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THE VOYNICH MANUSCRIPT
"The Most Mysterious Manuscript in the World"

BY BRIGADIER JOHN H. TILTMAN

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The following paper is a slightly expanded version of a paper which I delivered to the Baltimore Bibliophiles on March 4, 1967. I am fully aware of the inadequacy of my treatment of the subject. The paper is intended only as an introduction to the study of the manuscript for anyone approaching it for the first time.

INTRODUCTION

The Voynich Manuscript is a vellum book of over 200 pages. There is text on almost every page in an unknown script. There are also coloured drawings on all but about 20 pages.

Plate 1 will give you an idea of what the script looks like. *Plate 2* is an example of an illustrated page.*

To the best of my knowledge there is no confirmed solution of the script or any part of it, and the authorship and general dating of the manuscript is totally unknown. With the exception of a small number of later additions (not in the unknown script), the character of the script and general behavior of the symbols appear to be constant throughout the book. Opinions differ as to whether the whole is by one hand. There appear to be no erasures or corrections, which suggests that the manuscript as we see it is likely to be a copy of an original which may be of an earlier date. In any case the writing of the manuscript and the painting of the illustrations must have been a major undertaking. The late Father Petersen made his own transcription of the manuscript without the illustrations, and it occupied him for, I believe, three or four years.

Only a comparatively small part of this paper is original, i.e., has not appeared in print before. My purpose in writing it is to widen the circle of those who might be interested in the manuscript. I am a working man and have not been able to devote much time to its study and am fully aware of the many deficiencies in my knowledge.

DESCRIPTION AND HISTORY

In 1912 the manuscript was purchased by the late Mr. Wilfred M. Voynich (later a rare book dealer in New York) who "discovered it in

*All plates appear at the end of the article.

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a chest in an ancient castle in Southern Europe." It is now owned by Mr. H. P. Kraus, the New York antiquarian bookseller, who has revealed that it was found at Mondragone. This is a villa in Frascati near Rome, built by Cardinal Altemps about 1570. In 1582 Pope Gregory XIII issued from Mondragone the bull reforming the calendar. The villa apparently continued in the Altemps family as in 1620 a later member of the family bequeathed the Mondragone library to the Vatican library. In 1865 the villa became a Jesuit college which was finally closed in 1953. From 1912 to 1919, Voynich attempted to interest scholars in Europe and America in solving the script, while trying himself to determine the origin of the manuscript.

The manuscript, when discovered, was accompanied by a letter, shown in *Plate 3*. With Mr. Kraus's permission I quote from his catalogue number 100, entitled *Thirty Five Manuscripts*, the passages "History of the Manuscript" and "Conjectures concerning the early history of the Manuscript:"

HISTORY OF THE MANUSCRIPT

The manuscript enters recorded history on the 19th of August, 1666, when Joannes Marcus Marci of Cronland sent the codex from Prague to Athanasius Kircher, at Rome, with a signed autograph letter, which is found loosely laid into the manuscript. It reads as follows (transl. from the Latin):

"Reverend and Distinguished Sir, Father in Christ:

"This book, bequeathed to me by an intimate friend, I destined for you, my very dear Athanasius, as soon as it came into my possession, for I was convinced that it could be read by no one except yourself.

"The former owner of this book asked your opinion by letter, copying and sending you a portion of the book from which he believed you would be able to read the remainder, but he at that time refused to send the book itself. To its deciphering he devoted unflagging toil, as is apparent from attempts of his which I send you herewith, and he relinquished hope only with his life. But his toil was in vain, for such Sphinxes as these obey no one but their master, Kircher. Accept now this token, such as it is and long overdue though it be, of my affection for you, and burst through its bars, if there are any, with your wonted success.

"Dr. Raphael, a tutor in the Bohemian language to Ferdinand III, then King of Bohemia, told me the said book belonged to the Emperor Rudolph and that he presented to the bearer who brought him the book 600 ducats. He believed the author was Roger Bacon, the Englishman. On this point I suspend judgement; it is your place to define for us what view we should take thereon, to whose favor and kindness I unreservedly commit myself and remain,

At the command of your Reverence
Joannes Marcus Marci
Of Cronland

Prague, 19th August, 1666."

The last numeral of the date has been altered by pen from "5" to "6," obviously by Marcus himself. The emperor Rudolf II (1552-1612) was a scholar rather than a man of affairs; he neglected his duties as ruler of his realm in order to devote

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himself to the study of alchemy, astrology, and astronomy, and he was the patron of Tycho Brahe, Kepler, John Dee, and a host of other scientists and pseudo-scientists. He resided in Prague throughout most of his reign, where he assembled a great collection of books and art objects. Rudolf, after acquiring the book, apparently loaned or gave it to Jacobus Horcicky de Tepenecz (died 1622), whose name, "Jacobi à Tepenece," is written on the recto of the first leaf (erased, but easily visible under ultra-violet light). The form of the name shows that the book must have been in his hands after 1608, when the "de Tepenecz" was acquired by patent of nobility from the Emperor. Tepenecz was the director of Rudolf's alchemical laboratory and his botanical gardens.

Dr. Raphael (1580-1644), a lawyer and minor poet, who supplied information concerning the book to Marcus, was connected with the Imperial court under Emperors Rudolf II, Ferdinand II, and Ferdinand III, and thus was in an excellent position to have obtained knowledge concerning the codex. He was attorney-general of Bohemia under Ferdinand III.

Joannes Marcus (1595-1667), the writer of the letter, was Rector of the University of Prague, and a noted physician, mathematician, and orientalist. He was official physician to the Emperor Ferdinand III. In 1667 he was elected a corresponding member of the British Royal Society. He had studied under Kircher, at Rome.

The connection of the cipher manuscript with the famous Athanasius Kircher, S.J. (1601-1680), is especially intriguing. He was one of the foremost scholars of the Jesuit order, keenly interested in problems of decipherment and the author of three works on an attempted solution of the Egyptian hieroglyphics, and of another work (*Polygraphia*, 1663), on codes and ciphers in general. In the XXth century the codex was acquired by Wilfried M. Voynich, a dealer in manuscripts, in 1912, who discovered it in a chest "in an ancient castle in Southern Europe."

CONJECTURES CONCERNING THE EARLY HISTORY OF THE MANUSCRIPT

In his letter, Marcus says, "He (apparently the Emperor Rudolf) believed the author was Roger Bacon, the Englishman." Bacon (1214?-1294), famous scientist and philosopher of the Middle Ages, studied and taught at Oxford and Paris, and is believed to have died at Oxford. Professor Newbold, who considered this manuscript to be in the autograph handwriting of Roger Bacon, conjectured that his papers were acquired after his death by some English monastery; that the present one, on the dissolution of the monasteries after 1538, was acquired by John Dudley, Duke of Northumberland (1502?-1553); that John Dee (1527-1608) acquired it from the Duke or some other member of the Dudley family; and that Dee, who lived in Prague for several years and was personally acquainted with Rudolf II, sold it to him.

An interesting point is that John Dee, while in Bohemia from 1585 to 1588, possessed

"a book . . . containing nothing but hieroglyphicks; which book his father bestowed much time upon, but I could not hear that he could make it out"

(Sir Thomas Browne, quoting Dr. Arthur Dee, 1579-1651, the son of John Dee.). It is indeed very probable that the present volume was the one which Arthur Dee saw in his father's hands; it would seem from the tenor of this reference, that the elder Dee was trying to extract some meaning from the book. It is quite possible that the Emperor, after purchasing it, had entrusted it to him for decipherment. The word "hieroglyphicks" would not, of course, refer at the time to Egyptian writing specifically, but to any secret alphabet such as that of the present codex.

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Plate 4 is a photograph of the bibliographical description of the manuscript in the Kraus catalogue.

In the manuscript there are 125 pages of botanical drawings, 26 of astronomical (or astrological drawings), 28 of so-called biological drawings, and 34 of pharmaceutical drawings, nearly all accompanied by text. At the end there are about 20 pages of script without illustrations. *Plates 5 to 15* show examples of the appearance of the pages.

Plate 5.—The plant depicted here has been identified as some sort of Bindweed (*Convolvulus*).

Plate 6.—This seems to me a fairly natural representation of cross-leaved Heath (*Erica*).

Plate 7.—This has been identified as sunflower, giving rise to the hypothesis that the manuscript cannot be dated earlier than 1493, when Columbus introduced sunflowers into Europe. This identification has not been universally accepted.

Plate 8.—This is an example of the many drawings which appear to be composite and cannot be identified as any one plant. I should perhaps apologise for the lack of definition in some of these illustrations. This one was prepared from my photostat which was reproduced from Mr. Friedman's photostat, which was itself a copy of a photostat made many years ago by Father Petersen.

Plate 9.—This is one of the astronomical illustrations.

Plate 10.—This is one of the so-called zodiacal illustrations. There were presumably either one or two for each month, but the pages for two months seem to be missing. For each month there are 30 (or about 30) human figures round the edge of the circle.

Plate 11 shows two pages for April. One page has a black bull and 15 unclothed ladies, and the other, a white bull and 15 clothed ladies. All the zodiacal drawings carry the name of the month in the centre in a later hand and in readable script though the language has been disputed.

Plate 12.—This is one example of the illustrations in the biological part of the book. I have not myself studied these pages, and ideas as to their meaning advanced by specialists in medieval and early Renaissance history are completely outside my field.

Plate 13.—This drawing is an example of one of many pages which seem to comprise a sort of pharmacopeia.

Plate 14.—This is the first page. There is no title page, but this appears to be a table of contents, there being four paragraphs corresponding to the four illustrated portions of the manuscript.

Plate 15.—This is the final page and has on more than one occasion been assumed to be a key to a cipher used for producing the text as we

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see it. You will see that only one short passage is in the unknown script used for the rest of the manuscript and that there appears to be some evidence of Latin words and at the end an unfinished Old English or Old German sentence.

PROPOSED SOLUTIONS

There have been three published solutions, none of them generally accepted.

(1) William R. Newbold, professor of moral and intellectual philosophy at the University of Pennsylvania, began work on the manuscript in 1919 and in April 1921 announced that he had discovered the key to a cipher, that he was convinced that the author was Roger Bacon, and that he had decyphered portions of it. He said that his decyphermant proved that Roger Bacon had possessed both a telescope and a microscope, although history places the invention of these several centuries after his death, and further that one of the drawings depicted the great Andromeda Spiral Nebula, of whose existence he, Newbold, had been previously unaware. His solution, which was accepted at the time by Voynich and a number of scholars, was eventually demolished, particularly by Professor John M. Manly, Chairman of the English Department of the University of Chicago, in an article "Roger Bacon and the Voynich MS.," *Speculum*, July 1931, and now has no supporters. His complex method of decyphermant (I quote from an article by Mrs. Friedman in the *Washington Post* of 5 August 1962) "was reducible to nine steps. The first and last of these, without any consideration of the intermediate abstruse and confusing processes, are utterly devoid of precision and are incapable of yielding one and only one plain language text—a rigid requirement of any legitimate cipher method. His first step was to convert the individual strokes of each symbol into Greek shorthand, a process of which Newbold himself said: 'I frequently find it impossible to read the same text in exactly the same way.' The reason for this, palaeographers say, is that what Newbold saw as separate strokes of a symbol are merely the results of the cracking, uneven spreading and fading of the ink, and the condition of the vellum because of the manuscript's age." Newbold died in 1926, and two years later his literary executor published a full-sized book from his voluminous notes and worksheets—*The Cipher of Roger Bacon*.

