortunately I could not find the title of one of these editions, which is very pretty, printed obviously, while the blocks were still quite new, almost more neatly than the 1546 edition itself. The blocks seem already more used in an other work, bearing the following strange title: "Experiment: safe, correct and established experiences of various remedies against various strange defects, illnesses and diseases of the human body..... by the world-famous Mr. Nicolaus Spindler. Frankfurt a.M.: Jeremias Held, 1566." ("Experiment: Gewisse, rechte und bewährte

erfahrung allerhand Artzney wider allerley saltznen Gebräuchen, Pohl vnd
Kranckheiten des Menschlichen Cörper... durch den weitherhupten Herrn Ni-
coleus Spindlern probiert. Frankfurt a.M., Jeremias Held, 1583.") Still la-
ter the blocks were acquired by Sigmund Feyrabend and can be seen for instan-
ce in the edition of P. de Cressentius, which in 1583 Peter Schmid printed
for this publisher, well known at Frankfurt.

Packet-size was not really a novelty for herbals, as already Schosif-
fer's *Herbarius*, the *Herbarium* of Pseudo-Apuleius, various editions of the
Macer Floridus, the separate edition of Fuchs' small plant-pictures and some
others as well had appeared in this shape. The arrangement of Spindler's
book however differs from the herbals mentioned up to now in so far as it
contains ~~of~~ two parts. In the first the diseases are described, whilst the
second is the actual herbal. As he says in his preface, Spindler had meant
the book for the use of people with/ limited means, who "often live too
far away from doctors or whose means are too small and narrow to pay for
doctor and medicines.... and though these remedies can be found in huge
books, not everybody can afford these, nor has everyone time and leisure
to read them." ("...oft den rechten Artisten zu weit entzessen, oder aber
dem Artzt vnd Artzney zu lobnen vnd zu bezahlen, ir vermögen zu gering,
klein vnd schmal ist..... und ob man wil diese Artzneyen in grösseren Bü-
chern findet, so vermag doch nicht ein jeder dieweilige zu kauffen, hatte
auch nicht ein jeder zeit vnd weil, die zu lesen.")

At Sigmund Feyrabend's, who, as we just saw, acquired Brunnfels'
small woodblocks in 1583, there appeared in 1586 the *Matthiolus* edition,
managed by Joschim Camerarius, which we have already mentioned shortly,
and which was accepted favourably by the public, so that up to 1626 it
was printed in five more editions. Camerarius, in/ his preface mentions,

that he has appropriated, what was left behind by Conrad Gesner "by whom some herb-pictures had already been cut, others only drawn" ("von dem stilschen Kreutter Figuren zum theil schon geschnitten, zum theil allein gezeichnet vorhanden gewesen"). He says, that he had the latter cut in wood too and thus, with these pictures of Gesner's, he had Matthioli's herbal reprinted, of which the German edition could no longer be obtained. The pictures are nevertheless not all Gesner's, but part of the woodblocks have been copied, usually in reverse, and reduced in size, from the Prague edition of Matthioli. In one illustration there are the initials "1564 P R", which might refer to the wood-engraver "Peterlin", whom Camerarius, as he says, made come to Nuremberg to cut Gesner's drawings in wood. To judge by a rather confused statement of Andressens (*Peintre-Graveur*, Vol. I, page 427) the blocks later seem to have found their way to Basel, where they were used for a Matthioli's edition, edited by the Basel town-physician Bernhard Vezsassa and printed in 1678 at Basel by J.J. Decker.

