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Two Pioneers of Tropical Medicine:

Garcia d'Orta and Nicolás Monardes

by

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DOS LIBROS, EL V-
NO QUE TRATA DE TODAS LAS COSAS
que traen de nuestras Indias Occidentales, que sirven
al uso de la Medicina, y el otro que trata de la
Piedra Bezaar, y de la Yerua Escuerçonera.
Cõpuestos por el doctõr Nicoloso de Monardes Medico de Seuilla.



IMPRESSOS EN SEVILLA EN CASA DE
Hernando Diaz, en la calle de la Sierpe.
Con Licencia y Privilegio de su Magestad.
Año de 1569.

The only known portrait of Monardes forming part of the
title-page to one of his works

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FOREWORD

One of the most important factors in the development of modern civilisation has been the rapidly increasing exploitation, over the past few centuries, of the world's natural resources for the benefit of mankind. The great age of exploration which took Europeans to the East and the West Indies opened up riches more varied and more important than the gold of the Incas, although less spectacular. The value of the spices of the East had long been appreciated, and the significance of the discovery of a whole group of new medicinal plants in America was soon recognised. In those days before the causes and treatment of disease were investigated on modern scientific lines all the emphasis in medicine was on remedies (mostly of vegetable origin) which had proved to be useful in treatment. As disease was far more widespread then than now the discovery of exotic medicinal plants unknown to European physicians aroused as much excitement then as the discovery of penicillin did in the 1940s. This is well illustrated by the title given to the English translation of the book in which Nicolás Monardes, a Spanish doctor, first described the most important medicinal plants of America—*Joyful newes out of the newe found worlde* (1577).

A contemporary of Monardes, Dr. Garcia d'Orta, a Portuguese who had settled in Goa, was the first European to describe the vegetable drugs and diseases of India in one of the first books by a European to be printed in the East, for it was published in Goa on 10 April 1563, four hundred years ago. It was to celebrate the four hundredth anniversary of its appearance that Professor C. R. Boxer, who is Camoens Professor of Portuguese at King's College, London, and a Fellow of the British Academy, prepared this lecture in honour of these two medical pioneers. It was sponsored by the Hispanic and Luso-Brazilian Councils and the Wellcome Historical Medical Library, where, by

courtesy of The Wellcome Trust, the lecture was delivered on 10 April 1963. Dr. Francisco Guerra, Wellcome Research Fellow attached to the historic American Collection in the Library and an authority on Monardes, arranged a special exhibition for the occasion. Both lecture and exhibition gave to many their first glimpse of the life and work of two scientists who had something of the pioneer spirit of Columbus and Vespucci, and it is hoped that the publication of the lecture will make them known to a wider circle. Those specialists who already know something of them will be grateful for the completely fresh light which Professor Boxer throws on the career of Garcia d'Orta and will doubtless take up the challenge offered by the apparent discrepancies in the existing accounts of the life of Monardes. It is no easy task to recreate in precise detail all the events in the careers of men who have been dead for nearly four hundred years. Documents and facts are interpreted in different ways by different authorities, but—like all good lectures—Professor Boxer's opens the way to further discussion and research on several points which cannot yet be finally resolved.

F. N. L. POYNTER

TWO PIONEERS OF TROPICAL MEDICINE: GARCIA D'ORTA AND NICOLÁS MONARDES

THIRTY-ONE years ago, Lt.-Cdr. Louis Roddis, a medical officer of the United States Navy, published a short article in the *Annals of Medical History* entitled "Garcia da Orta. The first European writer on tropical medicine and a pioneer in pharmacognosy". After sketching the achievements of d'Orta in these two fields, Roddis concluded his article with the following appeal:

"March 10, 1934, will be just four hundred years from the day on which da Orta set sail for India. It would be well if this date could be commemorated in some suitable manner by societies throughout the world concerned with the study and advancement of tropical medicine, pharmacy and botany. The issue of special editions of their official publications, or of articles and editorials on da Orta, his time and his work, would well fit the occasion and bring to members of the professions of medicine and pharmacy the memory of a pioneer in both fields."¹

So far as I am aware, this appeal met with no major response, save for one important exception. It avowedly stimulated the distinguished Portuguese physician and medical historian, Dr. Augusto da Silva Carvalho, who was already investigating the life of Garcia d'Orta, to publish the result of his researches in a well-documented work printed at Coimbra three years later.² This book, which has completely revolutionized our knowledge of Garcia d'Orta and exposed the fallacies unwittingly perpetrated by his previous biographers, is still little known in Portugal and even less outside that country, having escaped the knowledge of such a lynx-eyed researcher as Dr. Francisco Guerra. It is my chief object this evening to make a

belated response to Roddis's appeal by drawing your attention to the figure of Dr. Garcia d'Orta as he really was, and not as he is commonly represented as having been. The four hundredth anniversary of the publication of his famous *Coloquios dos simples e drogas e consas medicinais da India* at Goa in April 1563, provides a sufficient excuse for this occasion. Nor need I apologize for associating Dr. Nicolás Bautista Monardes with this commemoration. As most of you are doubtless aware, Monardes, with his books on the materia medica of the New World, did for America what Garcia d'Orta did for India. They were contemporaries, and their works were made known to the learned world of Europe chiefly through the Latin versions edited by the celebrated Flemish botanist, Charles de l'Escluse (Carolus Clusius), and usually published between the covers of the same book. Their respective lives afford some interesting parallels and some curious contrasts. The recent publication by Dr. Francisco Guerra of what is surely the definitive bio-bibliographical study of Nicolás Bautista Monardes forms an additional reason for recalling the similarities between the pioneer researches of these two distinguished Iberian physicians.³

The father of Garcia d'Orta was a Spanish Jew, Fernão d'Orta, a native of Valencia de Alcántara, who had emigrated to the nearby Portuguese town of Castelo de Vide, when the Jews were expelled from Spain in 1492. He was evidently one of those who were forcibly baptized in the mass conversions ordered by King Manuel I of Portugal five years later. These converted Jews and their descendents were known as *Christãos-Novos* ("New Christians"), or as *Marranos* ("Swine"), and they were particularly numerous among members of the mercantile and medical professions. Fernão d'Orta's wife, whom he married at the beginning of the sixteenth century, was likewise of Spanish-Jewish origin, being a native of the frontier-town of Albuquerque. Garcia d'Orta was their eldest child, probably born in 1501

or 1502, and there were three sisters, Violante, Catarina, and Isabel, but in no case is the year of birth known. The family was sufficiently well-to-do for Garcia d'Orta to study Arts, Philosophy, and Medicine at the Spanish Universities of Salamanca and Alcalá de Henares, although it is uncertain which of them he frequented first.

At this period it was usual for a student in the Iberian peninsula to enter a university when he was between eleven and thirteen years old, and to graduate when between eighteen and twenty. We have no exact dates for d'Orta's scholastic career, but the indications are that he began his university studies about the year 1515 and returned to Portugal in 1523, two years after the death of his father. Despite a certain amount of practical work, medical knowledge was mainly acquired through reading and memorising texts, chiefly those of Hippocrates, Galen, and Avicenna. In accordance with the accepted Graeco-Roman ideas, humoral pathology was then and for long afterwards the basis of a medical education. Disease was considered as an imbalance or an impurity of one of the four cardinal bodily humours: Blood, phlegm, choler ("red" or "yellow" bile), and melancholy (black bile). Treatment aimed at readjusting the balance, predominantly by the use of enemas, purging, and bleeding, but also by the employment of stimulants, tonics, and drugs compounded from medicinal herbs and plants.⁴

After graduating as a bachelor or licentiate in medicine from Salamanca and/or Alcalá, Garcia d'Orta spent some three years practising as a physician in his native town of Castelo de Vide, whose population then hardly exceeded 5,000 souls. Either because he had no scope for a brilliant career in this town, or else because of the growing anti-Jewish feeling in the Alentejo during those years, or for some other reasons, d'Orta came to Lisbon in 1526. Here he remained for the next eight years, securing a university chair on an interim basis in 1530, and on a more

permanent footing two years later. In 1533, Orta was elected a member of the University Council, and the resultant administrative work together with his medical practice in the city evidently took up most of his time. Such at least is the kindest interpretation of the fact that the University Beadle noted that Garcia d'Orta either cut altogether or came late to forty of his own lectures in the first term of the year 1533-34.⁵