Plate 16 is an illustration from his book showing his interpretation in the form of shorthand strokes of a letter of the script; the page illustrated is one of the astronomical drawings and the arrangement of the stars near the portion of script which the author has chosen for illustration suggests Aldebaran and the Hyades.

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The controversy over Newbold's solution left a legacy of ill-feeling which persisted for many years and which I found reflected in a letter which Charles Singer wrote to me in 1957.

(2) In 1943 a Rochester lawyer named Feely published a book entitled *Roger Bacon's Cipher; The Right Key Found*. Feely was the author of some published items in the field of the Shakespeare authorship controversy. His unmethodical method produced text in unacceptable mediaeval Latin, in unauthentic abbreviated forms.

(3) In 1946, a research scientist, Dr. Leonell C. Strong, published a different interpretation of part of the manuscript. He claimed to have decyphered part of two pages, one of them the Sunflower page shown in *Plate 7*. He said that his decypherment revealed to him that the author was Anthony Askham and that the plain language text was in mediaeval English. Again his mediaeval English is not acceptable to scholars. He did not reveal the details of his key but his description of the cipher method makes no sense to cryptologists. However, in the process of preparing this paper I came across the following curious fact. Among the many editions of an illustrated English printed work known generally as *Banckes's Herbal*, the first dated 1525, are two usually attributed to Anthony Askham, dated 1550 and 1555. Their title pages read:—"A little herbal of the properties of herbs newly amended and corrected, with certain additions at the end of the book, declaring what herbs hath influence of certain stars and constellations, whereby may be chosen the best and most lucky times and days of their ministration, according to the moon being in the signs of heaven, the which is daily appointed in the Almanac, made and gathered in the year of our Lord God 1550, the 12 day of February by Anthony Askham Physician." The strange thing about this is that the astrological additions promised the reader, appear nowhere in either edition. Anthony Askham, a physician and clergyman, also published a number of almanacs. I managed to get a sight of one of these in a Library of Congress microfilm but found it only to be a Christian calendar on half a dozen pages.

In 1950 I was introduced to the manuscript by my friend, Mr. William F. Friedman, who gave me photostats of a few of the pages to work on, chiefly the unillustrated pages at the end. From these pages I made a preliminary analysis of the text, disregarding all but the most commonly occurring symbols. For purposes of the present paper, I have found it necessary to substitute for the symbols conventional and quite arbitrary letters and figures, as shown at the top of *Plate 17*, very similar to the system previously devised by Mr. Friedman for discussion of the problem with a study group which he brought together for a short time at the end of World War II. You will see that I have limited the number of symbols to 17. The second

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symbols which I have placed at positions 1, 2, 15, 16 and 17, I have treated, rightly or wrongly, as variant forms. As a result of my analysis I made a report to Mr. Friedman in 1951 of which the following is the gist (only slightly revised).

"(a) Following are some notes on the common behaviour of some of the commonly occurring symbols. I would like to say that there is no statement of opinion below to which I cannot myself find plenty of contradiction. I am convinced that it is useless (as it is certainly discouraging) to take account at this stage of rare combinations of symbols. It is not even in every case possible to say what is a single symbol and what is not. For example, I am not completely satisfied that the commonly occurring A has not to be resolved into CI or possibly OI. I have found no punctuation at all.

(b) DZ and HZ appear to be infixes of D and H within T. The variant symbol represented by E appears most commonly at the end of a line, rarely elsewhere.

(c) Paragraphs nearly always begin with D or H, most commonly in the second variant forms, which also occur frequently in words in the top lines of paragraphs where there is some extra space.

(d) G occurs quite frequently as the initial symbol of a line followed immediately by a combination of symbols which seem to be happy without it in any part of a line away from the beginning. Otherwise it occurs chiefly before spaces very frequently preceded immediately by 8. Hence my belief that these two have some separative or conjunctive function. (I have to admit, however, that G also seems sometimes to take the place of O before D or H (though rarely, if ever, after 4); this is particularly noticeable in some of the captions to illustrations in the astronomical section of the manuscript—these most commonly begin OD or OH and it is here that we occasionally see GD or GH.)

(e) I have tried, for convenience of handling, to divide words into what I call "roots" and "suffixes." This arrangement is shown at the bottom of *Plate 17*. Regarding the second type of suffix, some of the combinations are so rare that I have been uncertain whether to take any account of them at all. Some are very common indeed. It seems to me that each of these combinations beginning A has its own characteristic frequency which it maintains in general throughout the manuscript and independent of context (except in cases where two or more A groups are together in series, as referred to later). These A groups, e.g., AR or AIIL, frequently occur attached directly to "roots," particularly OD, OH, 8 and 2. ODAIIL, 4ODAIIL and 8AIIL rank high among the commonest words in the manuscript.

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(f) There are however many examples of 2, 3, 4 or even 5 A groups strung together on end with or without spaces between them. When this occurs, there appears to be some selective preference. For example, AR is very frequently doubled, i.e., AR AR, whereas AIIL which is generally significantly commoner, is rarely found doubled. Perhaps the commonest succession of three of these groups is AR AR AE. AE very frequently follows AR, but AR hardly ever follows AE.

(g) O, which has a very common and very definite function in "roots," seems to occur frequently in "suffixes" in rather similar usage to A, but nearly always as OR and OE. OR AIIL is very common.

(h) The behaviour of the A (and O) groups has suggested to me that they may in fact constitute some form of spelling. It might be, for instance, that the manuscript is intended to demonstrate some very primitive universal language and that the author was driven to spell out the ends of words in order to express the accident of an inflected language. If all the possible A and O combinations can occur, then there are 24 possibilities. They may, however, be modified or qualified in some way by the prefixed symbols D, H, OD, OH, T, S, 8, 2, etc., and I have not so far found it possible to draw a line anywhere. This, coupled with ignorance of the basic language, if any, makes it difficult to make any sort of attempt at solution, even assuming that there is spelling.

(i) E, usually preceded by A or O, is very commonly followed by D, much less commonly by H, with or without a space between. In this connection, I have become more and more inclined to believe that a space, though not intended to deceive, must not necessarily be regarded as a mark of division between two words or concepts.

(j) Speaking generally, each symbol behaves as if it had its own place in an "order of precedence" within words; some symbols such as O and G seem to be able to occupy two functionally different places.

(k) Some of the commoner words, e.g., ODCCG, ODCC8G, 4ODCC8G, ODAIIL, ODAR, ODAE, 8AIIL, TC8G occur twice running, occasionally three times.

(l) I am unable to avoid the conclusion that the occurrence of the symbol C up to 3 times in one form of "suffix" and the symbol I up to 3 times in the other must have some systematic significance.

(m) Peter Long has suggested to me that the A groups might represent Roman numerals. Thus AIIL might be IIJ, and AR AR AE XXV, but this, if true, would only present one with a set of numbered categories which doesn't solve the problem. In any case, though it accounts for the properties of the commoner combinations, it produces many impossible ones.

(n) The next three plates show pages where the symbols occur singly, apparently in series, and not in their normal functions. The column of symbols at the left in *Plate 18* appears to show a repeating cycle of 6 or 7 symbols D (or H), O, 2, G, C, ? . In *Plate 19* the succession of symbols in the circles must surely have some significance. One circle has the same series of 17 symbols repeated 4 times. *Plate 20* also has an interesting column of symbols. In all three there are symbols which rarely, if ever, occur elsewhere.

(o) My analysis, I believe, shows that the text cannot be the result of substituting single symbols for letters in the natural order. Languages simply do not behave in this way. If the single words attached to stars in the astronomical drawings, for instance, are really, as they appear to be, captions expressing the names or qualities of those stars, there can hardly be any form of transposition system involved. And yet I am not aware of any long repetitions of more than 2 or 3 words in succession, as might be expected for instance in the text under the botanical drawings."

After reading my report, Mr. Friedman disclosed to me his belief that the basis of the script was a very primitive form of synthetic universal language such as was developed in the form of a philosophical classification of ideas by Bishop Wilkins in 1667 and Dalgarno a little later. It was clear that the productions of these two men were much too systematic, and anything of the kind would have been almost instantly recognisable. My analysis seemed to me to reveal a cumbersome mixture of different kinds of substitution. When I was attempting to trace back the idea of universal language, I came upon a printed book entitled *The Universal Character* by Cave Beck, London 1657 (also printed in French in the same year). Cave Beck was one of the original members of the British Royal Society and his system was certainly a cumbersome mixture.

Plate 21 shows the title page. His system is based on a dictionary code of about 4,000 words to which are allotted the numbers from 1-3999 in alphabetical order.

Plate 22 is a page from his dictionary covering the words "That (conjunction)" to "till or untill." When digital code-groups are unaccompanied by letters, they represent verbal infinitives, e.g., "to tickle"-3773. Groups are preceded by the letter R when a noun is indicated as in the case of most of the groups on this page; if the adjectival form is intended, the digital group is preceded by Q. In the case of words which the author regards as synonymous with words earlier in the alphabet, the earlier code-group is given, e.g., "to thinke"-1163, where "to cogitate" is found on an earlier page opposite 1163. Prepositions are represented by the corresponding word in Latin, e.g., "through"-*per*. Some very common words have trigraphic

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equivalents beginning S and T to be found in a separate list of about 175 such words; these are repeated in their alphabetical place in the main dictionary, e.g., "that"-SNA. There are also on this page "thou"-E, "thine"-HE, and "this"-HO; also "Thursday"-+5 1484, i.e., "number five day." Plurals are designated by placing the letter S immediately after the digital code-group. There are also many other circumstances, particularly in the case of parts of verbs, which necessitate the prefixing of up to three letters before the digital code-group as the example taken from Cave Beck's book shows (*Plate 23*). As each word or concept treated as a word consists generally of a combination of letters and digits, it is necessary to put a comma after it to delimit it. I have wondered whether G and 8G in the Voynich Manuscript might be accounted for as representing "comma" and "plural comma." (I am aware that 8 occurs in other contexts in the manuscript, but so does S in Cave Beck's system.) Curiously, in his example (*Plate 23*) his substitution for "days" is given as 14848, not 1484S, as one would have expected.

Cave Beck starts his preface as follows: "This last century of years, much has been the discourse and expectation of learned men, concerning the finding out of an universal character" If this is to be taken literally, it carries the idea of universal language back to about the middle of the 16th Century. I tried in 1957 to trace back the idea of universal character, but I had little time to devote to this research and the earliest evidence I was able to find is contained in the following extracts from two lives of Bishop Bedell, who died in 1642, one by Burnet, dated 1692, and the other by Clogy, dated 1682, referring to a man named Johnston.

