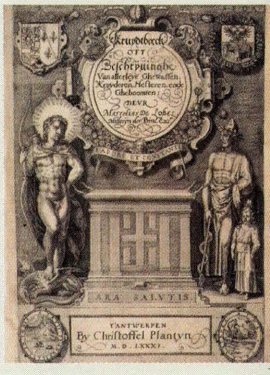
III

BOTANICAL PRACTICE AND AGRICULTURAL DEMANDS IN EARLY MODERN EUROPE: THE CONTRIBUTION OF REMBERTUS DODONÆUS

Mauro Ambrosoli
Università di Udine



This paper will discuss the works and the activities of Dodoens in respect of (1) his study and travels in continental Europe associated with de l'Escluse, (2) Dodoens's and L'Obel (de Lobel)'s book production and botanical practice in England, (3) the English translation of Dodoens's *Cruijdeboeck*, practical information and the English agricultural demands, and (4) the impact of Dodoens's books on seed production and the interaction with a developing agriculture in the early seventeenth century.

1 Preliminary remarks

To evaluate the contribution of Rembert Dodoens to the construction of botanical discourse we must keep in mind that he belonged to the second generation of European botanists. Since the formal teaching of botany took place in the faculties of medicine, these scholars were mostly interested in medical botany. They were doctors of medicine themselves and eager to obtain top positions as private doctors of the Emperor, the Pope and other monarchs. Others, more simply, were active in the major hospitals of their days. Dodoens was a contemporary of scholars such as de l'Escluse, L'Obel, Anguillara, Mattioli, Cesalpino, d'Aleschamps, Gesner and the brothers Bauhin, to name but a few. As a result of their work as botanists, they all collected regional floras out of local specimens, which became the base of European botany and provided the general information for what was due to become botanical taxonomy. Dodoens himself made a valuable attempt towards a natural classification and de l'Escluse's contribution was particularly important in respect of regional European floras thanks to his extended travels from Portugal to Hungary.[1]

Practical research was pushing botanists and scholars to exchange

written information and samples of specimens, plants and seeds, to find a solution for the many new problems of taxonomy, faced by Renaissance scientists, who were operating at an international level. At the same time new fractures were opening in mid-sixteenth century Europe even in the small world of men of science.[2] To appreciate the role of Rembert Dodoens and his contribution to the organisation of modern botany, we must keep in mind the social dimension of botanical discourse. I wish to illustrate how political and cultural divisions, which occurred in sixteenth, and early seventeenth century Europe, made the creation of botanical discourse more difficult and delayed the adoption of an international classification.

The growing demand for a complete botanical treatise was a common feature of the European book market. The botanists mentioned above performed a very useful task: they offered the European public general works and comments upon the plants that had been described in Greek and Latin (and later Arab) medical tradition, to which they added a mass of specialised information collected from direct experience. Furthermore, the public for the big (and expensive) botanical treatises was growing after 1550: whilst first editions were generally written in Latin and published everywhere in Europe, numerous translations into Italian, French, German and Dutch, Czech, Polish, English and Spanish frequently appeared in print. Although these numerous editions contained many differences vis-à-vis the original works, the translations did enhance the chance of European botany becoming a fully-fledged science rapidly. These translations helped some plant names to become more widely used than others in the description of old and new plants. In this process, famous institutions, such as the botanic gardens of Padua or Leiden, the Hôtel Dieu in Lyon or the Vatican Garden in Rome became better known and were visited more often by scholars and gentlemen who had acquired an interest in botany.

A solution to the twin problems of information (the great number of new plants never described before) and nomenclature (which names had to be given to plants unknown to the ancients) might possibly be found thanks to practical experience and some kind of agreement among scientists.[3] Although various social groups throughout Europe (male and female members of the religious orders, gentlemen, scholars, but also gentlewomen and housewives) were developing new interests in the natural environment, which were founded on practical experience, scientific unity was a long way to come. Local and regional eco-

nomic and cultural forces quickly responded to this scientific demand even in the midst of a very awkward political situation: the Emperor Charles V and his opponent Francis I of France were throwing every available resource into their epoch-making contest. As a result of

this political polarisation, economic and scientific competition grew stronger around regional centres of power.