On 12 March 1534, Orta sailed for Goa in the fleet commanded by his life-long friend and patron, Martim Affonso de Sousa, Captain-Major of the Indian Ocean in 1534-38, and Governor-General of Portuguese Asia in 1542-45. We can only guess at the motives for this move, but the increasing pressure that was being brought to bear on the *Christãos-Novos*, culminating in the establishment of the Portuguese branch of the Inquisition (1536), was surely one of them. It was probably due to the influence of Martim Affonso de Sousa that d'Orta was able to sail as his personal physician in the fleet of 1534, despite the law which had been enacted two years earlier (14 June 1532) prohibiting any New-Christian from leaving Portugal. Another motive was, in all probability, the scientific curiosity which he ascribes to his interlocutor, Ruano, in the first of the *Coloquios*:

"I have a great desire to know about the medicinal drugs (such as are called the drugs of pharmacy in Portugal), and these other remedies and simples which there are here, as well as all the fruits and pepper [spices]. I would like to learn their names in all the different languages, as also the countries where they grow, and the trees or plants which bear them, and likewise how the Indian physicians use them. Furthermore, I would like to know about some of the other plants and fruits of this land, even if they are not medicinal, and also some of the customs of this country and the things that happen therein."

The fleet of 1534 reached Goa in September, and during the next four years, d'Orta accompanied Martim Affonso de Sousa in several campaigns on the west coast of India between the Kathiawar peninsula and Ceylon. When Martim Affonso de Sousa sailed for Portugal at the end of 1538, d'Orta did not go with him but settled at Goa, where he soon had a lucrative medical practice. He also formed a close friendship with Burhān Nizām Shāh, Sultan of the Deccan kingdom of Ahmadnagar, whose personal physician he became, and whom he visited periodically in his capital city. D'Orta was also physician to several viceroys and governors of Goa, one of whom granted him a long lease of the island of Bombay, which he sublet, but which he sometimes visited on his way to Ahmadnagar. Apart from the money derived from his extensive medical practice, he was also a trader (chiefly in materia medica, jewels and precious stones) and shipowner, like most of his countrymen in the East who possessed any considerable capital or income. D'Orta never went east of Ceylon, nor did he visit the Persian Gulf region, but he met Persians, Arabs, Malays, and traders from all over India at "Golden Goa", which was then at the height of its somewhat precarious prosperity. He made a point of being on friendly terms with learned Muslims and Hindus, nor did he disdain to converse familiarly with ordinary Asian traders, shopkeepers, and physicians in his quest for knowledge of Oriental materia medica. He himself was anxious to go further afield than Ahmadnagar and Ceylon, but successive viceroys and governors would not allow him to visit more distant places, since they were unwilling to dispense with his professional services for long. He therefore contented himself with paid correspondents and agents, who sent him plants and seeds from elsewhere.⁶

Three or four years after settling as a physician at Goa, d'Orta married one of his cousins, Brianda de Solis, member of a prominent Spanish-Portuguese New-Christian family.

She came out to Goa in 1541, and there were two daughters of this marriage, which was not a happy one, as Brianda was of a shrewish and avaricious disposition, besides (apparently) looking down on her husband as her social inferior. In 1549, two of d'Orta's married sisters, who had been imprisoned by the Lisbon Inquisition for some months, came out to join him with their respective husbands, and accompanied by their old mother. D'Orta never mentions these and other close relations in his *Coloquios*, but he often alludes to a certain "Isaac of Cairo". This man, though passing himself off as an orthodox Egyptian Jew, was in fact a refugee from d'Orta's home-town, and related to him by marriage.

D'Orta and his family naturally preserved an appearance of strict Roman Catholic orthodoxy at Goa, particularly after a branch of the Inquisition was established there in 1560. In the *Coloquios* he is at pains to stress his close friendship with the local Franciscan and Dominican friars, and he was apparently on good terms with the Jesuits. But a few months after d'Orta's death, his brother-in-law admitted to the local Inquisitors that the doctor had often told him:

"that the Law of Moses was the true Law; that they should live therein and keep the feast of Yom Kippur . . . and they should keep the Sabbath on Saturdays, and change into clean shirts and linen on that day, and should light more tapers in the candlesticks than usual, and cleaner, and with more oil. That the [Old Testament] prophecies were not yet fulfilled. That Christ was not the son of God; that the Jews had not killed him, but he had died of old age, and he was the son of Miriam and Joseph."⁷

D'Orta himself was never a victim of the Inquisition during his lifetime, but many of his relatives in Portugal, including his mother and two of his sisters, were arrested,

interrogated, or imprisoned by the Holy Office for relatively short periods. That nothing more serious happened to them indicates that the family had powerful protectors in court circles. These were probably Martim Affonso de Sousa, and Dr. Tomaz de Orta, a distant relative of our Garcia, who was personal physician to three successive kings of Portugal. However this may have been, the Inquisitors at Goa waited until Dr. Garcia d'Orta's death, which occurred at an unascertained date in the first half of 1568, before they struck at his family, but they then made up for the delay. His mother had died in 1557, and his widow and youngest married sister were apparently allowed to return to Europe without being molested. But another sister, Catarina, was arrested at Goa in October 1568 and burnt at the stake a year later "as an impenitent Jewess". The fate of Garcia d'Orta's two daughters is unknown; but several of his relatives were subsequently arrested, tortured, and persecuted by the Inquisition, both in India and in Portugal, some of them fleeing abroad to escape the clutches of the self-styled and so-called Holy Office. Finally, in December 1580, d'Orta's remains were exhumed and solemnly burnt in an *auto da fé* held at Goa, in accordance with the posthumous punishment inflicted on crypto-Jews who had escaped the stake in their lifetime.⁸

I have dealt at some length with d'Orta's biography, because Dr. Silva Carvalho's book has been largely ignored. The traditional version perpetuated—in perfect good faith—by the Conde de Ficalho and Clements Markham still holds the field in most books which mention d'Orta. This traditional version is resumed in the words of Dr. Gerson da Cunha, which have been quoted approvingly by Roddis and other subsequent writers.

"Garcia da Orta died a bachelor in Goa, about 1570, aged eighty. The lord of the manor of Bombay lived thus to a ripe old age, receiving the love and regard of all in the splendid dignity of his venerable age; but no

record has been kept of the time and place of his death. Besides writing his immortal *Coloquios* and possessing the beautiful island of Bombay, he had the privilege to live long. To become an octogenarian is a supreme achievement everywhere, especially for a European in India. Garcia da Orta lived long and died happy. That is his short but true epitaph."⁹

The Inquisition records revealed by Dr. Silva Carvalho show that almost every one of these statements is entirely erroneous. D'Orta died not 'about 1570' but in the first half of 1568, when he was not "aged eighty" but less than seventy. Far from being a carefree bachelor, he was an unhappily married man, wedded to a wife so miserly that, although he died a rich man, she was forced to borrow a clean sheet from her neighbours wherein to wrap the corpse. It is significant that d'Orta mentions neither her nor their daughters in the *Coloquios*, but instead brings on the scene an intelligent slave-girl, Antonia, who helped him to catalogue his botanical and natural history specimens. Far from living happily as an orthodox Roman Catholic in "the Rome of the Orient", d'Orta was a militant Marrano who went in terror of the Inquisition for most of his life, and particularly after 1560.¹⁰

If the traditional account of Garcia d'Orta's private life is entirely erroneous, there is no need to quarrel with the accepted assessment of his professional achievements, to which both his contemporaries and modern authorities have paid glowing tributes. His reputation rests on the *Coloquios* (Plate I) published at Goa in April 1563, which is a remarkable work on four separate counts. Firstly, it is a landmark in the history of materia medica, and it is still quoted as an authority on some of the subjects of which it treats. Secondly, it is the most interesting and original book published by the Portuguese in India during the sixteenth and seventeenth centuries, and the only one

Coloquios dos simples, e
drogas e cousas medicinais da India, e
alsi dalgũas frutas achadas nella onde se
tratam algũas cousas tocantes a medicina,
pratica, e outras cousas boas, pera saber
cõpostos pello Doutor garçia dorta : fisico
del Rey nosso senhor, vistos pello muyto
Reuerendo senhor, ho liçençado
Alexo^s diaz, falcam desenbar-
gador da casa da supricaça
inquisidor nestas
partes.