"But the Bishop finding the man had a very mercurial wit, and a great capacity, he resolved to set him to work, that so he might not be wholly useless to the Church; and therefore he proposed to him the composing of an universal character, that might be equally well understood by all nations: and he showed him, that since there was already an universal mathematical character, received for Arithmetick, Geometry and Astronomy, the other was not impossible to be done. Johnston undertook it readily and the Bishop drew for him a scheme of the whole work, which he brought to such perfection that . . . he put it under the Press, but the Rebellion prevented his finishing it."

"My Lord gave him a platform which he observed; all the difficulty was about the syncategoramata. He styled his books with spell. I heard that some part of it was printed; but the rebellion prevented finishing."

It would seem that these events cannot be dated later than 1641.

It is, however, difficult to date the manuscript anywhere near as late as this. Charles Singer, in a letter to me, put the date at late 16th Century. Professor Panoffsky and the keeper of the manuscripts at the Cambridge Library both independently insisted on a date within 20 years of 1500 A.D., and the manuscript as we have it may be a copy of a much earlier document.

HERBALS

At this point I propose to undertake a short digression on the subject of manuscript and early printed herbals. This may be thought irrelevant and my treatment will certainly be very superficial, but, if the plain text of the Voynich manuscript belongs to the illustrations on the same pages, as we have a right to expect in the complete absence of evidence to the contrary, then much the greater part of that text is related to plants. However, I have to admit that to the best of my knowledge no one has been able to find any point of connection with any other mediaeval manuscript or early printed book. This is all the stranger because the range of writing and illustration on the subject of the plant world from the early middle ages right through into the 16th and even 17th centuries is very limited indeed.

The first significant name is Krateuas, the Rhizotomist (rhizotomist meaning "root-digger") who was body physician to Mithridates VI Eupator, the King of Pontus who was defeated by Pompey and took his own life in 63 B.C. Krateuas wrote a herbal in which plants were not described but were depicted in figures which were followed by brief discussions of the medical uses of plants. Some of this herbal has been preserved by Dioscorides who was a physician attached to the Roman army in Asia about the middle of the first century A.D., and who is much the most famous name as a herbal writer in classical times. He wrote in Greek the work usually known as *De Materia Medica*. One of the most beautiful and, I imagine, the most valuable manuscripts in existence is the so-called Juliana Anicia codex at Vienna, written about 512 A.D. for presentation to Juliana Anicia, whose father was for a short time western Roman Emperor in 472 A.D. Two facsimiles of this manuscript have been published, the second in five parts, of which the first two are in the Garden Library at Dumbarton Oaks. Part of the manuscript is a text of Dioscorides, and the whole is magnificently illustrated in colour. I have reproduced here in *Plates 24 and 25* two pages of the manuscript. Charles Singer, in a most interesting article in the *British Journal of Hellenic Studies* for 1927, has restored about ten of the original drawings of Krateuas from it.

Plate 26 shows Krateuas engaged in painting a Mandrake held by Epinoia, the genius of Intelligence, while Dioscorides beyond writes in a book. This representation of mandrake as a nude figure, male or female, with leaves sprouting from or replacing the head, persists in illustrated herbals into the era of early printed books and even into the 17th century, carrying with it a collection of superstitions, some of them to do with the precautions to be taken when digging it up.

In 1957 I paid visits to a few specialists in early herbals in England. Among them I saw the late Dr. T. A. Sprague in Cheltenham and

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showed him a few specimen photostats of herbal drawings from the Voynich manuscript, of which he had been previously unaware. As he looked at them he became more and more agitated and eventually said

"Do you know what you are asking me to do? I have spent the last twenty years of my life trying to identify the plant drawings in the Juliana Anicia codex when the names of the plants are given in Greek, Latin and usually Arabic, and you are asking me to identify these awful pictures."

One of the earliest illustrated printed herbals was the *Herbarium of Apuleius Platonicus* (printed in Rome about 1481) with Latin text. (This is not the Apuleius who wrote *The Golden Ass*). Virtually nothing is known of him, but his work is believed to have been originally written in Greek about 400 A.D. There are many extant manuscripts of it, including a finely illustrated translation into Anglo-Saxon about 1050 A.D., now in the British Museum.

But the three main herbal Incunabula, all originally printed in Mainz, are the Latin *Herbarius*—1484, the German *Herbarius*—1485, and *Ortus Sanitatis*—1491. This latter also appeared in translation as *Jardin De Sante* and *Gart Der Gesundheit*. There is a good facsimile of the German *Herbarius*. The woodcuts from all these are all rather stylized, obviously not drawn from nature.

Plate 27 is a typical illustration from the Latin *Herbarius*.

Plate 28.—I couldn't resist introducing this as a lighter note. It shows the woodcut of Narcissus from *Ortus Sanitatis* beside Lear's "Manypeeplia Upsidownia" from his *Nonsense Botany*.

Plate 29 was prepared from a copy of *Ortus Sanitatis* at Dumbarton Oaks, showing the female Mandrake picture and the text that goes with it.

A new era in the history of the herbal may be said to date from 1530 when the first part of *Herbarium Vivae Eicones* was published in Strassburg. This is known as Brunfels' herbal, and in it the plants are represented as they are. *Plate 30* shows a woodcut from this book.

Throughout the texts of all the early printed herbals (and presumably their forerunners in manuscript) runs the theme of the four elements and their natures—fire, hot and dry—air, hot and moist—earth, cold and dry—water, cold and moist. For instance, in the German *Herbarius* one finds on nearly every page a sentence such as "A finds this plant of the second degree of coldness and the third degree of dampness, but B considers it of the third degree of coldness."

In general, the illustrations in the early printed herbals are limited to two or three collections of stylized woodcuts copied over and over again in more and more degenerate form. The same superstitions persist. Probably the most fantastic is the story of the Barnacle Tree. According to one version, trees sprout from the wood of shipwrecks,

shells grow at the ends of the branches, and from the shells small geese gradually emerge and fly away.

Plate 31 is taken from Gerard's herbal—1597. Gerard claims to have seen this process in action with his own eyes on a small island in Lancashire.

I make no apology for this short survey of herbals. I repeat that my purpose is to interest a wider circle, and the text and illustrations of herbals of the 13th, 14th, and 15th Centuries are a most interesting part of the background of this odd book. To the best of my knowledge no one has seen any book, certainly no illustrated book, of the period which covers the wide range suggested by the drawings in it.

There are many aspects of the study of the manuscript which I have not covered in this paper. Little has been said about Roger Bacon, very little of John Dee, nothing at all of such figures as Ramon Lull. There is as yet no solid evidence that the manuscript is not by Roger Bacon or a copy of a work by him.

BIBLIOGRAPHICAL NOTE

- [1] W. R. Newbold (edited by R. G. Kent), *The Cipher of Roger Bacon*, University of Pennsylvania, 1928. This book was published after Professor Newbold's death from his notes and would probably not have been published at all had he lived longer since, after the first announcement of his decipherment of parts of the Voynich Manuscript, Newbold made virtually no progress at all. In spite of the fact that his solution is now quite unacceptable, the earlier part of this book should be read by anyone interested as it provides a more comprehensive background than any other source.
- [2] Agnes Arber, *Herbals, Their Origin and Evolution, 1470-1670*, second edition, Cambridge, 1953. This is the standard work on the history of herbals.
- [3] Robert T. Gunther, *The Greek Herbal of Dioscorides*, Hafner, 1959. The text of this book is an early English translation of *De Materia Medica* of Dioscorides, very fully illustrated with line drawings traced from the illustrations of the Juliana Anicia manuscript.

The first of these is a very large, dark, and somewhat irregularly shaped object, which appears to be a piece of wood or bark, possibly a fragment of a larger object. It is located in the upper left corner of the page. The second object is a smaller, more regular, and lighter-colored piece, possibly a piece of wood or bark, located in the upper right corner. The third object is a large, dark, and somewhat irregularly shaped object, which appears to be a piece of wood or bark, possibly a fragment of a larger object. It is located in the lower left corner. The fourth object is a smaller, more regular, and lighter-colored piece, possibly a piece of wood or bark, located in the lower right corner. The fifth object is a large, dark, and somewhat irregularly shaped object, which appears to be a piece of wood or bark, possibly a fragment of a larger object. It is located in the center of the page. The sixth object is a smaller, more regular, and lighter-colored piece, possibly a piece of wood or bark, located in the center of the page. The seventh object is a large, dark, and somewhat irregularly shaped object, which appears to be a piece of wood or bark, possibly a fragment of a larger object. It is located in the center of the page. The eighth object is a smaller, more regular, and lighter-colored piece, possibly a piece of wood or bark, located in the center of the page. The ninth object is a large, dark, and somewhat irregularly shaped object, which appears to be a piece of wood or bark, possibly a fragment of a larger object. It is located in the center of the page. The tenth object is a smaller, more regular, and lighter-colored piece, possibly a piece of wood or bark, located in the center of the page.

Plate 1.

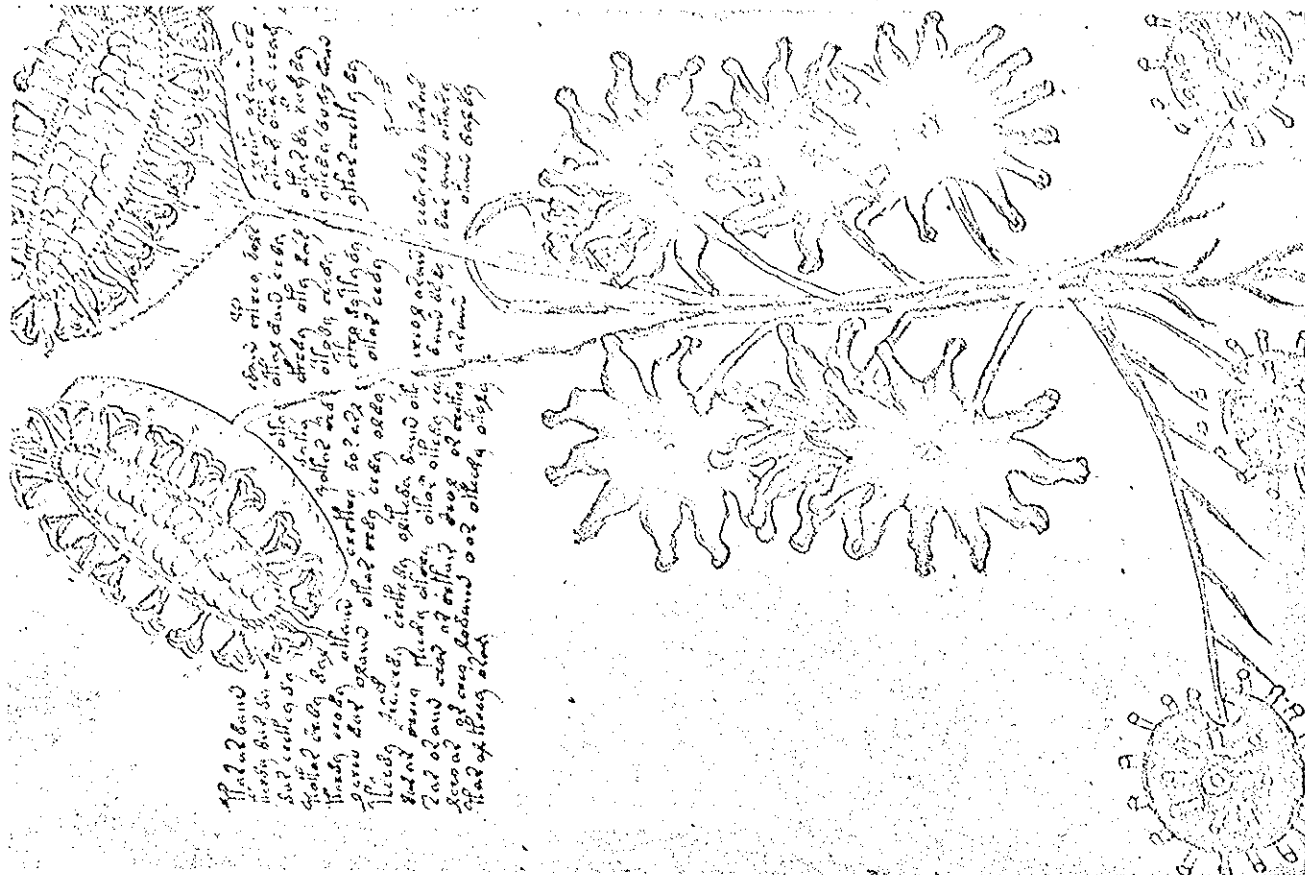


Plate 2.