Considerably less value attaches to the plant-illustrations in the herbal of Jacob Theodor, who, to indicate his home Bergebern, called himself Tabernaemontanus. As he tells us in his rather plaintive preface, he had been working on his book during 38 years and had to bear half of the expenses himself, so that it could be printed at all. He only lived to see publication of the first part, which appeared at Nicolaus Besseus' at Frankfurt in 1588. The second part was edited in 1591 by Nicolaus Braun. In the year of his death however (1590), the publisher already produced a separate edition of all the woodcuts, whose number was greater than 2000, under the title "*Icones plantarum*". These blocks, on the average 120 mm high, could not be said to be badly cut, but all the same they make a very monotonous impression; also they are only partly drawn from nature, whilst

most have been copied from earlier herbal. Tabernaemontanus' work, in which much space was given to the description of curative powers of the plants, had little success originally. 1613 however, it was re-edited in 3 volumes by Caspar Bauhinus, whom we have already mentioned as the editor of Matthioli's herbal, and again published in 1625. After that the wood-blocks came from Frankfurt to Basel, where in 1654 an edition, revised by Hieronymus Bauhinus, appeared at Jakob Werenfels', which was printed in two further editions in 1687 and 1731.

The Period of Decline in Germany.

Of the plant-pictures in the "Historia sive descriptio plantarum" of Leonhard Thurneisser zum Thurn, who in spite of his boastful advertisements was not entirely without merit, not many good points could be mentioned. He intended to publish his book in 10 parts, of which however only one reached the public during his lifetime. This one volume appeared in 1578 at Michael Montzke's publishing office in Berlin, in German, and at the same time in a Latin translation, done by Salomon Teichmann. The 37 plant illustrations contained in it have been copied in much reduced size from Matthioli and other works. They have oval shape and are about 81 mm in height, each of them surrounded by a little frame with two small figures, which also bears the name of the plant in Hebrew and Greek language and a short indication of the medical products won from them and their effects, all composed in loose type.

Part of the woodblocks which were made for Thurneisser, and which originally numbered 1921, were acquired by Thomas Pancevius, who in 1634 produced a new edition of Thurneisser's book; later on they were owned by Bartholomaeus Zorn, who published a new edition in 1673. He says in his preface: "Having seen by chance in the house of a noble gentleman in this

plena, Mr. Mart. Frid. Seydel, member of the Court of Justice and the Consistorial Council of the Churfürstentum Brandenburg, a whole lot of artfully cut and naturally pictured herbs and plants in woodcuts, and he having noticed, that I liked them, he willingly and obligingly let me have them. They were, formerly, cut by an artful master, called Holtzmeier, to the orders of the famous Leonhard Thurnhüser, former physician and chemical expert of the Churfürst here at Berlin." ("Nachdem aber ich ohngefahr bey einem vornehmen Manne hiesigen Orts, Herrn Mart. Frid. Seydeln, Churfürstl. Brandenburg Hoff-Cammergerichte und Consistorial Rath kommen und einer ganzen Heuffen Mühselich geschafften und natürlich abgebildeter Kräuter und Gewächse-Formen gesehen, Er auch vermercket, das wir solche gefällig, hat er mir dieselben willig und gerne zuhause lassen. Es hat eben voran den solchen der berühmte Leonhard Thurnhüser, alhier zu Berlin gewesener Churfürstl. Physikus und Medicus, durch einen Mühselichen Meister, Holtzmeier genant, schneiden lassen.") Seydel, by his "Collection of Portraits of 100 Men Born in the Mark Brandenburg" ("Bildersammlung von hundert in der Mark Brandenburg gebornen Männern"), had grown quite famous; the statement about the Holtzmeier however has not been investigated thoroughly yet. The framings rather remind one of illustrations in other printed works of Thurneisser's, that were drawn by Franz Friedrich, a goldsmith at Frankfurt a.O., and cut by Peter Hille, a wood-engraver living in the same place. As Mühsen, in his "Beitrag zur Geschichte der Wissenschaften" ("Contributions to the History of Science") states, that according to letters from and to Thurneisser, which are kept at the Royal Library at Berlin, the said Peter Hille, Absolon Poll (a Prague engraver) and Wolfgang Stürmer (a Leipzig wood-engraver), worked for his herbal, it is only reasonable to attribute more probability to this statement than to the report of Zarnm, which perhaps was due to some mis-

understanding.