¶ Com priuilegio do Conde ríso Rey.

Im presso em Goa, por Ioannes
de endem a^x x. dias de
Abril de 1563. annos.

PLATE I

Title-page of d'Orta, *Coloquios* (Goa, 1563)

(C. R. Boxer collection)

1564
Caroli Clusij A.
Vlyssipone
vi. Calend. Januarias.

Colloquia Garcia ab Orta
medici Lusitani Clarissimi de Simpli-
cibus Indicis, Coll Lingua Lusit-
tanica, prout ab ipso conscri-
pta fuere. et Goæ in India
edita, anno 1563,
cum notis mss. Caroli Clusij.

PLATE II

Clusius's autograph inscription on the preliminary leaf of
d'Orta, *Coloquios* (1563)

(Reproduced by courtesy of the University Library, Cambridge)

written by a layman. Thirdly, it probably contains more typographical errors than any other book ever issued from a printing-press. Twenty closely printed pages of *errata* are followed by the author's despairing admission: "There are many other misprints in this book." Fourthly, it contains the earliest published work of Luis de Camões, Portugal's most famous son, in the form of a laudatory ode dedicated to the Viceroy Count of Redondo. I need hardly add that the book is exceedingly rare, though not so rare as it is often represented as being. I have been able to trace twenty-four existing copies, several of them very imperfect, and all save two of them in public or institutional libraries.¹¹

As regards the subject-matter of the *Coloquios*, it is important to remember that although d'Orta was a celebrated practising physician in his time and place, he was not primarily concerned in this book with medicine in general, but with Asian (more especially, Indian) *materia medica* and the botany pertaining thereto. Whereas he occasionally cites Hippocrates and Celsus, he frequently quotes Dioscorides and Pliny. Of the numerous works by Galen, the one he quotes most frequently is the treatise *De simplicibus medicamentis*. He quotes his illustrious contemporary, Vesalius, not in connection with the latter's revolutionary anatomical studies, but merely in connection with China-root as a remedy for syphilis. Dioscorides and Pliny among the Ancients, Avicenna and the younger Serapion among the Arabs, Manardi and Antonio Musa among his Italian contemporaries, are the principal authorities whom he cites in his chosen field of study, though many others are mentioned when occasion offers.¹²

The other point to stress about d'Orta's approach to his subject is his robust common-sense. While always respectful of the classic authorities whose works were on his shelves, he was always ready to correct, to contradict, or to amend them, whenever his own personal observation or the

evidence of reliable eyewitnesses convinced him that what they said on any particular point was wrong. This may not seem so very revolutionary nowadays, but it was certainly very uncommon at a period when classical learning was apt to be preferred to practical observation and experience. In the Cambridge medical school, for example, Galen was still a prescribed text down to the middle of the nineteenth century.¹³ "Don't try and frighten me with Dioscorides nor Galen", says d'Orta at one point to his interlocutor in the *Coloquios*, "because I am only going to say what I know to be true."¹⁴ Elsewhere, disputing something that Dioscorides and other classical authorities had stated about cinnamon, d'Orta affirms: "though I am the humblest of all physicians, you should give more credit to me as an eyewitness than to those fathers of medicine who wrote from false information."¹⁵ Again, when his interlocutor quotes Serapion the younger as claiming that the Greek authorities knew and described the nutmeg, d'Orta retorts: "He did this because he was frightened of saying anything contradicting the Greeks. Nor should you be surprised thereat, for, if I was in Spain, I would not dare to say anything against Galen and against the Greeks."¹⁶ This phrase, as the Count of Ficalho observed, is the key to the *Coloquios*. As Vesalius earned with the scalpel the right to emend Galen, so d'Orta's long sojourn in India gave him the right to correct Dioscorides.¹⁷

As is obvious from the title, the *Coloquios* are cast in the form of Dialogues, a common Renaissance literary device of classical origin. D'Orta had begun to write them in Latin, but changed to Portuguese at the request of some friends, who pointed out that they would reach a wider public in Portuguese Asia if printed in the vernacular. I may add that d'Orta's Portuguese is riddled with Spanish words and influences to such an extent that one suspects he was more at home in Castilian than in Portuguese, despite the strongly anti-Spanish bias which he displays—perhaps

as a defence mechanism—in several of the colloquies.¹⁸

Although various secondary—but real—characters, such as d'Orta's Spanish colleague, Dr. Dimas Bosque, his slave-girl Antonia, and the Hindu physician, Malupa, sometimes appear on the scene, the *Coloquios* are essentially a discussion between d'Orta himself and a fictitious Spanish colleague, Dr. Ruano. This man is represented as having just arrived at Goa from the Iberian peninsula, where he had been a student at Alcalá and Salamanca with d'Orta. Ruano is given the role of spokesman for the classical authorities, whereas d'Orta represents himself as relying more on observation and experiment than on received tradition. It is also worth noting that d'Orta often speaks up in defence of the Arab authors against Ruano's preference for the Graeco-Roman authorities. This is partly a reflection of the differences between the medical schools of Alcalá and Salamanca, as the former showed a marked preference for Hippocratic and Galenic teachings, whereas the latter was inclined to give more weight to the Arab commentators. The *Coloquios* are by no means confined to a discussion of Asian materia medica, but they are enlivened by frequent digressions into such varied topics as the history and politics of Gujerat and the Deccan, the greatness of China, Luso-Spanish rivalry in the Spice Islands, case-histories of some of d'Orta's patients, and anecdotes about elephants, cobras, and mongoose.

The body of the book consists of fifty-seven colloquies or chapters on a similar number of drugs and simples, mostly of vegetable origin but also including items like ivory, diamonds, and the bezoar-stone. They start off in alphabetical order, but this is abandoned after the twenty-fourth chapter when they revert from *galanga* to *cravo*. Similarly, d'Orta does not always adhere to his general plan for each colloquy. This plan was to give the names of each plant (or substance) in the different languages he knew, then to describe its general appearance, followed by a discussion of

the country where it grew, of the commercial route(s) by which it reached Goa, of the part or parts which were utilized, and the medical or therapeutic uses to which it was put. In spite of the frequent digressions which enliven and the innumerable misprints which disfigure the book, d'Orta not only contrived to correct and amplify many accepted notions about Asian materia medica, but he described several important plants and their uses for the first time.

As indicated above, the scientific questions discussed by d'Orta in the *Colloquios* can be divided into two categories: firstly, those connected with the materia medica and botany of the East; secondly, those which deal with medicine in general. As specimens of the author's method, I will give brief extracts from (a) his description of a drug-plant and (b) his treatment of a disease. Writing of the aromatic plant called galangal (Old English "galingale"), he states *inter alia*:

"There are two kinds of what we call *Galanga* viz, one small, and very aromatic, which is brought from China to these parts, and thence to Portugal and other Western regions. This is called *lavandou* in China. And there is another larger, which is found in Java, and there called *lancuaz*. The first is a small shrub or bush of two spans in length. It has leaves like a myrtle, and the Chinese say it grows without being planted. The larger one which grows in Java is five spans in height. It grows large roots, and has knots like a cane, and the Chinese variety likewise has the same. The Java kind has leaves shaped like a great lance, and it bears a white flower. It yields seeds, but does not propagate itself through them; although in this country it is sown in gardens in small quantities, and used by the Indian peoples as salads and in medicines, chiefly by those who come from Java, and who are midwives (called *daias*) and work here as physicians. The plant propagates

itself from the roots, like ginger, and not in any other way. If you find anything written to the contrary, don't you believe it. For Avicenna, Serapion, and other Arabs only had confused accounts of it."¹⁹

Asiatic cholera (*cholera morbus*) was a disease unknown to physicians in Europe at this period, though they were, of course, familiar with the relatively milder European variety. As Roddis has observed, the description given by d'Orta not only brought the Asiatic form of the disease to the attention of the Western World, but was so complete and circumstantial as to constitute a classic of clinical description. D'Orta described in the simplest and tersest terms the sudden onset, the profuse watery diarrhoea, the extreme dehydration of the tissues, the tendency to circulatory failure, and the short and frequently fatal course.²⁰ His discussion of the disease and its treatment is too lengthy for reproduction in full and the following extracts must suffice.