*Precedere et Eximie Dne
in Christo Patet*

"THE MOST MYSTERIOUS MANUSCRIPT IN THE WORLD"

THE ROGER BACON CIPHER MANUSCRIPT

(BACON, ROGER ?) Cipher manuscript on vellum. Text written in a secret script, apparently based on Roman minuscule characters, irregularly disposed on the pages. 102 leaves (of 116; lacks 14 leaves), including 7 double-folio folding leaves; 5 triple folio folding leaves; and one quadruple folio folding leaf. With added signature marks (of the XVth or XVIth century), and foliation (of the XVIth or XVIIth century) 1-11, 15-58, 65-75, 75-90, 95-96, 99-108, 111-116. With about 400 drawings of botanical subjects, including many of full-page size; 55 drawings of astrological or astronomical subjects, plus about 350 single star-figures; and 42 (biological?) drawings, most of which include human figures. The drawings colored in several shades of green, brown, light yellow, blue, and dark red. Large 8vo (c. 250 x c. 160 mm.). Old limp vellum covers (now detached). From the libraries of John Dee (?), the Emperor Rudolph II (reigned 1576-1611); Jacobus Horcicky (Sinapius) de Tepenecz; Joannes Marcus Marci of Cronland (1666); Athanasius Kircher, S. J.; and Wilfrid M. Voynich. Accompanied by an Autograph Letter signed by Joannes Marcus, presenting the book to Athanasius Kircher.

No place or date, (XVth century, or earlier?).

An enigmatic mediaeval manuscript, which for over forty years has baffled the scholars and cryptographers who have attempted to wrest its secrets from it. It has been termed by Professor John M. Manly, who made a detailed study of it, "the most mysterious manuscript in the world."

Plate 4.

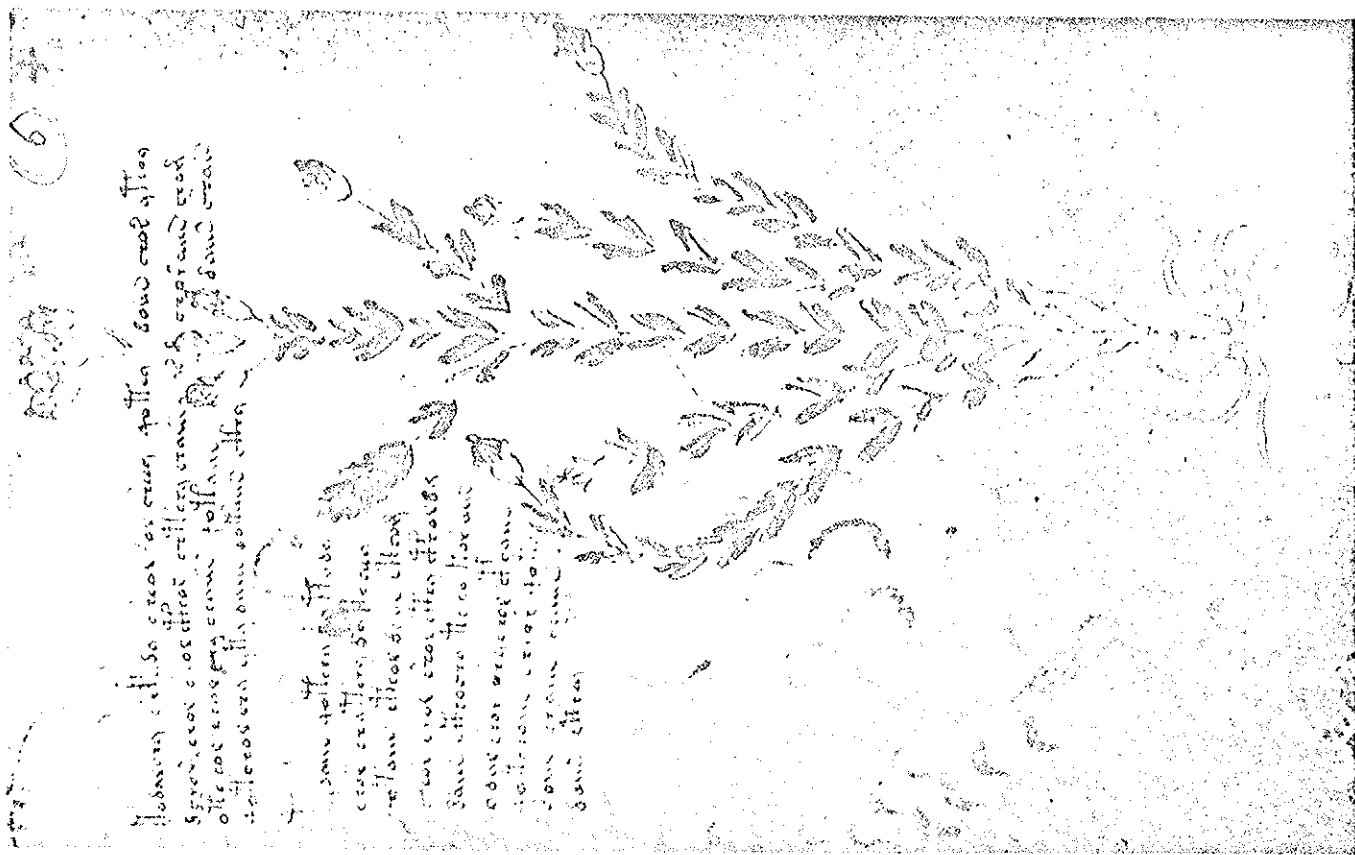
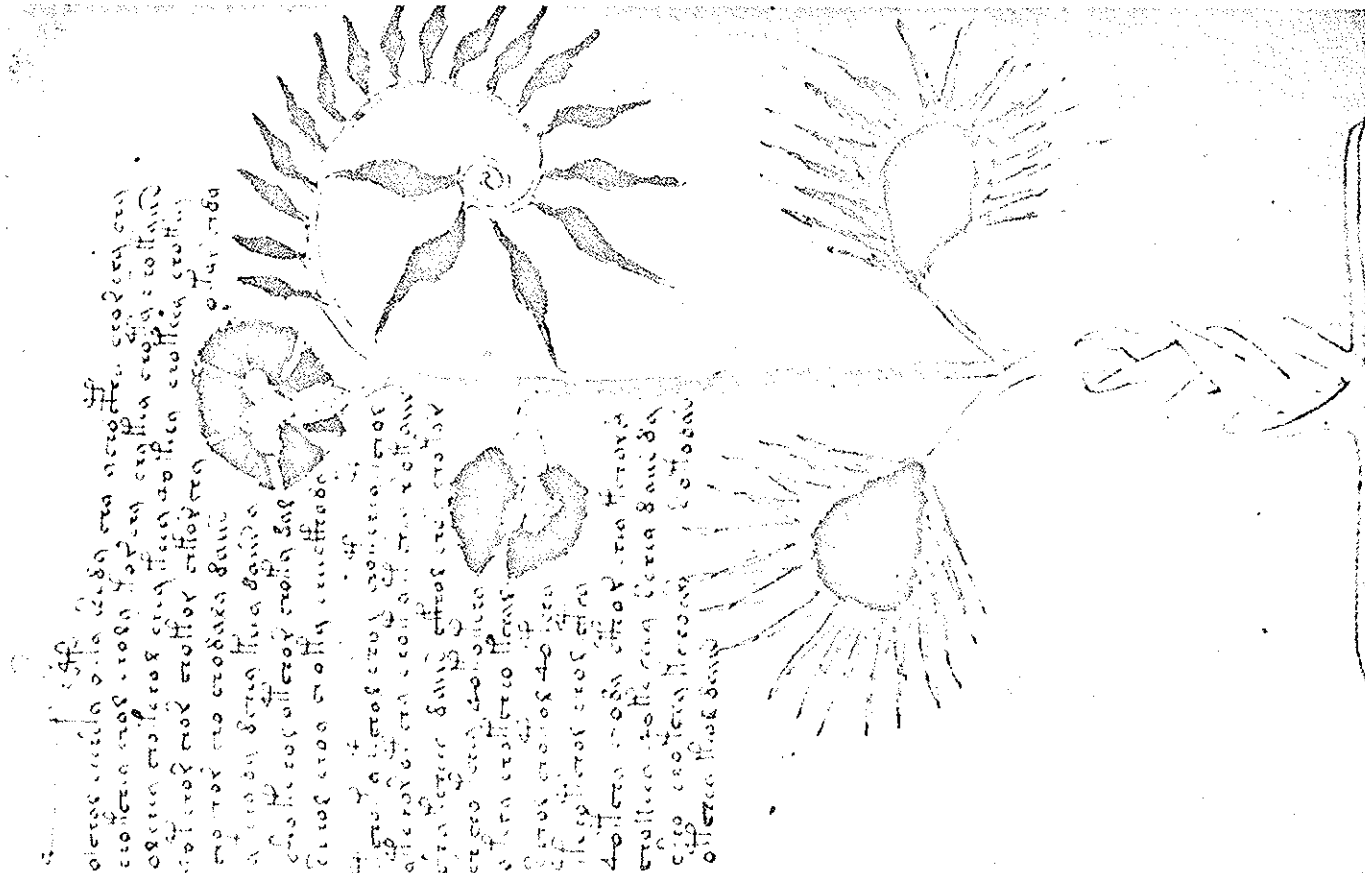
*librum hunc ab amico singulari mihi testamentis relictum, max-
ime tibi amiceissime Athanasi Kircheri ubi primum possidem capere, animo des-
tinavi. Siquidem perfectum habui a nullo mihi attulo legi potest. Sed si
aliquando per litteras ejusdem libri dum perfectior judicium tuum par-
te aliqua libri a se descripta et tibi transmissa, ex qua reliqua a te legi
possi perfectam habui, verum librum ipsum transmittere tam reu-
labet, in quo descriptando potest indefectum laborem, uti manifestum ex
ceratibus ejusdem huius tibi transmissis, nunc prius huius libri quam
vis de vinum, sed. Verum labor mihi frustraneus fuit, siquidem non
mihi suo perfectior habebatur, nunc ergo te effectus indicium,
nunc tibi habebatur, nunc tibi felicitate parump. recte tibi
nunc tibi habebatur, nunc tibi felicitate parump. recte tibi
O. E. color Raphaeli Terentiano terti Regis tam diem in lingua boemia
instructor dictum librum tibi Rudolpho Imperatori, pro quo ipse labor
qui librum attulisset 600 denarios protulerat, Rethorem vero ipsum pa-
labat esse Rogerium Baconem Anglem. ego judicium meum fructu-
perbo. in vero quid nobis mihi sententiam habina, caput faciem et fra-
tis me totum amantem manent*

