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Philippine Botanist, Physician, Pharmacist

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Georg Joseph Kamel: Philippine Botanist, Physician, Pharmacist

LEO A. CULLUM

EVERYONE is familiar with the *camellia* or "Japan rose." The *Webster International Dictionary* (1955) says that it is named "after Georg Joseph Kamel or Camelli, a Jesuit who is said to have brought it from the East." The *Funk and Wagnalls Standard Dictionary* (1904) says that it was named after Georg Joseph Kamel "a Jesuit traveler." The *American College Dictionary* (1953) adds that Kamel was a "Moravian Jesuit missionary." What the dictionaries do not tell is that the "Jesuit traveler" or "Moravian Jesuit missionary" in whose honor the great Linné or Linnaeus named the *camellia* (*Thea japonica*) was a Jesuit lay brother who lived in Manila for twenty years and died here in 1706, just two hundred and fifty years ago.

The scene of his labors (and of his death) was the Jesuit college of San Ignacio in Manila, the history of which is treated elsewhere in these pages. It was located within the old Walled City (Intramuros) on the spot now occupied by the ruins of the 31st Infantry Barracks not far from San Agustin Church.¹ The circumstances of his death were fortunate from his spiritual point of view, for a Provincial Congregation was in session with a great number of priests in attendance. As a result Brother Kamel received the benefit of a large number of Masses almost immediately after his death.

Brother Kamel was rather famous in his day, not only in the Philippines but also abroad; but after his death his name was almost completely forgotten save for a few scattered—and largely incorrect—references.

Even in the Philippines, whatever literature there is on the history of science, passes over Kamel with scant attention. Leon Ma. Guerrero knew of Kamel's work but did not think much of it.² We shall discuss Dr. Guerrero's opinion below. Dr. José Bantug refers to Kamel's collaboration with the English botanist Ray and gives the title of the work, but nothing more.⁵ It is not surprising therefore that Father Lorenzo Rodríguez, O.P., who acknowledges his indebtedness to Bantug for this period, omits Kamel's name entirely from his "Chronicle of Philippine Pharmacy during the Spanish Times."⁴

Dr. Josef Gicklhorn, Professor in the University of Vienna, and his wife Renée have collaborated on a life of Kamel to rescue his name from oblivion. The title of their book is *Georg Joseph Kamel (1661-1706). Pharmacist, Botanist, Physician and Naturalist of the Philippine Islands*.^{*} Working on materials culled from five nations and written in six languages, they have produced from original sources in the Archives of the Archdiocese of Vienna, of the Society of Jesus in Rome and Louvain, of the British Museum of Natural History in London, and of Spanish Archives in Valladolid and Seville, with intelligent interpretation of secondary sources, a most informative life of this religious. Many of the documents are used for the first time; a number of the most important are produced in photostat. The life is part of a series, devoted to the history of pharmacy, being written under the auspices of the International Society for the History of Pharmacy.

Pharmacy is the key to Kamel's life. He worked in many fields but his whole scientific activity took its rise from pharmacy. Anyone who reflects upon the conditions which greeted the European missionaries who went to labor in the Far East

^{*} *Georg Joseph Kamel, S.J. (1661-1706). Apotheker, Botaniker, Arzt und Naturforscher der Philippineninseln* von Josef und Renée Gicklhorn. Eutin (Holstein). Internationale Gesellschaft der Pharmazie. 1954. Herausgeben von George Edmund Dann. I Bild im Text und 14 Tafeln. Pp. 123.

and America will recognize the important role of the infirmarian. Unfamiliar food and a trying climate combined to make the European newcomers easy victims to the strange diseases that confronted them in their new home. The infirmarian was their protector.

But it was not only for the health of missionaries that the infirmarians were important. They were also influential in creating a friendly attitude among the native races by the aid they could render them. Naturally the treatment of diseases was at best less advanced in the mission countries than in Europe; at worst it was a strange potpourri of herb therapy, magic and quackery. Thus it came about that a good infirmarian was not only the protector of his own community against illness, but also an ambassador of the missionaries to the people. Brother Kamel was effective in both roles.