"It is more acute here than in Europe, for it generally proves fatal within twenty-four hours. I have known a patient who lasted no longer than ten hours, and those who last longest live for four days. Since there is no rule without an exception, I have seen a man endowed with exceptional endurance who lived for twenty days, continually vomiting *colera curginosa*²¹ until he finally died. . . . The usual symptoms are: the pulse is very weak and can scarcely be felt. The skin is very cold, with some sweat, also cold. The patient complains of great heat and a burning thirst. The eyes are much sunken, and he cannot sleep. There is continual retching and diarrhoea until the patient becomes so weak that he is unable to discharge anything. There is also cramp in the legs."

D'Orta's treatment included the application of external heat with hot poultices on the body, the application of a

hot iron to the soles of the feet, friction of the skin with hands and cloths, and rubbing the skin with warm oils. He also used very small quantities of opium in a curious treacly compound called *teriaga*, to lessen the extreme depletion of the body by the excessive amounts of intestinal discharge. Last not least in his own opinion—though certainly least in ours—was his faith in the application of three grains of the bezoar-stone, in whose curative properties he was a firm believer, just as were Monardes and other contemporary leading physicians. D'Orta claimed to have cured many patients in this way, including the Bishop of Malacca, who was taken ill with cholera soon after his arrival at Goa (1559). As Ficalho comments, the Bishop's recovery probably owed more to the opium in the *teriaga* (theriac) compound than to the non-existent therapeutic properties of the bezoar-stone.²² It is also evident that d'Orta's undoubted success as a clinician, whether among his Christian patients at Goa or his Muslim patients at Ahmadnagar, was largely due to the confidence he inspired in them. This confidence in turn convinced them that the medicines—or the nostrums—which he prescribed for them were really doing them good.

That a patient's absolute confidence in his (or her) physician is often half the cure, is likewise shown by the career of Dr. Nicolás Bautista Monardes, whose life and work had so many interesting parallels and contrasts with those of his great Portuguese contemporary. Both men were of foreign origin; but whereas d'Orta was born on Portuguese soil to Spanish crypto-Jewish parents, Monardes was born at Seville to an immigrant Genoese bookseller and his Spanish wife, in or about the year 1493. Like Orta, Monardes studied at the University of Alcalá de Henares, graduating with the degree of bachelor of medicine in 1533. Both men were great admirers of Antonio de Nebrija (or Lebrija), whose annotated edition of the *materia medica* of Dioscorides and Pliny, *Lexico artis medicamentae* (1518), was

their favourite textbook. But whereas d'Orta never took a doctor's degree, his title of "doctor" being a courtesy one, Monardes in due course received the degree of doctor in medicine from the University College of Santa Maria de Jesus at Seville in 1547. Ten years earlier Monardes had married the daughter of the Seville physician with whom he was then in practice for the statutory two-year period before setting up on his own. There were seven children of this marriage, and whereas we know nothing of the fate of d'Orta's two daughters, we know a good deal about the careers of Monardes's seven children. Here it will suffice to mention two: Nicolás, the youngest son and black sheep of the family, who led a roving life in Europe and Mexico, becoming successively a Dominican and a Mercedarian friar before ending his days as a secular priest at Seville; and Jeronima, the youngest (and married) daughter, with whom Monardes made his home after the death of his wife in 1577.²³

Unlike d'Orta, Monardes never left his native country, but remained content with his position as one of the leading physicians of Seville—and, indeed, of all Spain—for over half a century. Like d'Orta, however, Monardes traded on a considerable scale, as well as enjoying the profits from his extensive and lucrative medical practice. He invested part of his profits from medicine and merchandise in housing and landed property in and around Seville, besides providing generously for those of his children who were married. He engaged for some years in the Negro slave-trade with America, but the death of two of his business associates in Mexico reduced him to temporary bankruptcy in 1568, and he was forced to take refuge from his creditors in the monastery of Regina Coeli. However, he and his wife's family still had considerable assets, and thanks to his medical practice and business acumen, he was soon able to leave this refuge and recoup his losses. By the time of his death (10 October 1588) he was the equivalent of a millionaire,

and he left a very substantial fortune to be divided among his heirs after all his creditors had been paid in full. I may add that whereas d'Orta was a life-long crypto-Jew, whose remains were disinterred and burnt by the Goa Inquisition, Monardes was a devout "Old Christian" who took holy orders as a secular priest some time after his wife's death.²⁴

Whereas d'Orta was a man of one book, Monardes fathered as many books as he did babies. His first published work appeared at Seville in 1536, and was entitled *Dialogo llamado pharmacodilosio o declaracion medicinal*. Like the *Coloquios*, it is cast in the form of a dialogue between a physician named Nicolás, obviously Monardes himself, and an apothecary named Ambrosio. It is interesting to note that in this book Monardes deprecates the therapeutic value of the medicinal plants imported from the New World and considers them inferior to those found in the Iberian peninsula. He also criticizes the Arab writers on materia medica and declares his preference for the Graeco-Roman authorities. Monardes's contemporary and posthumous fame, however, was mainly based on his *Dos Libros* (see Frontispiece) of 1565-74, in which he maintains a very different standpoint, extolling the medicinal and therapeutic value of many American plants and herbs, including tobacco and sarsaparilla. The *Dos Libros* gave Monardes a European reputation, being translated into Italian and English in his lifetime, and into French and German after his death, apart from the numerous Latin versions of Clusius which are discussed below. What, it may be asked, induced Monardes to change his mind about the value of American materia medica, and to advocate so warmly in 1565 what he had explicitly rejected in 1536?

Dr. Francisco Guerra, the latest and most authoritative writer on Monardes, thinks that the decisive impulse was the *Coloquios* of Garcia d'Orta, which he assumes that Monardes must have read before the publication of his *Dos Libros* in 1565.²⁵ With all due deference to so dis-

tinguished an authority, who has forgotten more about Monardes than I can ever know, I do not believe that this assumption is justified. We know from the ecclesiastical printing-licence in the first edition of *Dos Libros* that this work was ready for the press before 12 June 1564.²⁶ D'Orta's *Coloquios* were printed at Goa in April 1563, and it is exceedingly unlikely, if not absolutely impossible, that a copy could have come into Monardes' hands fourteen months later. Homeward-bound Portuguese East-Indiamen only left Goa between December and March with the Northeast monsoon, and the voyage lasted anything from six to nine months. A book sent from Goa in December 1563 could not have reached Lisbon before June 1564. Moreover, it seems that none of the homeward-bound Indiamen that year reached Lisbon earlier than the 13 September 1564.²⁷ That a copy of the *Coloquios* was sent overland to Portugal in 1563 is just possible, but in the highest degree unlikely. The overland route through Iraq was seldom used at this period, and it was only travelled by a few spies or by messengers in disguise with urgent dispatches for the Crown.

Moreover, I can find nothing derived from d'Orta's *Coloquios* in Monardes' *Dos Libros* of 1565-69. The first time that Monardes specifically alludes to d'Orta is in the treatise on tobacco published in the edition of 1571, where he quotes the *Coloquios* in connection with the effect of *bhang* on Sultan Bahdāur.²⁸ As regards Monardes' monographs on amber and the bezoar-stone, which Dr. Guerra considers are largely based on the corresponding chapters in the *Coloquios*, I cannot see any direct connection between them. Monardes is much more detailed than d'Orta in his account of the bezoar-stone and he states specifically that his principal Portuguese authority was Amato Lusitano, who was, of course, likewise known to d'Orta. Monardes also quotes many other authorities, including his much-travelled fellow-townsmen, Guido de Lavazares (later

acting-governor of the Philippines, 1572-75), and an unnamed ex-governor-general of Portuguese Asia, who may have been d'Orta's patron, Martim Affonso de Sousa, since the latter had a Spanish wife and spent some years in Spain. D'Orta is not mentioned in Monardes' account of the bezoar-stone nor in that of amber, both of which have as many differences as similarities with the corresponding accounts in the *Coloquios*. Where similarities exist, they are evidently due to the use of common authorities, such as Avicenna, Serapion, and Mattioli de Sienna.²⁹ For these and other reasons, I conclude that Monardes could not have been influenced by d'Orta when he wrote his *Dos Libros* of 1565-69. I would suggest that his change of heart between 1536 and 1565 about the value of American materia medica was a gradual process and was due to his own experience.