Ad te vestre

Joannes Marcus Marci

Joannes Marcus Marci

*Page 59, August 11
1708*



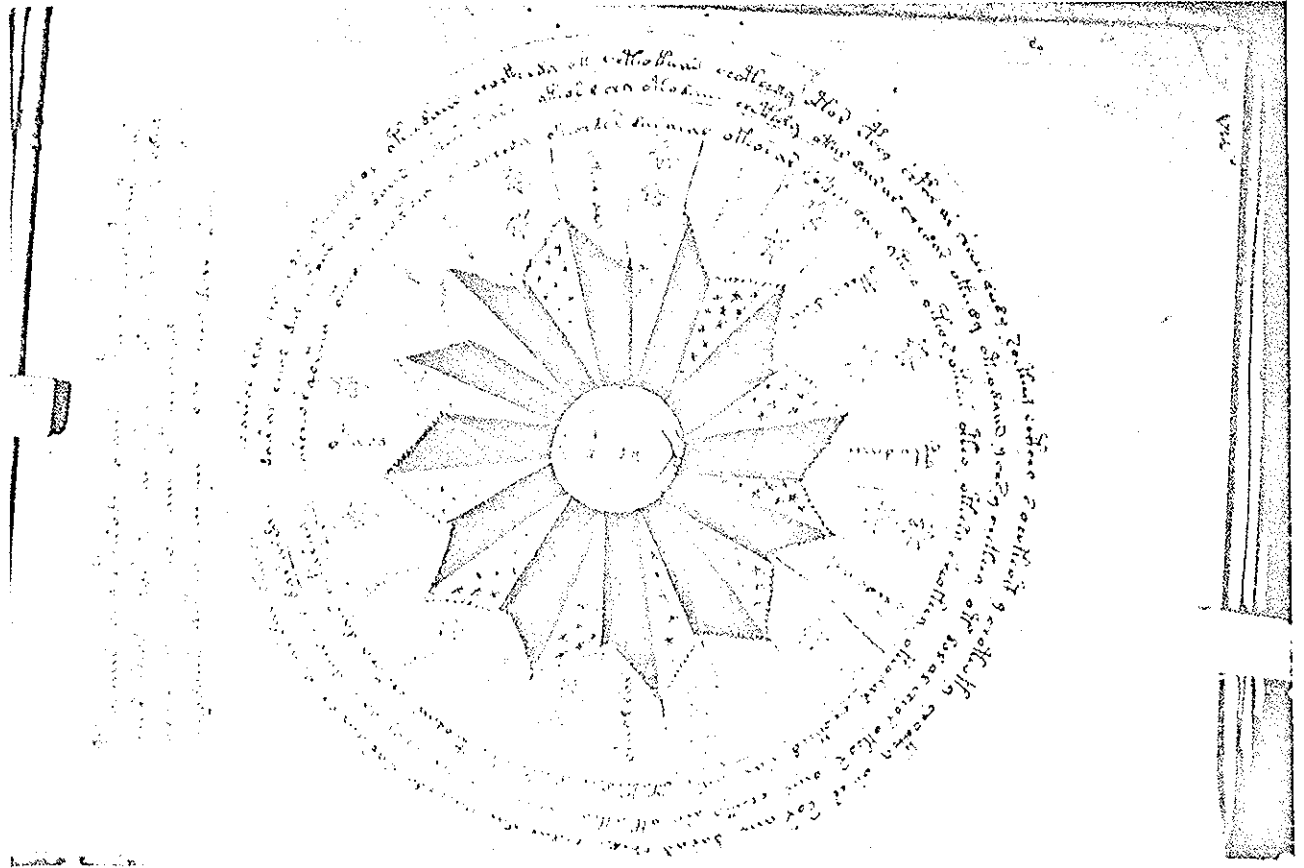


Plate 9.

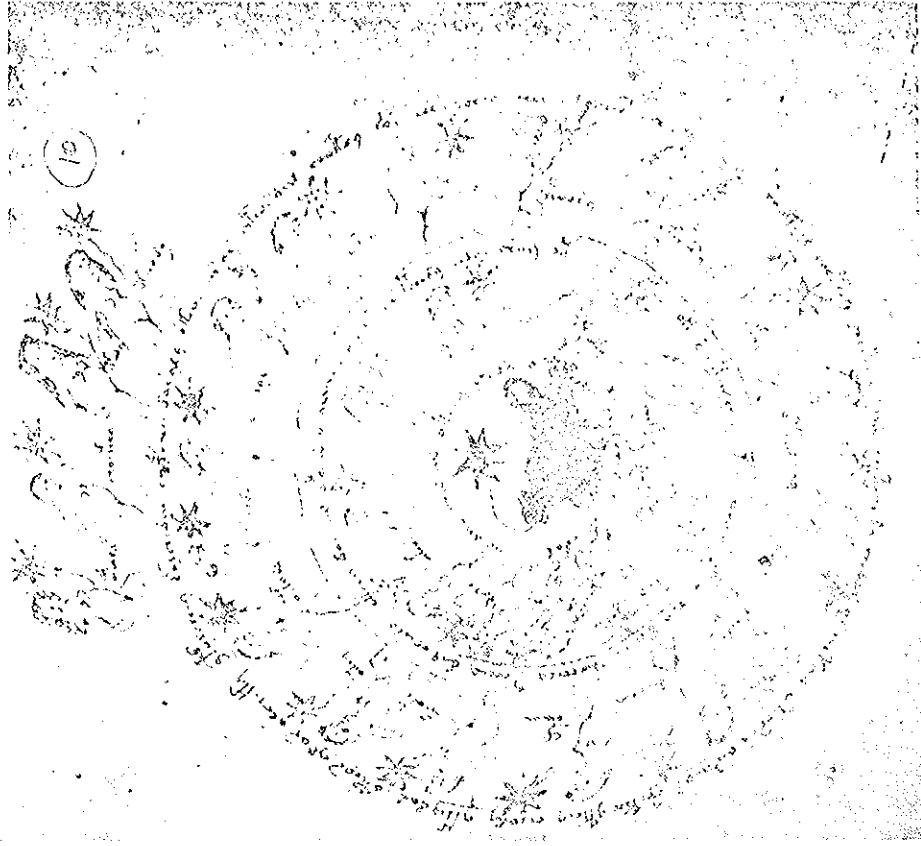


Plate 10.

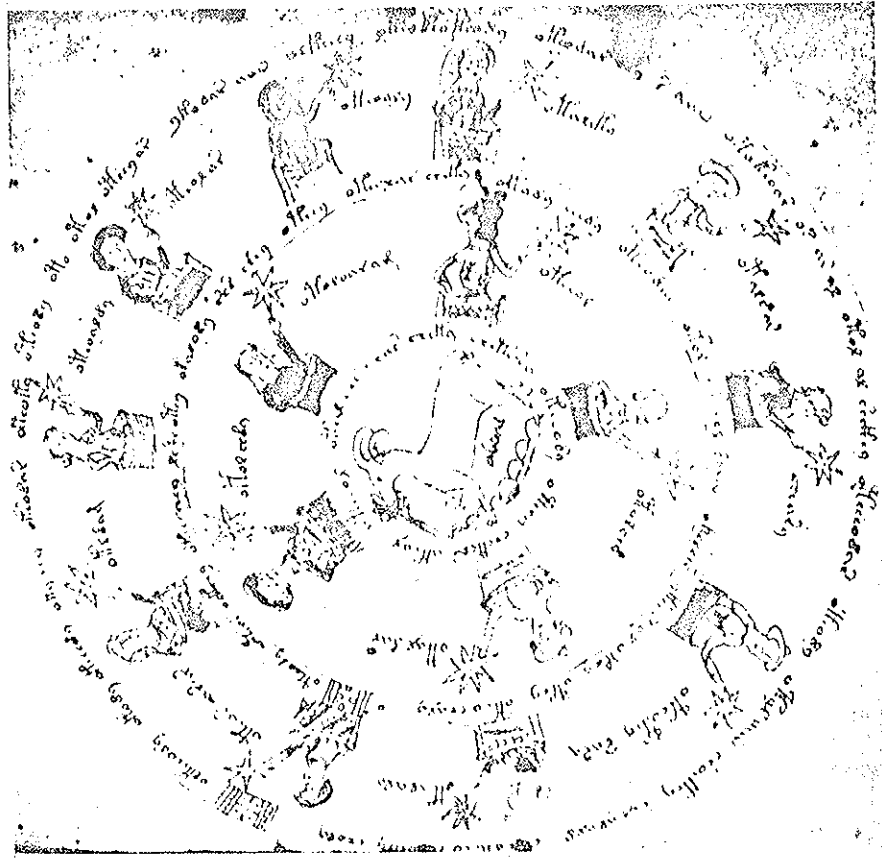


Plate 11b.