Furthermore, Dodoens's contribution endured into the following generations thanks to the numerous editions printed by Plantin. Many of the scientific problems connected with Rembert Dodoens's activities, and somehow brought to light by his work, found a solution in the following decades thanks to the interests and the exacting demands made by a larger public of consumers. Rembert Dodoens's achievements were a good representation of the possible solutions, that were available to a developing discipline in an age of deep crisis. My first acquaintance with Rembert Dodoens dates back to some years ago when I was working on the agricultural revolution in Western Europe and pointed out that the growth of botany preceded and aided agricultural modernisation during the sixteenth century. Rembert Dodoens's contribution to the creation of a botanical discourse was founded on his botanising journeys, on his collections of fresh and dried specimens sent to him by others, on his travels in Central Europe, but also on the position of Antwerp in the world economic system, and particularly Antwerp's place in the European grain trade.[4]

In the introduction to *De frugum historia* (1552), Dodoens dedicated the work to Viglius Zuichem, president of the State Council of the Netherlands, to whom he had been introduced by his cousin Joachim Hopper, and declared that he was complying with the requests of many Belgian and foreign friends to publish the part about cereals and legumes, which he was preparing for the *Cruijdeboeck*. In this first work, Dodoens remained faithful to the medieval tradition and, among other things, made clear the value of cereals to keep one's health, but warned his readers against eating rotten wheat, because of the hazard of getting scurvy. His descriptions of lesser-known grains, such as panic, sorghum, rice and maize were full of details and useful contemporary nomenclature. In the same category of healthy foodstuffs for human and animal consumption were also listed various kinds of beans and peas, both cultivated and wild varieties. Dodoens was in a position to make valuable remarks about the garden cultivation of many of these imported grains and legumes by the Flemish peasantry and keen herbal-

ists, thanks to the multiple trading connections of Antwerp with Spain and hence Spanish America on the one side, and Northern Europe and the Baltic on the other. Unfortunately, Rembert Dodoens lived in a time when Western Europe was split by religious and political divisions and the Low Countries were at the heart of these divisions. I believe that these religious and political cleavages even manifested themselves in the scientific solutions proposed by botanists.

II A brief genealogy of European botany in the sixteenth century

I shall approach Rembert Dodoens's contribution from the viewpoint of cultural history. Botany benefited greatly from improvements in printing and engraving in the early decades of the sixteenth century. The circulation of Rembert Dodoens's scientific achievements was made possible by the development of printing in the late sixteenth century. Plantin could easily sell the botanical books of Dodoens, although some works came out during very turbulent years.[5] Plantin printed 800 copies of Rembert Dodoens's *Stirpium historiae pemptades sex* and illustrated books usually reached issues of about 400 to 800 copies in the same century (probably this number remained fairly stable until the eighteenth century).[6] Although the first generation of botanists-humanists such as Ermolao Barbaro (1454-1493) and Jean Ruel (1474-1537), held different opinions on particular points, they fulfilled the function of discussing classical (i.e. Greek and Roman) botany and made it available to the following generations of scholars. It was the German books printed in the 1530s, which enlarged the market for the herbals thanks to the superior quality of their illustrations and to their vernacular nomenclature. But the works of Brunfels, Bock, Fuchs, Cordus etc., came out of Lutheran Germany (for example, Brunfels supported his work as a botanist with the income from the sale of his own protestant pamphlets[7]) and were therefore looked upon with suspicion, especially in Roman Catholic Italy.

During the same decades, Italian universities at Pisa, Padua and Pavia, as well as Cosimo de Medici in Florence created the first botanical gardens to support medical teaching;[8] yet Italian botanists remained firmly attached to Dioscorides' texts for the identification of the European flora. In the short run this strict conformity to the classical model reinforced the division with botanists of northern Europe. Most illustrious botanists throughout Europe looked to the classical heritage

with respect, and a visit to Italy or stay at one of its major universities, Bologna or Padua, was an obligation for anyone who aspired to a scholarly career. Dodoens himself is said to have travelled to Italy (as well as France and Germany), at least briefly after his graduation from university: these were the same years when Luca Ghini lectured on the *Simples* at the university of Bologna. Many European botanists considered Luca Ghini a master (for example: Valerius Cordus from Saxony spent two years studying with Ghini in Bologna, then travelled to Padua and Ferrara, 1542, went as far as Rome, visited everything and died in the city in 1544;[9] often the Englishman Turner referred to Ghini as "my master").[10] Although many botanists from northern European regions thought that Theophrastus' and Dioscorides' writings (which were the foundation of botanical teaching at the universities) contained very important observations on the natural history of plants and pharmacopoeia, yet they found Dioscorides' selection of plants biased and related to a precise region, Asia Minor, where he had served as a surgeon to the Roman imperial army (first century A.D.).