If Monardes did not know of or utilise d'Orta's *Coloquios* before about 1570, it remains true that both men had much in common. They had both drunk from the same fount of medical and botanical lore at Alcalá de Henares, and they were both well-grounded in the Graeco-Roman and Arab authorities—although, as we have seen, d'Orta was inclined to give more weight to the latter and Monardes to the former. Both of them were primarily concerned with the identification and description of medicinal plants, followed by an account of their pharmacological and therapeutic uses. If Monardes, unlike d'Orta, was not able to examine exotic plants in their original environment, at least he took great care (after about 1536) to examine those imported and/or transplanted into Spain—a self-imposed task facilitated by the unrivalled position of Seville as the sole entrepôt for Spanish trade with the New World. Moreover, just as d'Orta cultivated Asian plants in his gardens and orchards at Goa and Bombay, so Monardes had a botanical garden with native and exotic plants at Sevilla. Monardes is also credited with having formed a private museum of natural

history and curiosities, but Dr. Guerra has shown that this museum in all probability was not his, but belonged to his friend, Argote de Molina.³⁰

Just as d'Orta gave to the learned world of the West the first accurate accounts of various Asian medicinal and commercial plants, so did Monardes with those of America. His treatise on tobacco alone gave rise to a whole literature on this "holy herb" in many languages, and the *Dos Libros* can fairly be described as one of the seminal books of the sixteenth century. As Dr. Guerra has observed:

"The writings of this Spanish physician were printed at Antwerp when the Flemings rebelled there against the troops of the Duke of Alva; they were read in English just when the Invincible Armada was battling off the coast of England; they appeared in Italian editions although the Spaniards had just sacked Rome and were modifying the boundaries of Italian states at their pleasure; they were being translated into French when the troops of the Duke of Parma were fighting at the gates of Paris; and they were being turned into German in the Protestant principalities at a time when the Spaniard personified the soul incarnate of the Counter-Reformation."³¹

Monardes' English translator was John Frampton, a West Country merchant formerly domiciled in Spain, who had been imprisoned and tortured by the Inquisition before making his escape from Cádiz in 1567. Frampton devoted the rest of his life to translating scientific and travel books from Spanish into English, including the *West-Indian Geography* of Fernández de Enciso (1578), the *Travels* of Marco Polo (1579), and the *Art of Navigation* of Pedro de Medina (1581).

Nicolás Bautista Monardes, like Garcia d'Orta, has a strong claim to be regarded as one of the fathers of the science of pharmacognosy. Both of them compiled what

were virtually complete monographs on many important items of our actual *materia medica*, which were then unknown or only inaccurately known to the Western World. D'Orta's accurate description of such Asian products as aloes, camphor, sandalwood and betel, is paralleled by Monardes' scientific study of such American species as coca, mechoacan, sarsaparilla, and sassafras. Of course, they were both inevitably influenced by the mistaken concepts of humoral pathology, and by hoary if unfounded traditions such as those which claimed curative properties for the bezoar-stone. But when due allowance is made for this, it cannot be denied that both d'Orta and Monardes frequently showed remarkable powers of scientific observation and independent judgement, whether in studying exotic *materia medica* or in experimenting with vegetable drugs on themselves and on their patients. Both of them were more moderate and sensible in their use of bleeding, purging, and dieting than were most of their contemporaries; and Monardes, as Dr. Guerra has recently shown, was also a skilful surgeon whose methods of treating wounds were in some respects superior to those of his more famous contemporary, Ambroise Paré.³²

Since the works of d'Orta and Monardes on exotic *materia medica* complemented and supplemented each other in so many ways, it is fitting that their diffusion throughout the learned world of sixteenth to seventeenth century Europe was chiefly due to the joint Latin versions of them made by the Flemish physician and botanist, Charles de L'Escluse (1526-1609). Carolus Clusius, to give him the Latinized form of his name by which he is best known, was exceptionally well qualified for his self-imposed task. He had studied the humanities at the University of Ghent, jurisprudence and languages at Louvain, and graduated as a doctor of medicine from Montpellier in 1559. He was fluent in Latin, Greek, Flemish, French, Spanish, and Italian, and he had travelled

through most of Western Europe, botanizing and studying the regional *materia medica*. For some years he acted as tutor to Jacob Fugger of the famous Augsburg merchant-banking family, and he maintained an active correspondence with many prominent physicians, botanists, and dealers in drugs.³³

Clusius accompanied the young Jacob Fugger on a botanizing expedition through the Iberian peninsula between May 1564 and May 1565. After visiting Salamanca, Madrid, Alcalá, and other places, they left Spain for Portugal via Badajoz in September 1564, and must have reached Lisbon by the end of that month. Clusius stayed in Portugal until the middle of January 1565, most of the time in Lisbon and its environs, though he went as far north as Coimbra. Leaving Portugal by way of Evora and Serpa, he reached Seville on the 18 January 1565. He stayed in Seville for only a few days and then left on a rapid tour through southern Spain; nor did he return to this city before starting on his homeward journey via Madrid and Paris to Antwerp, which he reached early in June 1565. It was during this trip that Clusius secured a copy of the *Coloquios* of Garcia d'Orta, and fortunately we know the exact date and place that he did so. This very copy, containing numerous marginal notes in Clusius' neat handwriting, and with an inscription in his autograph on the flyleaf reading

1564

Caroli Clusij A

ulyssipone

vi Calend. Januarias

is preserved in the library of Cambridge University (Plate II). The year corresponds, of course, to 1565 in our actual reckoning, since Clusius, like so many of his contemporaries, began the New Year in March and not in January.³⁴

Clusius had learnt sufficient Portuguese to be immediately aware of the importance of his find, despite the innumerable misprints with which the book was disfigured, and he obviously had this copy with him during his few days' stay at Seville in January 1565. Dr. Guerra and other authorities argue that he must have met Monardes during his brief sojourn in this city, as the Spaniard was already a famous man, with exactly the same interests as Clusius, and the latter would surely have sought him out. Perhaps he did, but there is no proof whatever that they met at this time, and such evidence as we have points the other way. It seems clear from Clusius' published correspondence that he had no personal knowledge either of Monardes or his works until an Italian friend at Ferrara sent him a manuscript Latin abridgement of the first part of *Dos Libros* (1565), in April 1569. Clusius makes no allusion to Monardes in the annotated Latin edition of d'Orta's work which he published in 1567, though he cites other and less relevant authorities. It was not until September or October 1571, in the course of a short visit to England, that Clusius secured a printed copy (or copies) of the first two parts of *Dos Libros*, in the editions of 1565-71, which he then translated into Latin and published at Antwerp in a drastically abridged and modified version in 1574. Though this negative evidence is not entirely conclusive, it does indicate that Clusius did not meet Monardes during his brief stay at Seville in January 1565—possibly because the latter was ill or out of town just then.³⁵

However this may have been, it was d'Orta's *Coloquios* and not Monardes' *Dos Libros* that first took Clusius' fancy, and it was to the *Coloquios* that he subsequently gave priority. Despite the obscurity and inaccuracy of the original Portuguese text in many places, Clusius made a remarkably good job of his Latin version, entitled *Aromatum et Simplicium aliquot medicamentorum apud Indios nascentium historia*, which was published by Christopher Plantin at