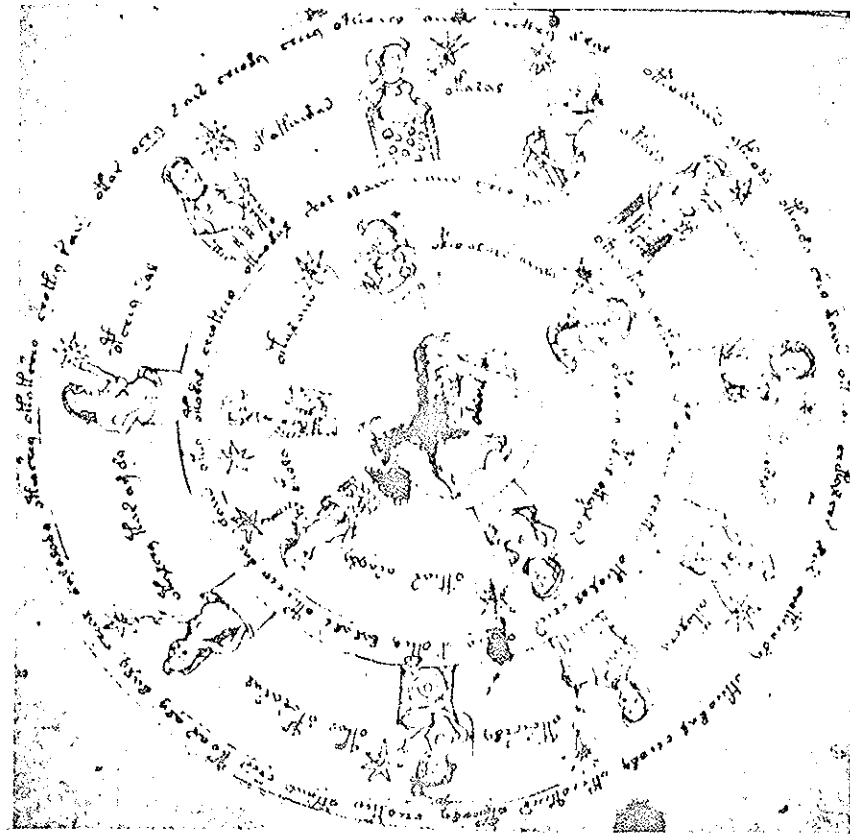
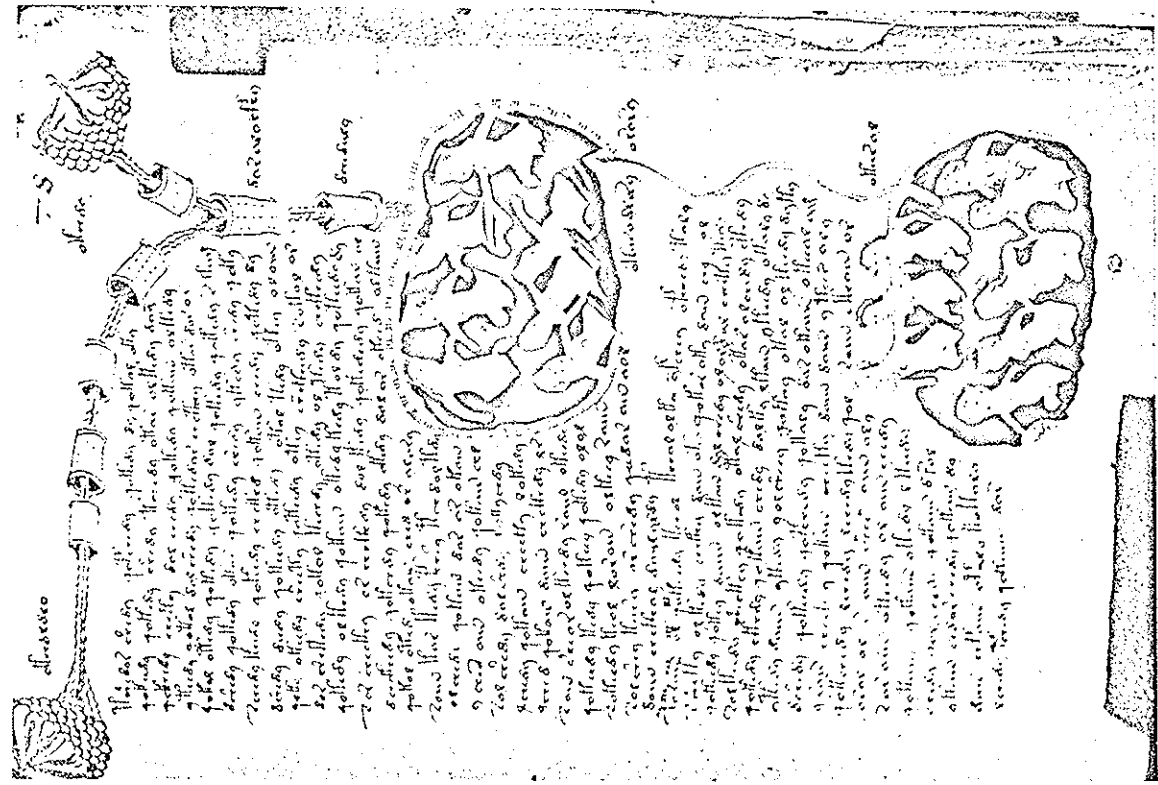
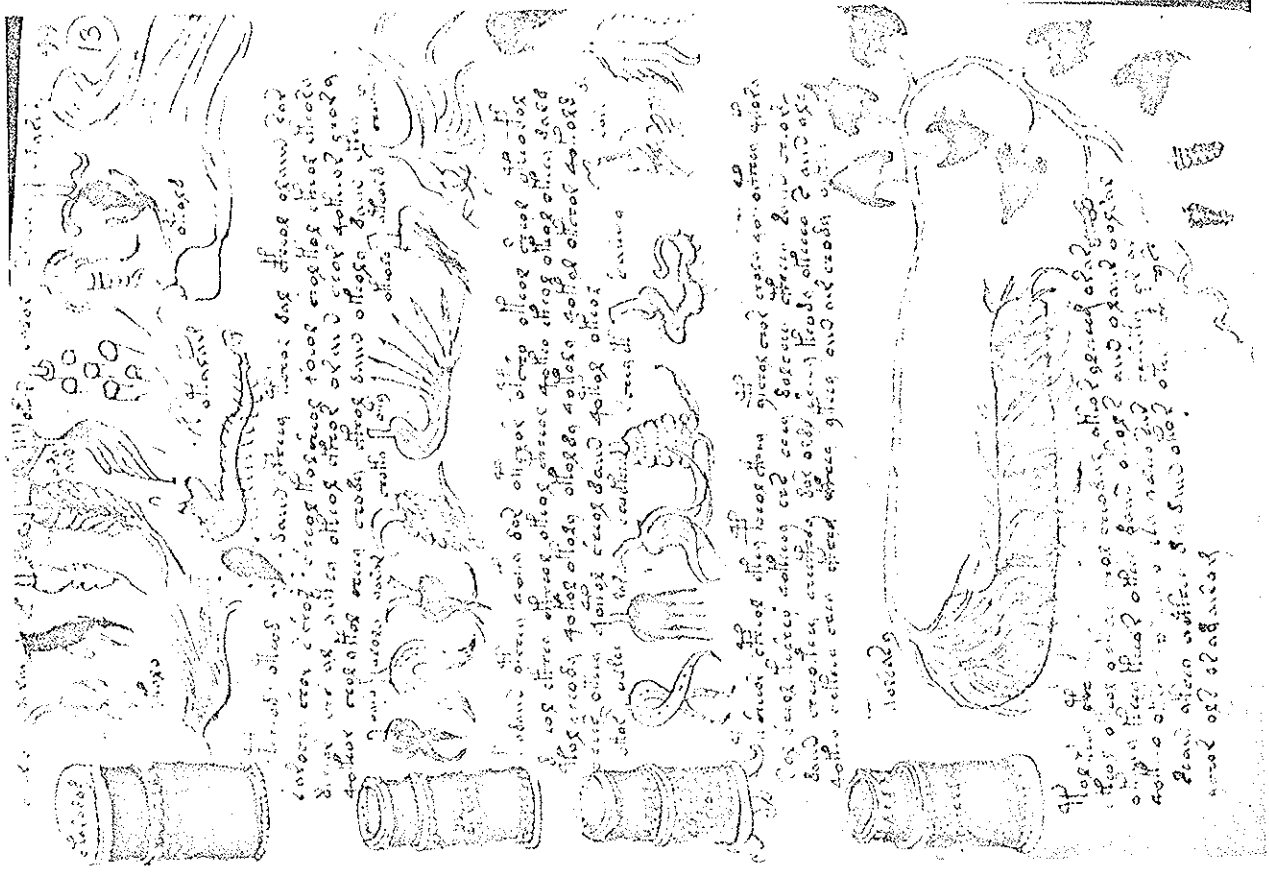


Plate 11a.



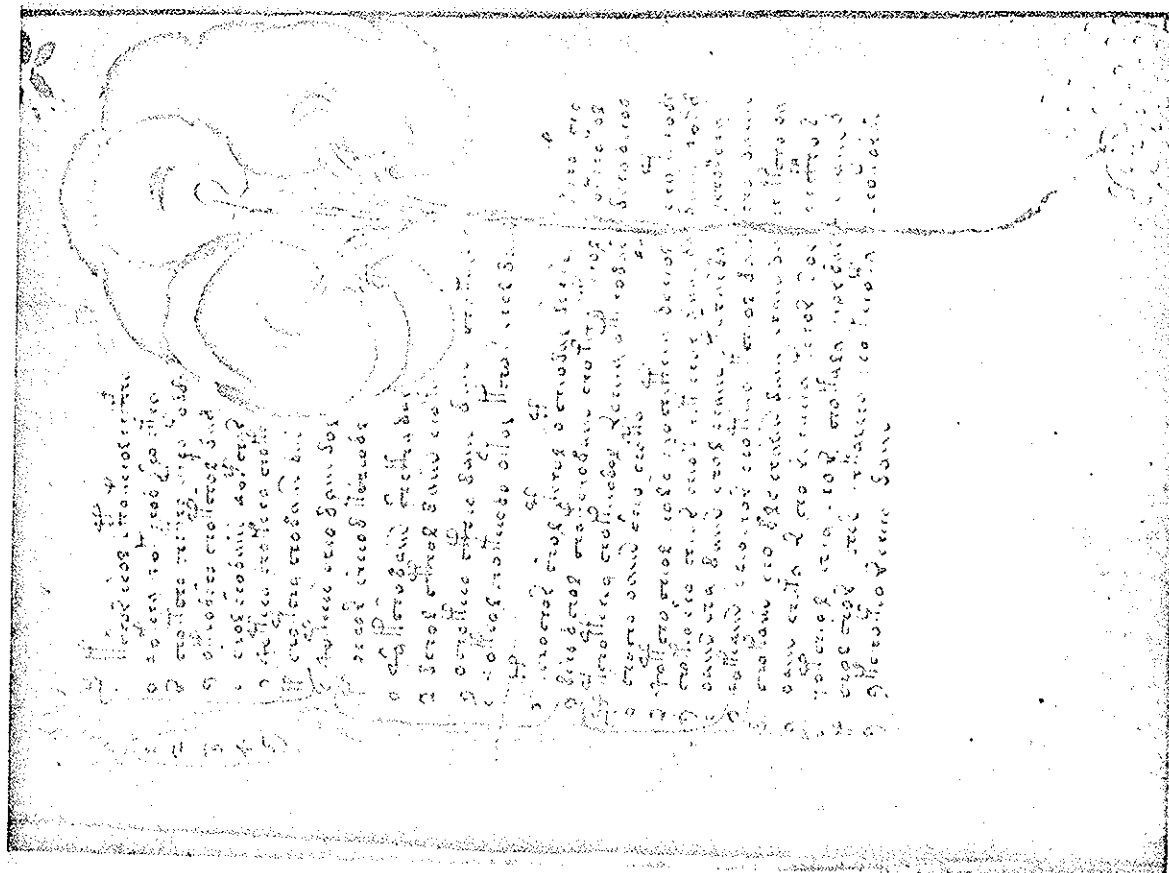


Plate 18.



Plate 19.

THE UNIVERSAL CHARACTER

By which all the Nations in
the World may understand
one anothers Conceptions,
Reading out of one Common
Writing their own
Mother Tongues.

A N I N V E N T I O N Of GENERAL USE,

The Practise whereof may be Attai-
ned in two Hours space, Observing the
GRAMMATICAL DIRECTIONS.