In the second half of the sixteenth century German and northern European botanists were discovering families of plants that were not known to the ancients. Brunfels realised that certain plants were not known to Dioscorides, so he maintained the name German peasants gave them, such as *Gauchblumen* i.e. *Cardamine pratensis*, L.[11] Northern European botanists were not ready to adopt any nomenclature that found its origin in the Mediterranean regions simply on the grounds that it was founded on the classical experience. This 'scientific option' would have maintained botany under the domination of the Italian universities and reinforced the commercial value of Italian botanical handbooks (especially Mattioli's, which contained fewer engravings compared to German and Flemish block prints) to the detriment of a larger book market in continental Europe.

III Beyond the regional floras: P. A. Michiel and R. Dodoens

There was one way to overcome these difficulties and that was to produce regional floras for quick reference books, which had a larger market than expensive folio volumes about medical botany. These were the first books produced by Rembert Dodoens with the publisher Van der Loe in 1552, 1553, 1554 (and collected as *Cruijdeboeck* in 1554) and later with Plantin in 1565, 1566, 1568, 1574, 1580 (and collected as *Pemptades* in 1583, 1616). Smaller octavo books had a larger

market and certainly answered better the demands of landowners and householders in search of practical information about the management of plants as medicines, about the conservation of grains as foodstuffs, recipes for winemaking, and flower cultivation for personal pleasure. Furthermore, since the 1550s the geographical boundaries of urban conspicuous consumers were extending dramatically and products from the New World became available, all sorts of new information on new plants were in demand.

Rembert Dodoens's collection was also founded on the labours of others[12] and was not dissimilar to that large unpublished collection of plants put together by P. A. Michiel, a patrician from Venice, who refused active service for the Republic of Venice and preferred to work quietly in the shadow of the Padua botanical gardens.[13] The latter received information and dried specimens from Europe and the Mediterranean area thanks to the Venetian consular network. Parallel to the exchange of plant collections, letters were being exchanged between the most open-minded botanists, such as Gesner, Aldrovandi, d'Aleschamps, de l'Escluse, all discussing common problems of nomenclature. It was Jean de Brancion, director of the botanical garden at Mechelen, and a personal friend of Dodoens, who supplied the illustrious scientist Ulisse Aldrovandi of Bologna with small parcels of seeds and handwritten information about their management in the years 1566-1568 (in those years Dodoens was about to leave Mechelen). Among other items, in these parcels Brancion made clear the differences between the *Trifolium* and the *Medicago* genus and supplied the right seeds of lucerne (alfalfa), a cultivation that had been lost in most European regions (see below).[14] This is only one example of the way botanists behaved in mid-sixteenth century: amidst quarrels there was also scientific co-operation. However, these attempts to find solutions, which would have soon reduced the differences within the botanists' community on both sides of the Alps by comparing practical information, were hampered by one major disaster, the revolt in the Low Countries.

IV Politics, war and Rembert Dodoens's life

Rembert Dodoens's father, Denys, was born into a family of civil servants from Friesland: he moved to Mechelen when he was appointed to the post of 'médecin juré de la ville', and married a widow, Urselle Rollands. Junius Rembert had been born there in 1517 out of her first marriage.[15] At the age of eighteen he took a degree in medicine:

his studies also covered geography and cosmography, classical languages, and, obviously, botany. He was also a student at the *Collegium Trilingue* of Leuven University. After his graduation he purportedly made extensive travels in France, Germany and Italy, where he visited
66 *'multas universitates ibidem'*, according to his personal friend Petrus Suffridus.[16] It is not clear whether Rembert Dodoens's travels and his friendship with de l'Escluse took him away from Mechelen and the Low Countries at an early age or later.[17] Yet, after he had made Mechelen the centre of his early career, Dodoens was in the position to benefit from the journeys and the experience of others. He was on friendly terms with Jean de Brancion, a gentleman who directed the botanical gardens there and who supplied him with plants and seeds. De l'Escluse studied at the medical school of Montpellier, and travelled the length of Europe, from Portugal to Hungary; L'Obel frequently visited England and had good relations there. In the course of these travels Dodoens, de l'Escluse and L'Obel exchanged a great deal of information. In the *Pemptades* (1583 and 1616) Rembert Dodoens acknowledged de l'Escluse's and L'Obel's contributions to his own plant collection. However, the centre of Dodoens's well rewarded professional activities as a physician remained Mechelen, as long as he was not forced to move. Soon afterwards (1568) he was offered the vacant post as physician to Philip II of Spain, thanks to his cousin Joachim Hopper (by then secretary of the same king).