Antwerp in 1567. This version is not a straight translation, but an abridgement or epitome of the original. Clusius dropped the dialogue form of the *Coloquios*, and rearranged the scientific material more systematically, omitting the references to Indian life and politics and the anecdotal digressions. He also provided numerous notes to the text and inserted seventeen woodcuts of plants. His version thus lost the flavour of the original, with its references to the Sultan of Ahmadnagar, d'Orta's household, and daily life in Goa, but it gained in scientific accuracy and clarity. Instead of a faulty and discursive text in a language which few people could read outside Portugal, the learned world of Europe was now presented with a clear and elegant Latin version which could be read by any scholar. The *Aromatum* was deservedly popular and went through another five editions in Clusius' lifetime. These were not merely reprints of the 1567 edition, but were successively improved and amplified with additional material by the translator, who was still working lovingly on the book when he was eighty years of age.³⁶

Once he had found Monardes' *Dos Libros* in England, Clusius did an equally thorough and conscientious job in publishing successive Latin abridgements and commentaries of the Seville physician's works, five Latin versions of which appeared between 1574 and 1605.³⁷ Not content with this service to sixteenth-century science, Clusius likewise translated the Spanish work of another Portuguese physician and botanist, Christovão da Costa's *Tractado de las drogas y medicinas de las Indias Orientales* (Burgos, 1578). Da Costa's work was confessedly based on that of d'Orta, but it is unfair to charge him with plagiarism and lack of originality, as is often done. He had also spent many years in Asia, where he had gone further afield than d'Orta, visiting Malacca and China, and he was at one time a prisoner of the Malabars. Although taking the *Coloquios* as the basis of his own *Tractado*, Da Costa

corrected and amplified the former in many places, apart from arranging the material more systematically, and, above all, supplying excellent woodcuts of most of the plants which he described. Clusius added a Latin abridgement of the *Tractado* to his edition of d'Orta and Monardes in 1582, and thenceforward the three authors usually appeared between the covers of the same book, whether in Clusius' Latin versions, or in Italian and French translations.³⁸

I have no time to discuss the use made of d'Orta, Monardes, and Da Costa by the Dutch East-India Company's physician, Jacob Bondt (Jacobus Bontius, 1592-1631), in his pioneer work on tropical medicine, *De Medicina Indorum*, published posthumously at Leiden in 1642, nor to trace the influence of their works on medical writers of the seventeenth and eighteenth centuries.³⁹ Suffice it to say, that they held the field as primary authorities until the great scientific discoveries of the nineteenth century revolutionized the study of botany and materia medica, and on certain points they can still be consulted with profit today. I will conclude by quoting the tribute paid by Professor F. A. Flückiger, the founder of modern pharmacognosy, to his pioneer Portuguese predecessor in 1884.

"But above all the *Coloquios* are most remarkable for their wealth of information and for the accuracy of their descriptions. Nobody before Garcia had described the drug plants of India with such care, or assembled such useful information about them. Whoever is concerned with the history of Indian drugs must of necessity consult Garcia de Orta; despite all errors, which are mainly due to the period in which he wrote, the *Coloquios* must hold an honourable place in the history of pharmacognosy."⁴⁰

Substitute Nicolás Monardes and America for Garcia d'Orta and India, and the above passage is equally applicable

to the Seville physician's *Dos Libros* in place of the *Coloquios*. The progress of science during the last one hundred and fifty years has inevitably rendered obsolete much of what d'Orta and Monardes wrote; but this does not alter the fact that in their respective spheres these two illustrious Iberian physicians must each stand *primus inter pares* by virtue of their pioneer researches.

NOTES

(1) *Annals of Medical History*, New Series, Vol. I, Nr. 2 (1931), pp. 198-207. Roddis used the erroneous form "da Orta", but the researches of Teixeira de Carvalho and Silva Carvalho have shown that d'Orta and his contemporaries used the form Garcia d'Orta. Roddis also misprints the date of d'Orta's departure for India as the 10 March when it was really the 12 March.

(2) *Garcia d'Orta. Comemoração do quarto centenário da sua partida para a Índia em 12 de Março de 1534* (Coimbra, 1934), reprinted in a limited edition from the *Revista da Universidade de Coimbra*, Vol. XII, nr. 1.

(3) Francisco Guerra, *Nicolás Bautista Monardes, su vida y su obra, ca. 1493-1588* (Mexico, D. F., 1961). Publication nr. 41, Department of the History of Medicine, Yale University.

(4) My chief authority for the above and what follows is Silva Carvalho, *Garcia d'Orta* (1934), pp. 1-20. On medical education in sixteenth-century Spain, cf. Francisco Guerra, *Monardes*, pp. 31-40.

(5) A. Teixeira de Carvalho, *Homens de outros tempos* (Lisboa, 1924), pp. 5-61, for a documented account of d'Orta's Lisbon University career.

(6) *Coloquios*, nr. 9 (*Benjuy*), and 12 (*Camfora*). Cf. Silva Carvalho, *op. cit.*, pp. 42, 65.

(7) Inquisition records *apud* Silva Carvalho, *Garcia d'Orta* (1934), pp. 74, 159.

(8) Silva Carvalho, *Garcia d'Orta* (1934), pp. 72-84. Cf. also I. S. Révah, *La Famille de Garcia de Orta*, 16-page reprint from the *Revista da Universidade de Coimbra*, Vol. XIX (Coimbra, 1960), which corrects and amplifies Silva Carvalho in some respects.

(9) J. Gerson da Cunha, "The origin of Bombay (Bombay, 1900), p. 112. Cf. also A. X. Soares, "Garcia d'Orta, a little known owner of Bombay", in the *Journal of the Bombay Branch of the Royal Asiatic Society* (Vol. XXVI (1923), pp. 195-229.

(10) Silva Carvalho, *Garcia d'Orta* (1934), pp. 49-51, 55-56.

(11) Cf. The appendix *infra* for further bibliographical details.

(12) Conde de Ficalho, *Garcia da Orta e o seu tempo* (Lisboa, 1886), pp. 284-299.

(13) And not, as stated by P. Green, "In the Cambridge medical school till the middle of the last century Galen was still the only prescribed—or permitted—text" (*The Spectator*, 27 Feb. 1953, p. 240).

(14) *Coloquio* nr. 9 (*Benjuy*).

(15) *Coloquio* nr. 15 (*Canela*).

(16) *Coloquio* nr. 32 (*maça e noz*).

(17) Ficalho, *Garcia da Orta e o seu tempo*, p. 303. For textual examples of D'Orta's insistence on direct observation and ascertained truth in preference to received tradition and hearsay evidence, cf. Luis de Pora, "Garcia de Orta e a verdade", in *O Medico*, Vol. X (Porto, 1959), pp. 97-105.

(18) Typical examples in *Coloquios*, nrs. 25 (*cravo*), 29 (*lacre*), 34 (*mangas*), 43 (*diamão*).

(19) *Coloquio* nr. 24. D'Orta corrects the Chinese name to *lavandon* in the errata, but this does not make it any easier to identify. For the scientific interest of d'Orta's description of the galangal, cf. Ficalho's comments in his edition of the *Coloquios*, Vol. I (1891), pp. 356-58.

(20) L. H. Roddis, "Garcia da Orta", p. 203. Cf. *Coloquio* nr. 17.

(21) *sic* in the original text of 1563 (fl. 73 [75]). Ficalho confesses himself baffled by this misprint, and Clements Markham in his English translation of 1913, tentatively suggests *cholera sanguinosa*, "Red bile", as distinguished from "black bile", two of the four "natural humours" of ancient and of Indian medicine (*Colloquies on the simples and drugs of India* by Garcia da Orta, London 1913, pp. 155 n).

(22) Ficalho, *Garcia da Orta e o seu tempo*, pp. 313-21, and his edition of the *Coloquios* (2 vols., Lisboa, 1891-95), Vol. I, pp. 272-76. For the complicated ingredients of *theriac*, *teriaga* or *triaga*, which sometimes contained over a hundred components, see A. Pires de Lima, *Como se tratavam os Portugueses em Moçambique no primeiro quartel do século XVII* (73-page reprint in a limited edition from the *Anais da faculdade de farmácia do Pôrto*, Vol. III), Porto, 1941, pp. 34-45. Bezoar is a calcareous concretion found in the stomach of certain ruminants, more especially the wild Persian goat.