Apart from a few reprints of the XVth, and a few new editions of the XVIIth and XVIIIth centuries, all the herbals we have mentioned, with the exception of the Prague Matthioli edition and the Berlin Thurneisser print, were thus produced at Mainz, Frankfurt, Strasburg or Basel. Of course there are plant-illustrations in other works too, not only in editions of P.de Crescens and other older authors, but also in some medicine-books, as e.g. in the so-called "Garden of Paradise, in which the finest herbs are pictured" ("Paradeisgärtlein darinnen die edelste Krütter abcontrafeytet sind") written entirely in verse by C.Rosbach and published in 1584 by Johann Spiess at Frankfurt.a.M. These books however offer nothing new, as usually they are illustrated with the pictures we already know or at least with copies of these. More important are the writings of some scientists, who described in special treatises, in text and pictures, the plants they found on their expeditions into foreign countries. These works however, usually only fitted out with very few illustrations, were meant for experts only and do not belong to the group of herbals we are considering and which were addressed to a wider public. So I think I can bring my subject to an end.

It is rather unpleasant to see, that, as I have demonstrated, especially those editions, which were produced with most care and expense, could not get firmly established, while those showing less originality kept going through centuries. Still, it can be explained by the fact, that there were only very few real botanists, while the doctors were not specially interested in learning about new plants, of which the pharmaceutical effects were unknown and which they could not purchase at the apothecaries. Also physicians were very rare out in the country, so that rural clergymen

and other educated people were compelled to gain information about illnesses and their cures from popular books; consequently these books always found buyers quite easily. The mob however, in case of illness, as already Heiler von Heinsperg tells us, relied on the good advice of old women, neighbours and friends etc. It is to these that a certain couplet in Sebastian Brant's "Herrnschiff" ("Fools' Boat") refers:

"Die hatt eyn kumst, die ist so gut,
Das sie all presten heyllen kumt;
Vnd darff keyn vnderacheyt ma han
vnder jung, alt, kynd, frouwen, ann."

approximately: "They have an art, which greatly pleases
Because it helps in all diseases,
No matter, whether young or old
Man, child, or woman, we are told."

We have already seen, that this complaint has been repeated in several herbals, and similar references are to be found in other medical works of that time. All these warnings however were of no use, in spite of them there were, in the second half of the XVth century crowds of quacks, who with quirinus-oil, scorpion-oil, elephants' fat, planetary stones and similar miraculous cures pretended to be able to heal all diseases. And their number and their impudence only increased during the next hundred years. Compared with all this humbug, the herbals, funny as they sometimes may seem to us, were really useful, and their popularity can quite easily be explained and justified.

But the more this fact moved publishers and printers to produce herbals, the more they tried to rival each other by low prices, which meant reducing the expenses of production. Just as in the end of the XVth century concurrence impaired the quality of printed works, the paper now began to get worse from one year to the other, and as the old woodblocks were used

over and over again, the art of wood-engraving necessarily declined for lack of practice. Works by new authors were only printed, when the author agreed to bear part of the expenses of production. On the other hand the old authors, even when they were definitely out of date and antiquated, were published again and again, though sometimes with revised text.

Under these circumstances of course German scientists were discouraged from further activity, while other countries now got busy, the leading role being taken first by Antwerp. Whereas the illustrations of the "Cruyt-boek" of Rembr. Dodonaeus, published in Antwerp in 1557, were mostly copies of Fuchs' herbal, the publication of the botanical works of Pena, Lobel and Clusius at the publishing office of Christoph Plantin marked the culminating point in this town, - all while in "our country" (Germany) they were content to print anew the books handed down from their forefathers. By the way, in the South of Germany even nowadays people are very much interested in herbals. Hardly a year passes without the publication of some work of this kind, called "Kräuterbuch" (Herb- book) "Kräutersegen" ("The Blessing of Herbs.") or something similar. And just as the name has kept itself through centuries, so the public has remained the same, as the fairly high price (8 Mark, 12 Mark 50) proves, that the middle-classes, and not the very poor, are mainly interested.