His refusal has to be understood in the light of the difficult political situation of those years of rebellion and civil strife. Dodoens remained in Mechelen for a few more years, until the Spanish troops of the Duke of Parma besieged and sacked the city, along with other cities, in 1572: Mechelen's population dropped from 30,000 inhabitants in 1550 to 11,000.[18] Dodoens, by then a wealthy man, lost all his possessions in this tragic event. Whilst Viglius Zuichem insisted again that he take up the post in Madrid, he accepted Maximilian II's invitation and settled in Vienna, where he stayed from 1574 to 1578, as imperial physician (to Maximilian II and then Rudolf II), in the position previously held by his personal friend de l'Escluse.[19] He remained in Vienna until the 'Religious Peace' had been proclaimed in Brussels and Mechelen (1578); but news that in his native Mechelen the Protestant and Catholic factions were at war again (1579) and that the Catholic patriciate had entered into negotiations with the Duke of Parma, halted him on his way back home. Peace talks were even held at Cologne, the imperial and episcopal city, sponsored by Rudolph II in 1579.[20] Dodoens spent

some years in Cologne, which had become a temporary home for many refugees from Flanders who did not want to take the Calvinist side yet were hostile to Spanish rule. He successfully practised medicine there until 1581. Between 1581-83 he lived in Antwerp to supervise Plantin's edition of the *Pemptades* (1583). As Parma's army was getting ready to besiege that city, he accepted de l'Escluse's invitation and settled in Leiden in the years 1583-85, where he was offered the chair of medicine by the newly founded University. His numerous academic successes did not prevent Dodoens from pursuing his major botanical interests relentlessly until the last moment: in 1583 Plantin arranged for a long list of seeds to be sent to him, on Dodoens's behalf, from father Arias Montanus, the curator of the Escorial Library in Madrid.[21]

v Nomenclature and botanical discourse

In the perspective of political divisions that divided the major European regions during the second half of the sixteenth century, even European botany was organised around centres of cultural and political influence. The quarrel over nomenclature (classical names against popular and vernacular ones) was also reinforced by the tough competition in the publishing world in a bid for commercial supremacy in the European book market. In the mid-sixteenth century some printers, notably in Venice or Lyon, became more able than others to produce smaller and cheaper editions: this improvement also affected the production of illustrated botanical books. For example, Valgrisi put together and produced 562 illustrations of plants for the edition of P.A. Mattioli's *Commentari* (Venice, 1554). Of that edition and the following reprints, Valgrisi published a total of 32,000 copies. Still, he could not compete with Plantin's entrepreneurial skills. Van der Loe and later Plantin had engraved, collected and later on bought most of the print blocks already available on the market (in Antwerp and London) and produced 1300 illustrations for Dodoens's *Cruijdeboeck* (1554 and following editions) and around 2000 tables for the *Pemptades*.[22] Among these illustrations 600 descriptions and prints were taken out of Fuchs (1539) and Brunfels (1532). To these Dodoens added 300 new plants, never illustrated nor described before. In the 1563 edition Dodoens increased them to 1200 plants: it took him and Plantin another twenty years to prepare the illustrations and text for the *Pemptades* of 1583.[23]

The increased number of plants described since the 1550s forced all botanists to abandon the alphabetical order, a remnant from the medie-

val herbal tradition, which still was the usual manner to organise plant lore. Henceforth other external characteristics were taken as criteria to group plants into families. In 1583 Andrea Cesalpino (1519-1603) arranged plants in a very sensible manner (according to fruit and seed) and prepared a binary nomenclature that, unfortunately, did not find supporters. Rembert Dodoens (and later Caspar Bauhin in 1623) believed that the leaves presented good enough characteristics to support a general classification of plants. Yet these characteristics were too limited and the example of the genus *clover*, in Latin *Trifolium*, proved that the class of plants with trifoliate leaves had become too large and unmanageable for practical use.[24]