(23) For the above and what follows regarding Monardes and his family, I have relied exclusively on Francisco Guerra, *Nicolás Bautista Monardes* (1961), save where otherwise stated or indicated. For the great importance of the Genoese community in 16th-century Seville see two articles by Ruth Pike, "Seville in the 16th-century", in *Hispanic America Historical Review*, XLI (1961), 1-30, and "The Genoese in Seville and the opening of the New World", in the *Journal of Economic History*, Vol. XXII (Sept. 1962), pp. 348-78.

(24) F. Guerra, *Nicolás Bautista Monardes* (1961), pp. 13-14.

(25) F. Guerra, *op. cit.*, pp. 87-88.

(26) "Vi este cuaderno en que ay dos tratados. . . . Fecho en doze de Junio de mil & quinientos y sessenta & quatro años. El Doctor Millan". Cf. F. Guerra, *op. cit.*, p. 124.

(27) Duarte Gomes de Solis, *Discursos sobre los comercios de las dos Indias* (n.p., 1622), fl. 230 under the date of 1563.

(28) *Segunda Parte del Libro de las cosas que se traen de nuestras Indias Occidentales, que sirven al uso de medicina* (Seville, 1571), fl. 20. The corresponding section is in *Coloquios* (1563), nr. 8, fl. 25 [alias, 27].

(29) Cf. Ficalho's discussion of the pedra-bezoar, d'Orta and Monardes in Vol. II of his edition of the *Coloquios* (1895), pp. 231-39.

(30) F. Guerra, *Nicolás Bautista Monardes* (1961), pp. 79-82.

(31) F. Guerra, *op. cit.*, p. 1.

(32) F. Guerra, *op. cit.*, pp. 30-82.

(33) F. W. T. Hunger, *Charles de L'Escluse (Carolus Clusius) Nederlandsch kruidkundige*, 1526-1609 (2 vols., The Hague, 1927-43) is the definitive bio-bibliographical study of Clusius. For the Iberian tour cf. Vol. I, pp. 73-75.

(34) Cambridge University Library (pressmark: Adv. d.3.21), a fine copy in superb condition in the original vellum binding (Plate II). This, the most interesting of all surviving copies of the *Coloquios*, was unidentified by previous bibliographers, and my attention was first drawn to it in 1947 or 1948 by the late Mr. N. M. Penzer. How it came to England originally, I cannot say; but my colleague, Professor Stephen Reckert, informs me that it was in the possession of Bishop John Moore of Ely when he died in 1714. It then went with part of the Bishop's library to King George I, who presented it to Cambridge as part of the royal library donated in 1715. It is not known how or when Bishop Moore acquired it; but he had a great interest in materia medica and enjoyed prescribing remedies for the ailments of his friends. The fact that Clusius bought the copy at Lisbon in January 1564-65, disposes of the story that he came across it by chance one night at a country inn—a story which Ficalho repeated but viewed sceptically, since the author of Clusius' funeral oration specifically stated that the copy had been acquired at Lisbon (*Garcia da Orta e o seu tempo*, p. 372).

(35) F. W. T. Hunger, *Charles de L'Escluse* (Vol. I (1927), pp. 106-117-18).

(36) Ficalho, *Garcia da Orta e o seu tempo* (1886), pp. 367-88, for a discussion of Clusius' translations and editions of d'Orta.

(37) F. Guerra, *Nicolás Bautista Monardes* (1961), pp. 133-61, for details.

(38) Cf. the editions of 1582, 1589, 1597, 1602, 1605, 1616 and 1619, listed in the above quoted works of Ficalho (1886), Hunger (1927-43), and Guerra (1961). Cf. also Jacob Seide, "The relationship of Garcia da Orta's and Cristobal Acont's botanical works", in *Actes du Septième Congrès International d'Histoire des Sciences*, Jerusalem, August, 1953, pp. 564-67.

(39) The following example will suffice: *An account of the diseases, natural history, and medicines of the East Indies. Translated from the Latin of James Bontius, Physician to the Dutch settlement at Batavia. To which are added Annotations by a Physician* (London, Printed for T. Noteman, near Norfolk Street in the Strand, 1769), reissued with a new title-page and another London printer's Address in 1776. Pp. 165-231 of this work contain "Animadversions on Garcias ab Orta", with a dedicatory letter to Bontius' brother, a burgomaster of Leiden, in which Jacob Bontius explains his right to criticize Orta, Monardes, and Da Costa, while acknowledging their still great authority. For Bontius, cf. D. Schoute, *De Geneeskunde in den dienst der Oost-Indische Compagnie in Nederlandsch-Indie* (Amsterdam, 1929) pp. 119-36.

(40) F. A. Flückiger, in *Archiv der Pharmacie*, Pd. 22, Hft. 7 (1884), p. 253, textually quoted by Ficalho, *Garcia da Orta e o seu tempo* (1886), p. 366.

APPENDIX

A BIBLIOGRAPHICAL NOTE ON THE *COLOQUIOS* (1563)²

C *Coloquios dos simples, e drogas he cousas medicinaes da India, e assi dalguas frutas achadas nella onde se tratam algũas cousas tocantes a medicina, | pratica, e outras cousas boas, pera saber | cõpostos pello Doutor garçia dorta: fisico | del Rey nosso senhor, vistos pello muyto | Reuerendo senhor, ho liçençado | Alexos diaz: falcam desenbar-|gador da casa da supricaã | inquisidor nestas | partes. | ¶ Com privilegio do Conde viso Rey. | Impresso em Goa, por Ioannes | de endem as x. dias de | Abril de 1563. annos. [First line printed in gothic characters.]*

COLLATION: 4to. ¶, ⁶χ¹ A-Z⁸, Aa-Ii⁸; ff. [7], 217 [i.e. [255; 25-27 lines to a page, the majority of which have catchwords; no colophon. Hh8 is blank and is not included in the foliation, which is erratic. Some copies have two extra leaves inserted in the C gathering which supply text omitted in the original printing. The first is signed ¶Cij and numbered 18, immediately following original fol. 18; the second (cognate) leaf is unsigned but numbered 22, following original fol. 22. They also have, on a strip pasted down at the foot of Diiij, one additional line of type, again to supply an omission in the printing of the original text.

LOCATION: Vila Viçosa, Portugal (ex-King Manuel II and a British Museum 'duplicate'); Biblioteca Nacional, Lisboa* (2 copies; one in poor condition, the other very defective); Biblioteca da Ajuda, Lisboa*; Torre do Tombo, Lisboa*; Sociedade das Ciências Médicas, Lisboa* (imperfect); Cdte. Ernesto Vilhena, Lisboa* (imperfect); Biblioteca Publica, Evora (2 copies); Biblioteca Publica, Elvas (ex-A. J. Torres de Carvalho); Bibliotheca da Faculdade de Medicina, Oporto (ex-Dr. Jose Carlos Lopes); Biblioteca Nacional, Rio de Janeiro* (very badly wormed and with each leaf laid down); Bibliothèque Nationale, Paris; Royal Library, Stockholm (wants the title-page); Leiden University; Harvard University* (the Palha copy); Catholic University of America, Washington, D.C.* (the Oliveira Lima copy); British Museum*; Cambridge University (Clusius' own copy with his autograph signature and marginal annotations); Bodleian Library, Oxford* (imperfect); Wellcome Historical Medical Library*;

² I am indebted to Dr. Noel Poynter for kindly checking and revising this note.

C. R. Boxer*; two copies sold at Sotheby's on 13 November and 18 December 1934, respectively. The first of these two is identical with the copy offered for sale in Maggs Bros., *Catalogue* No. 546, *Bibliotheca Brasiliensis* (London, 1930), item nr. 52, price £1,250, but I have not been able to ascertain the subsequent whereabouts of either of them. This makes a total of 24 recorded copies in all, easily a record for any book printed at Goa during the years 1556-1674, when a press (or presses) functioned there. Those copies which I have actually examined are indicated with an asterisk*.

LITERATURE: King Manuel II, *Early Portuguese Books*, Vol. II (Cambridge University Press, 1932), pp. 644-659; Augusto da Silva Carvalho, *Garcia d'Orta* (Coimbra, 1934), pp. 123-133; *Boletim do Instituto Vasco da Gama*, Nr. 39 (Goa, 1938), pp. 91-95; *Boletim do Instituto Vasco da Gama*, Nr. 73 (Goa, 1956), pp. 19-41.