Which CHARACTER is so contri-
ved, that it may be Spoken as well
as Written.

By Cave Beck, M.A.

L O N D O N,

Printed by W. Stansfeld, at the 'Millum Press', and
by J. W. Smith, in Ipswich, 1657.

Page 31

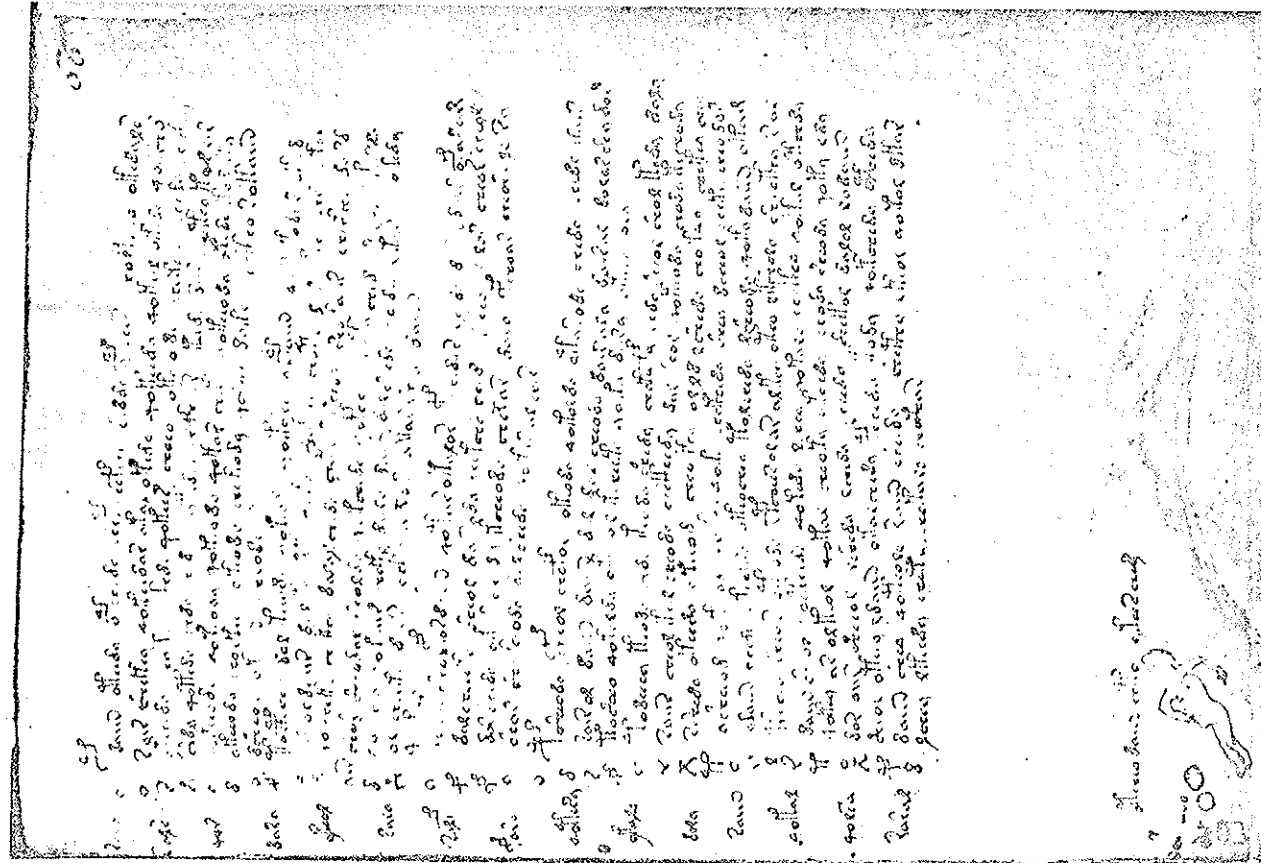


Plate 20.

that conjunct	sná	to threaten	r 215
to thatch	3757	to thresh	r 1913
to than, no r 261		to thrive	v. r 2612
a theater, tam	480	thrift or frugality	r 2016
a theefe	p 1745	the throat	r 874
then adverb of time	fni	a throne	r 2436
then in comparison	fno	to throbb	r 116
thence	fnu	to throng, v. <i>Cressa</i>	r 1399
Theology	r 1606	a thresle bird	3769
therefore	spa	to throw or cast	927
there	fne	thrums	r 3770
a Thesls	3182	a thruft bird	r 3771
thicke	q 802	to thruft	r 1400
the thigh	r 1738	a thumbe, +1,	1907
a thiller of a Cart	r 3759	to thumpe or knocke	673
a thimble	r 3760	a thunderbolt, fure	624
thinne	q 312	thunder	r 624
thine	he	Thursday	+5, 1484
a thing	r 2069	to thwack, ant	508
to thinke	r 1163	thyme herb	r 3772
to thirst	r 1654	to tickle	r 3773
this	ho	the tide	r 3774
a thistle	r 3761	tidings	r 3775
thither	spe	to tye or binde	302
athong	r 3762	tiffany	r 3776
athorne	r 3763	a tiger	r 3777
a white thorne	r 3764	a tick of a bed	r 3778
a blacke thorne	r 3765	a tick worne	r 3779
athorne-backe fish	r 3766	a tile	r 3780
athorpe or village	r 3767	a gutter tile or rooffe tile	
through	per		r 2197
thou	e	to till or allure	r 138
thraidome	r 626	to till the ground	1422
thrend	r 3768	till or untill	spa
threadbare or old	208		atill

An Example of writing and speaking the fifth Commandement.

Honour thy Father and thy Mother

Writ. { leb 2314 P 2477 and pf 2477

Speak. { leb torebno, pee tofosenfen, & pif tofosenfen

That thy days may be long

sná, her 14848 mb 1716

sná heronforafos, mib onfenónfic

In the Land which the Lord

in p 1699 vip 2529

in ponieninnin vip tohtónin

Thy God giveth thee

hep 306

hep treófic

pee b 510

pee befóno

*Note, for Euphony sake or the better sound, the letter [t] in [tre] may sometimes be left out and [t] in [at] may for the same cause be omitted or changed into the Consonant following as onforáfo or onforáffo, which I berry is usually taken in all languages as Command for Commend assemble for assemble.

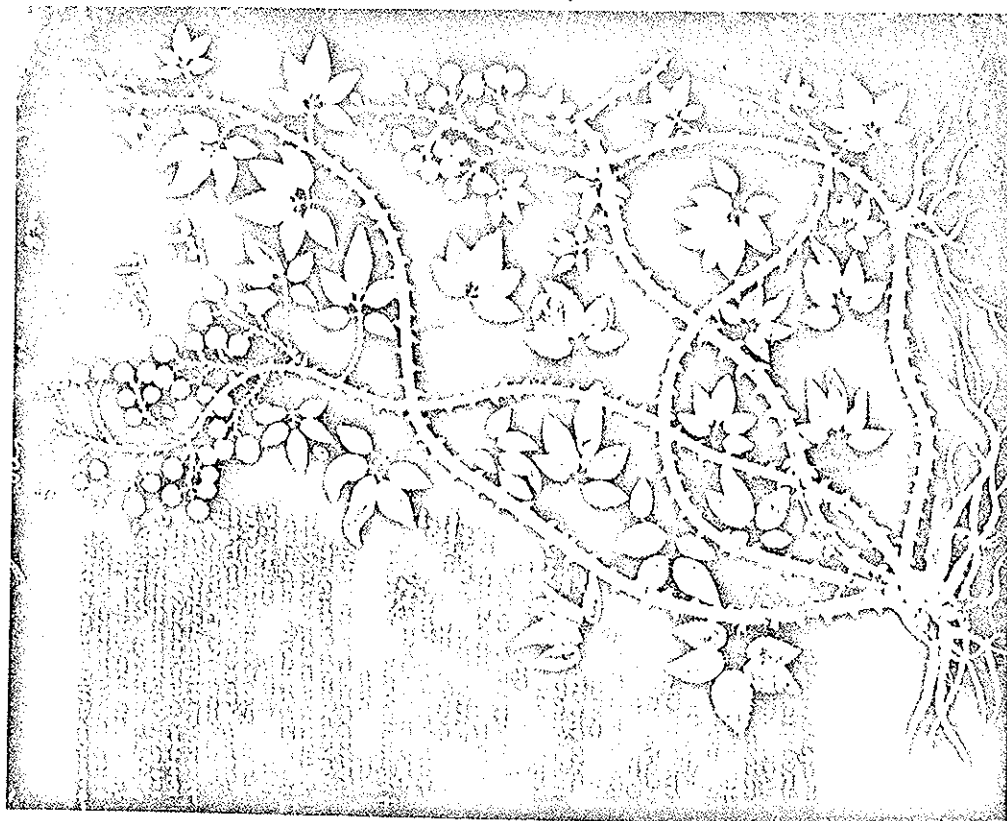


Plate 24.

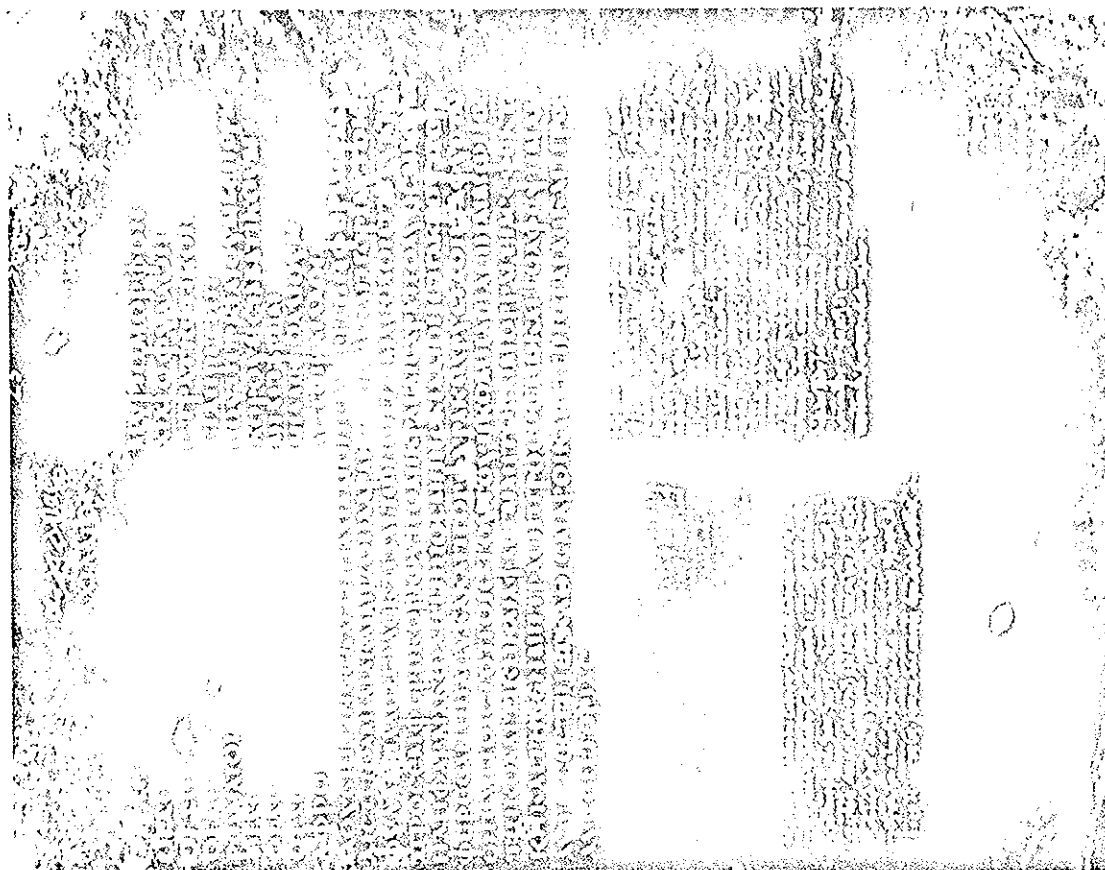


Plate 25.