Once again the question of nomenclature revealed the sensible position on the subject held by Rembert Dodoens (and the Flemish school), who followed the local nomenclature when available: the botanist could not expect that unknown plants revealed their 'true' names by some 'inner virtue'. Pandolfo Collenuccio (who belonged to the humanist tradition of Padua, 1444-1504) was the first to suggest that botanists should ask peasants about the names and use of unknown plants: his suggestion was taken up only by German botanists (Brunfels published Collenuccio's botanical work, 1532-1539). Jean Ruel (1536)[25] had clarified the difference between wild and cultivated plants and demonstrated that wild plants existed before cultivated ones, that some existed at both states and that wild plants usurped the place of cultivated ones (and this was the case of *Medicago*).[26] It became the task of the botanist to record folk names and local uses of plants known to peasants and peasant women, great experts in plant medicine. For example, Euricius Cordus (1486-1535), son of a farmer, gardener and botanist, took great delight in outings into the country and learned a great deal from illiterate women and peasants, but also from the comparison of his findings with other scholars such as Dioscorides or Brunfels.[27] Rembert Dodoens followed the same way: when he brought some order into the genus of leguminous plants, he was first to use the name *Onobrychis* (instead of the older name *Polygala*, which went into disuse since) to describe what is now known as *O. sativa* (Lam.) or *O. viciaefolia*, L. To this he added one local spelling of the Flemish name of the plant (today known as *hanekam*), which he translated as *O. crista gallinacea*. Clusius reinforced the statement and added that this plant was known in Brabant as *Hanecammekens*.[28] It was a sensible thing to keep Latin nomenclature also in vernacular textbooks, to help identification of less familiar and new plants.

VI Rembert Dodoens, L'Obel, Lyte: a growing market for botanical information

L'Obel (1538-1616)[29] and Pierre Pena had travelled in England for the first time in 1569. They stayed in London to publish the *Adversaria nova* with a dedication to Elizabeth I in 1571. Pena from Provence and L'Obel from Arras had met at Montpellier University and they remained on good terms since: their journey to England took place when the Duke of Alva's Council of Troubles (Tribunal de los revoltosos) was engaged in the repression of the rebellion in Flanders. On their way through France, they stopped at La Rochelle, another instance of a friendship that shared religious sympathies for the reformed churches. Plantin followed the London edition of the *Adversaria nova* for his edition, which came out in 1576.

The English translation of Rembert Dodoens's *Cruijdeboeck* was undertaken in this circle. It was Henry Lyte who translated it from the French version of the *Cruijdeboeck* published in Antwerp by de l'Escluse in 1557. He had once been a student at Oxford and became an amateur botanist, a cultured landowner in Somerset, who had travelled in the Continent. The copy he used has come down to us, with his corrections and marginal notes.[30] It is difficult to establish whether Henry Lyte wrote all the notes we find in this copy himself. This translation faced a problem that is central to this collection of essays: English, French, Flemish and Latin plant names had to agree with the illustrations in an age when formal nomenclature was still in its infancy. If the translator wanted that his book was useful, he needed precision and on some crucial points it was not easy even between languages with many common points such as French, Flemish and English. Unfortunately, Rembert Dodoens-de l'Escluse somehow confounded the translator and the reader about one particular fodder plant, which appeared in places in Brabant but, more generally, was grown in the gardens of herbalists. This plant is sainfoin, *O. viciaefolia* L. Whilst Rembert Dodoens had acquired experience on chosen plants growing in gardens, de l'Escluse had studied plants in their natural environment: the latter was better acquainted with grasslands and pastures in central Europe, where *O.viciaefolia* grew wild. Translating a text that had been originally written in Flemish by Dodoens, but published in French by de l'Escluse (Antwerp, 1557), Lyte was somehow confused and added that the plant in question was the famous 'Medick' of the ancients (luzerne today, *M. sativa* L.), which had been described by Jean Ruel (1536).