Dr. Augusto da Silva Carvalho, noting that there were some differences between the pagination of the two copies in the National Library at Lisbon, as well as marked discrepancies in the wording and orthography of fol. 7 of these two copies, suggested that perhaps there were two editions of the *Coloquios* published at Goa in 1563, one of which he tentatively termed A and the other B (*Garcia d'Orta*, pp. 127-28). Personally, I believe that there was only one edition, but that there were numerous minor variants between different copies, for reasons which I will indicate briefly.

Dr. Carvalho claims that the two examples of leaf 7 which he examined in the National Library at Lisbon were printed from different types, as seems evident from the photo-facsimiles of fol. 7 *recto* which he reproduces on p. 127 of his book. Having placed these two original leaves alongside each other and carefully examined them, I can only say that they seem to me to have been printed from one and the same fount of type. The apparent differences are due to (a) heavier or lighter inking on the page(s), and (b) the fact that Dr. Carvalho's reproductions are not on the same scale, one being slightly smaller than the other.

The differences between variants A and B, as described by Dr. Carvalho, are more numerous and complex than he implies, though still relatively minor. I doubt whether any two of the fourteen copies which I have personally examined at one time or another are exactly the same in all particulars—and I would hazard the guess that there are some variants between the BM copy and the former 'duplicate' which was given in exchange (for a much less interesting and valuable work, the *Itinerario* of Antonio Tenreiro) to ex-King Manuel II. It is not difficult to account for this typographical confusion.

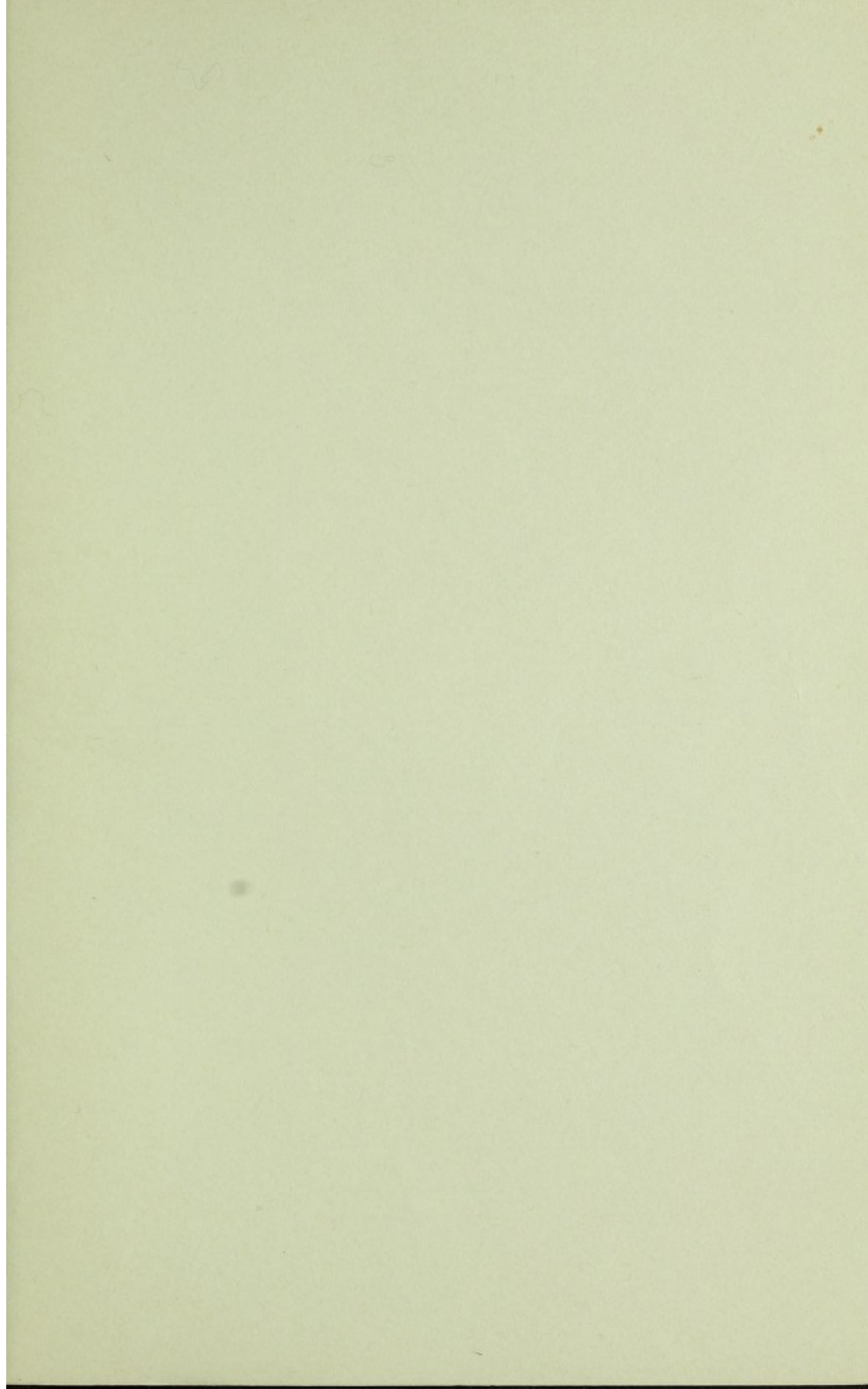
As Dimas Bosque observed in his preface to the *Coloquios*, this book "had some errors in printing, since the chief printer was away, and the work was left in the hands of his assistant who was not yet very skilled in the art of typography". Presumably the German master-printer, João de Endem (Johann of Emden) was absent through illness or some other cause while all or most of the book was being printed, and the work was left to a partially trained apprentice. Nor was this all. As often happened with sixteenth-seventeenth century books, including Shakespeare's First Folio, sheets were evidently printed before having them checked against copy to discover errors. "Proof was read while printing continued at the rate of about three impressions per minute. So a lot of uncorrected pages were printed for the book while the text was being checked", as Mr. J. D. Hart explains about the printing of the First Folio.¹ These two factors would account for the numerous variants in different copies of the 1563 *Coloquios*, without postulating the existence of two editions.

A final word on the relative rarity of the first edition of the *Coloquios*. Dr. Silva Carvalho could only locate fourteen copies in 1934—though he realized that others probably existed—and he assumed that the book had been condemned to the flames soon after the death of its author (*Garcia d'Orta* p. 79). I am quite ready to believe that the bigots who staffed the Holy Office of the Inquisition were capable of any obscurantist folly, as a survey of the books periodically prohibited by that tribunal clearly shows, but there is no need to charge them with this particular offence. Apart from the twenty-three copies listed above, others may well come to light in the near future, especially in Spanish libraries, which none of d'Orta's bibliographers have investigated. Apart from this, the *Coloquios* is by far the least rare of all the books and pamphlets printed by the Portuguese in India during the sixteenth and seventeenth centuries, as I have stated above. The runner-up in this respect is the Jesuit Padre António Fernandes, *Vida da Santissima virgem Maria may de Deos, Senhora Nossa* (Goa, 1652), of which I have been able to trace seven or eight existing copies.

The rarity of all the Goan imprints is sufficiently accounted for by the fact that their editions were very limited, while the ravage of the tropical climate and insects sooner or later destroyed all of those which circulated in Monsoon Asia. Only those which were sent to Europe had a good chance of survival during three or four centuries. It is virtually certain that more copies of the *Coloquios* were sent to Europe

¹J. D. Hart, *Two Million* (California University Press, 1956).

than of any other early Indo-Portuguese printed work, since these others were destined exclusively for circulation among readers in "Asia Portuguesa". The *Coloquios*, as is clear from Dimas Bosque's preface and from d'Orta's preliminary remarks to the twenty-sixth colloquy, were addressed to potential readers both in Europe and Asia. Hence the likelihood that a fair number of copies were shipped to Europe—at any rate before Clusius published his Latin epitome, the *Aromatum*, and news of this reached Goa.



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