FIG. 2.—TRACTO FROM THE JULIANA ANICIA CODEX OF 512, No. 5 v.
Epincia holds a mandrake in her hand. Kratonas is painting it, while Diokurides writes an account of it in a codex. In the original figure much of the paint has scaled off and our restoration is conjectural in places.



BRIONIA

Fig. 6. "Brionia" [*Latin Herbarius* (Arnaldus de Villa Nova, *Tractatus de virtutibus herbarum*), 1499]

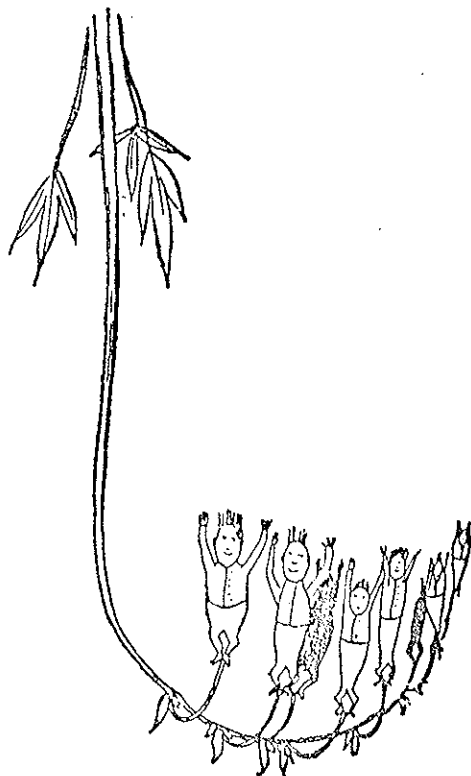
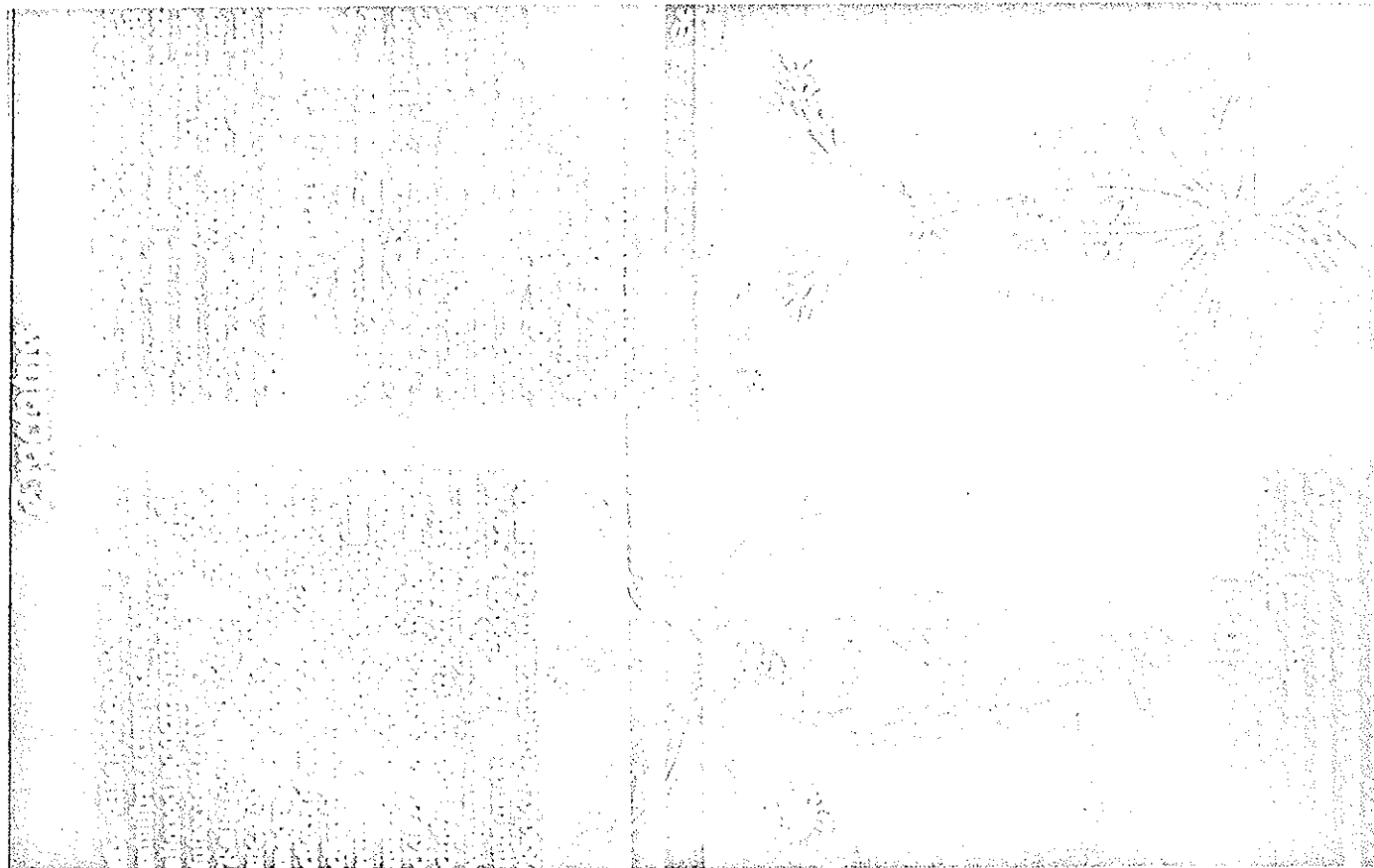
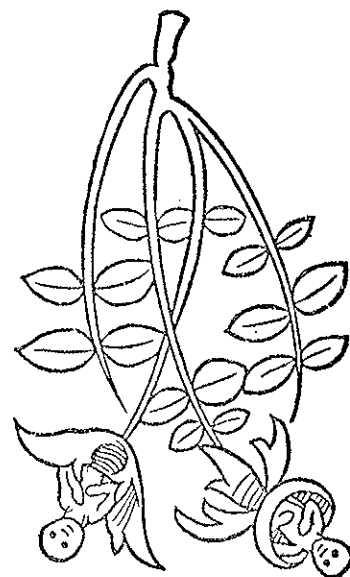


Plate 28.



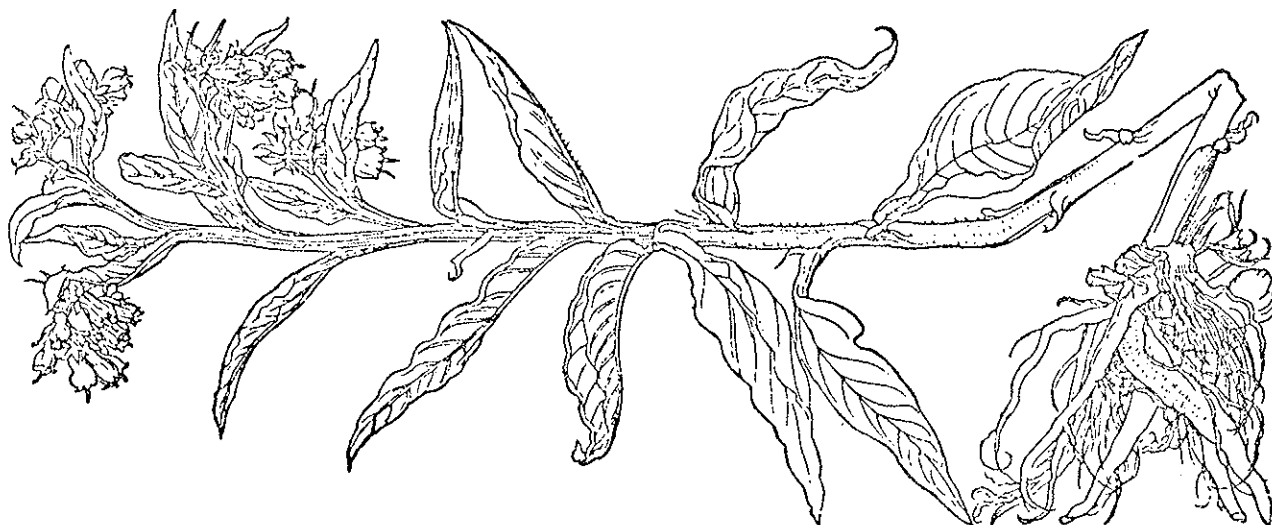


Fig. 22. "Walwurtz männlin", *Symphytum officinale* L., var. *purpureum* Pers., Comfrey [Brunfels, *Herbarum vivae icones*, vol. 1, 1530] Reduced

The breede of Barnakles.

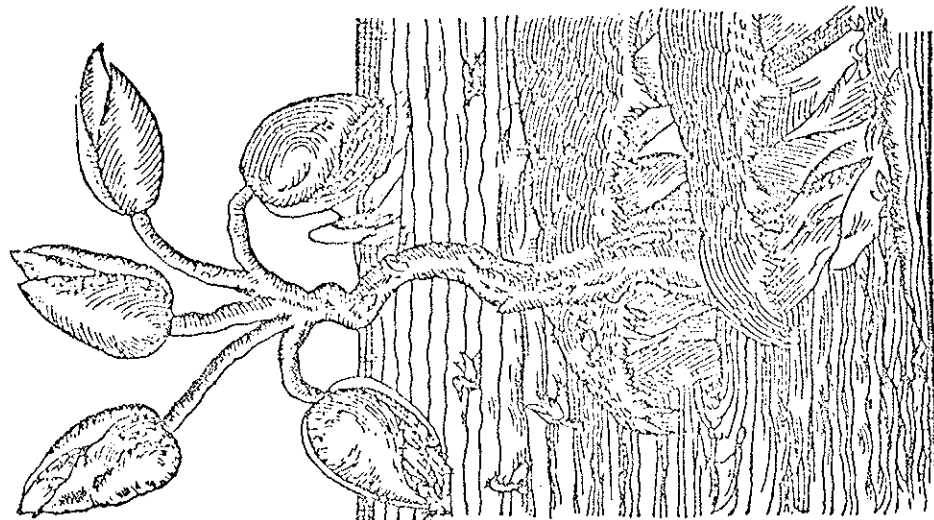


Fig. 60. "The breede of Barnakles" [Gerard, *The Herball*, 1597]