Sainfoin and luzerne are similar fodder plants, which have, very unfortunately, different soil requirements. Since the 1550s landlords in Italy, France, Germany and England had begun to look again at plants not purely for their medical value. I have pointed out above that the first printed book by Dodoens was, not incidentally, a small treatise on cereals and legumes (1556) for human and animal consumption. In their quest to improve production, landlords and botanists rediscovered forgotten plants, which in the Roman and Greek farming experience had been highly valued. Although leguminous fodder plants are naturalised plants in Western Europe, the best strains of cultivated clover, sainfoin and luzerne had all but been lost and what remained of them was hidden in only a few areas (Southern Spain and Provence for instance), whilst their place had been taken by weeds and undomesticated plants of the same species.[31] In the following century enterprising English landlords took these grasses out of their semi-wild context and sowed them – an innovation in their capitalist farms. Because of the opportunities created by the dissolution of monasteries (1536), English landlords became extremely interested in developing their agricultural methods and read anything that dealt with the economic use of plants more eagerly than other social groups in Europe. Yet, it took about seventy years for English landlords, who read botanical and agricultural textbooks by the letter, to overcome the inaccuracy, when they wanted to put into practice Dodoens-Lyte's description. Some years later, L'Obel, who was very active in England at that time, clarified these and other inaccurate names that were featured in the Flemish books on fodder plants. But unfortunately his efforts never reached the printing press and remained unpublished among his papers.[32]

By the beginning of the seventeenth century, botanists had brought together so much information that their discipline required a new sort of treatise. By then, the book market was capable of sustaining the production of a great number of plant engravings with the desired precision, in order to illustrate a rather elaborate and complex text, which contained information for the landlord, the botanist, the physician, the householder, the corn merchant, and eventually the housewife. By the standards of the time all this information could not be compressed in one volume. When the Bauhin brothers printed the largest collection of plants ever produced by Renaissance botany (1623, 1650-51, 1671), they had to suppress much of the practical information and to introduce abbreviations.

VII Seed production in the early seventeenth century

Rembert Dodoens's writings and activities produced their major effects in the following generation, in a less learned *milieu* and abroad. It was in England that innovative landlords created an international market for agricultural seeds and benefited from the recovery that Flanders and Brabant were enjoying in the early 1600.[33] Recent research does show an upward movement of land rents in the Spanish Low Countries as soon as the war moved towards Maastricht, at the end of the Twelve Years' Truce (1609-1621).[34] Once again, intensive agriculture became the option chosen by the Flemish peasantry to pay high rents: their noted (by L'Obel for instance) ability to produce garden seeds provided a new source of income. A regular trade of garden seeds (especially onion!) did exist from late medieval times (and earlier) between London and the Low Countries. Irregular parcels of clover seed appear in merchant records to anticipate a regular trade after 1690: these seeds, known to Rembert Dodoens and L'Obel, became the object of an intriguing obsession for inquisitive English landlords, who were looking for new methods to overcome their own agricultural and economic crisis. During the years of the English Civil War, an English exile, Sir Richard Weston, travelled extensively through Flanders and Brabant and did not fail to notice the new wave of economic and farming activities, which had made a quick recovery possible in these regions. From 1650 onwards a growing interest in intensive agriculture gained momentum in England. And although clover, flax, linen, rape and turnip were all native English plants, their successful cultivation required fresh and good quality seeds, not easy to obtain by the English peasantry, who were not specialised in this industry.[35]

More mundane landowners had tried their luck with fruit plants and flowers: e.g., on 6 April 1639 one particular landowner, in his London garden was growing flowers from 153 tulip bulbs, all different.[36] His was not an isolated case: agricultural and garden seeds were soon quoted and advertised in farming books and later newspapers. Clover seed especially became the object of a trade, which went alongside with the major grain trade. Nurserymen, gardeners and seeds men in England had always been strongly connected with the Continent, especially Flanders and France (and some English gentlemen with Italy).[37] In 1567 and later, a number of refugees from Flanders settled in southeast England developing horticulture and running nurseries.[38] Regions such as Flanders, Holland, Zeeland and later Friesland, pro-

vided seeds and trees to English gardens and improved a botanical patrimony that was naturally poorer than the rest of Europe. Between 1550 and 1650 (and later during the eighteenth century) the position of England in respect of the oceanic trade gave new impetus to the diffusion of non-European plants in the continent: yet English agriculture depended heavily on seeds which European peasants provided in regular quantities. In the mid-seventeenth century the complex social and economic transformation, which we usually refer to as the agricultural revolution, was, for the botanical part at least, founded on the diffusion of books, information, and seeds from Flanders and Holland. Lesser men, like peasants and gardeners, and important botanists, like Rembert Dodoens and L'Obel, all made their valuable contribution to make this transformation possible.

VIII Conclusions: Rembert Dodoens's irenic position

The newly founded University of Leiden was not a place for strict Calvinist orthodoxy: Lipsius and other professors openly professed their Catholic faith, and Catholic students quickly moved there to listen to the most prominent teachers in many disciplines. During the next few years following Dodoens's arrival, the new Republic invested lots of money to make Leiden into a leading university in Northern Europe, with institutions that included a student college, a large library and a botanical garden (1587). It was de l'Escluse, a professed protestant, who turned the garden into an efficient institution. It has been suggested that Rembert Dodoens shared the religious views of other Erasmian scholars.[39] His personal experience seems very much tied up with the political events that framed the lives of his fellow countrymen. Dodoens's dedications to Hopper and Viglius probably suggest his conciliatory position towards the court of Madrid and those at home who wished to win the elite in Flanders to the Spanish side after the Troubles. Dodoens twice declined the position offered to him in Madrid, which probably put him on difficult terms with the Spanish government. This might explain why he preferred to stay in Vienna at the court of that famous patron of scientists and artists, Rudolf II, instead of looking after his endangered possessions in Mechelen. It is very difficult to approach and to discuss the problems of the scientific community in the sixteenth-eighteenth centuries, without keeping in mind these sharp religious and political divisions, which tore Europe apart. Writing to his good friend, father Arias Montanus, in 1585, among other news, Plantin spoke of the death of Dodoens and clarified his

public position in respect of his post at Leiden: the professors of the Catholic faith were free from taking an oath of allegiance to the States of Holland in political matters. On other occasions (1572, 1575, 1583) Plantin had informed father Arias about Dodoens's necessities and troubles.[40] Arias had been chaplain of Philip II (1566) and in 1568 had been sent to Antwerp to supervise the 'Bible royale et polyglotte', to be printed by Plantin. It seems that Arias, Plantin, Hopper and Viglius interceded on behalf of Dodoens with the Spanish government either in Flanders or in Madrid: yet he did not commit himself to the Spanish side during the rebellion and acted freely on important occasions.

During the second half of the sixteenth century a very interesting group of botanists arose in Normandy and Flanders: Belon from Mans, d'Aleschamps from Caen, Jean and Caspard Bauhin from Amiens, Rembert Dodoens from Mechelen, de l'Escluse from Arras, L'Obel from Lille. One thing they had in common: they all travelled throughout Europe to a greater extent than other European botanists did. Furthermore, they had studied at the university of Montpellier, in clear opposition to the medical school of Paris. The contribution of the Flemish botanists to the development of botanical discourse was very important. They were men of the North (at least in respect of Greek and Latin botanical studies). They all shared a competence in current spoken languages and an interest in peasant and local folk plant names; yet they were all versed in classical botany without following it strictly as Mattioli did in Italy. It seems to me that Rembert Dodoens practised a kind of irenic botany, which took in consideration the ideas of other authors without overwhelming them. The seventeenth-century developments of this botanical school, which were carried on at Leiden University by Commelin, Rumphius and Boerhaave, enabled Carolus Linnaeus, active in Leiden between 1735-1738, to achieve a botanical classification thanks to a binary nomenclature.

In respect of the formation of a botanical discourse, the following major steps took place roughly between 1450 and 1550. When Greek plant names were translated into Latin they became binaries (Leuconion – viola alba, Melanion – V. nigra etc)[41]; at the same time, individual readers added hand-written plant names in their vernacular language to the few printed herbals available.[42] The corrected versions of Dodoens's Latin and German herbals, which he bequeathed to Plantin in 1585, reveal a great similarity of practice between botanists and their public.[43] This uniformity made scientific communication easier

between the high and the low sector of society and it promoted the creation of a botanical discourse. Latin and vernacular nomenclature were both present in Rembert Dodoens's work: if we take into consideration that the *Cruijdeboeck* was also printed in different languages, we easily understand that it appealed to a larger public, which had primarily practical interests. At the same time the men of learning had the opportunity to acquaint themselves with a very large body of popular nomenclature, which became the foundation of any subsequent classification.

NOTES

1 E.L. Greene and F.N. Egerton, ed., *Landmarks of Botanical History* (1909), 2 vols. (Stanford, Cal.: Stanford University Press, 1983), passim.
2 Mauro Ambrosoli, *The Wild and the Sown. Botany and Agriculture in Western Europe, 1350-1850* (Cambridge: Cambridge University Press, 1997), chap.3; M. Findlen, *Possessing Nature. Museums, Collecting and Scientific Culture in Early Modern Italy* (Berkeley, Cal.: University of California Press, 1994), passim.
3 Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Princeton: Princeton University Press, 1970).
4 Herman Van der Wee, *The Growth of the Antwerp Market and the European Economy (Fourteenth-Sixteenth Centuries)*, 3 vols. (The Hague: Nijhoff, 1963).
5 Leon Voet, *The Golden Compasses. A History and Evaluation of the Printing and Publishing Activities of the Officina Plantiniana*, 2 vols. (Amsterdam: Vangendt, 1969-1972), 1:46, 90.
6 M. Rooses and J. Denuncé, *Correspondence de Christophore Plantin*, 8 vols. (Antwerp, 1883-1918), III:6; L. Febvre and H. Martin, *Histoire du livre* (Paris: A. Colin, 1958); E. Eisenstein, *The Printing Press as an Agent of Change* (Cambridge: Cambridge University Press, 1979).
7 Greene, *Landmarks*, 1:240ff.
8 A. Chiarugi, "Le date di fondazione dei primi orti botanici nel mondo", *Nuovo Giornale Botanico Italiano* 60 (1953): 785-839.
9 Greene, *Landmarks*, 1:369ff.
10 Ambrosoli, *Wild and Sown*, 263.
11 Greene, *Landmarks*, 1:264.
12 Armand Louis, "La vie et oeuvre de Rembert Dodoens (1517-1585)", *Bulletin de la Société Royale de Botanique de Belgique* 82 (1950): 281-82.
13 Ambrosoli, *Wild and Sown*, 101, 106, 115-17.
14 Ibid.,116.
15 Louis, "Vie et oeuvre", 272.
16 P. Suffridus, *De Scriptoribus Frisae decades xvi. Lovanii* (1593).
17 Rembertus Dodonæus, *Cosmographica in Astronomiam et geographiam isagoge*, 1548. Facsimile of the original Latin text, with an introduction by A. Louis (Nieuwkoop, NL: B. De Graaf, 1963).
18 Jonathan Israel, *The Dutch Republic: Its Rise, Greatness, and Fall, 1477-1806* (Oxford: Clarendon Press, 1998), 308.
19 Biographisch Woordenboek der Nederlanden (1852) ii, R. Dodonæus.
20 Israel, *The Dutch Republic*, 195-96.
21 M. Rooses and J. Denuncé, *Correspondence de Plantin*, VII: 1011.
22 See paper by Helena Wille in present volume.
23 Dodonæus, *Cosmographica in Astronomiam*, 1548. Intr by Louis (1963), 41.
24 Greene, *Landmarks*, 1:108-9.
25 Ibid., 2:636.
26 Ambrosoli, *Wild and Sown*, passim.
27 Greene, *Landmarks*, 1:366.
28 Woordenboek der Nederlandsche Taal, sub nomine.

29 Ibid., 2:877 ff.
30 London, British Library, Printed Books Dep.,442h9.
31 Ambrosoli, *Wild and Sown*, CHAP. 6 passim.
32 Ibid., 279-80.
33 Ibid., 335-356.
34 Vandenbroeke, *Annales* ESC,39 (1984) and Israel, *The Dutch Republic*, 412-13.
35 Mauro Ambrosoli, *"The political context of the agricultural activities of the Hartlib circle"*, in *Politics Religion and Economy in the Hartlib* Papers, ed. S. Mandelbrote (Oxford University Press), forthcoming.
36 Sloane Ms 95.5. British Library,London.
37 F. Harvey, *Early Nurserymen* (London Chichester: Phillimore, 1974) and M. Thick, *"Market Gardening in England and Wales"*, in J. Thirsk, *The Agricultural History of England and Wales* (Cambridge: Cambridge University Press, 1990), AHEW,V,II.
38 AHEW, vol V, 1988.
39 Blok, *Janus. A Review of the History of Medicine* 22 (1915).
40 M. Rooses and J. Denuncé, *Correspondence de Plantin*, III:421, V:664, VII: 1011, 1045.
41 Greene, *Landmarks*, 108 ff.
42 Ambrosoli, *Wild and Sown*, CHAP.2-3, passim.
43 M. Rooses and J. Denuncé, *Correspondence de Plantin*, VII: 1045.