It is striking how conspicuous medical practitioners have been in the history of the missions. Some of them were priests, others were brothers, and perhaps some were laymen, who dedicated themselves to this apostolate without vows—precursors of our modern medical missions. Concerning Father Apperger of Paraguay we read: "He is a famous man in this country and has by his skill in medicine won the love and esteem of all . . . A Spanish father said of him 'If this German had not been here, half the Paraguay province would have died.'" Another example of the importance of the religious infirmarian was the remarkable exception made in the case of Brother Joseph Zeittler when the Jesuits were expelled from Paraguay in 1767. A decree of the governor allowed him alone, among all the Jesuits, to remain, alleging as a reason: "lest the capital be deprived of so necessary an institution [his pharmacy]."

It will be remarked that both names cited above (Apperger and Zeittler), as well as Kamel itself, are German. This is not a coincidence. A large number of infirmarians in the Spanish and Portuguese missions were from northern Europe. The Gicklhorns list from Huonder:⁵ Johann Haller who first worked in Mexico, but in 1688 was sent to the Marianas; Paul Klein, who was sent to the Philippines in 1678, a contemporary of Kamel, and like him a Czech and author of a work on medicinal

plants; Georg Maisler who worked as a pharmacist in Manila from 1717 until his death on Dec. 15, 1721; Jakob Riedl who is identified with the Philippines from 1748; Leopold Schenk who worked in the Philippines from 1731 to 1734.

Christop Mattern, a pharmacist at Goa (and this may be applied to the Spanish missions as well) said: "God grant that more German pharmacists, whether of the Society or single laymen, will feel their hearts moved to come here out of love of their neighbor. If six were to arrive at once, they would all find work enough."

This high incidence of German names among the infirmarians of the missions reflects an educational condition in the home land. To turn our attention only to Kamel's native land, Bohemia, or Czechoslovakia as it is called today, we find there a history of careful pharmaceutical education that reaches back several centuries before Kamel's time. Dr. Josef Gicklhorn has gone into this question in great detail and has revealed careful provisions both on the part of the state and of the universities for the preparation and practice of pharmacy. During Kamel's schooling the statutes drawn up by Professor and Doctor of Medicine Marcus Marci of Kronland were in force. These detailed the courses of instruction and provided for oral examinations and practical tests. It is not clear that Kamel ever became a master pharmacist but it can be taken for granted that he had a sound pharmaceutical formation.

Georg Joseph Kamel was born on April 12, 1661 at Brünn⁶ in Moravia, a part of the present Czechoslovakia. His name suggests that he was of German origin. He probably attended the Jesuit college at Brünn but dates and details are not available. He entered the Society of Jesus on November 1, 1682 when he was 21 years of age. In 1685 he is in Neuhaus in Bohemia, where the catalog lists him as "assistant infirmarian and pharmacist." The triennial catalog of the Society of Jesus for that year contains the following entry: "Georgius Josephus Kamel, Moravus, Brunensis, Annorum vitae 24, Soc.tis 3. Scit linguam Germanicam et Moravicam, mediocriter Latinam. Apothecarius." (Georg Joseph Kamel, Czech from Brünn, twenty-five years old, three years in the Society, knows German and Czech. Also Latin fairly well. Pharmacist.)

In 1686 Brother Kamel was sent from Neuhaus to Krummau to act as infirmarian and pharmacist in the Jesuit college there. Krummau was a city with a pharmaceutical past. Historians find that the first pharmacy was established there in 1568. The Jesuit records for 1603 regarding the College at Krummau (*Collegium Crumloviense*) describe an intense activity on the part of the brother infirmarian, to whom people came from miles around: "*unicum habent perfugium, fratris nostri infirmarii opem, quam ipse, non tantum consilio sed medicinis ipsis suppeditis, nemini negat successu fere prosperrimo, et, ut ego arbitror, plus quam humano.*" (They have only one recourse, that is the help of our brother infirmarian, which he refuses to no one, not only giving advice but also medicine, generally with the most happy results, which in my opinion are more than human.) This was about eighty years before Brother Kamel was assigned to that house, but later reports indicate a continued tradition of important and extensive activities of the brother infirmarian not only in the religious community but even beyond it.

Brother Kamel did not remain long in that city. After two years he received his appointment to the Philippines, and the annual letters of the province of Bohemia for 1687 contain a report from the College of Krummau which—after enumerating the deceased of the year—goes on to say: "*Et hos quidem defunctos dedimus mundo alteri; unum vero e mundo vetere transmisimus orbi novo Pharmaceuticam nostrum, dignum piis missionibus Christi in Indias Orientales.*" (We gave these to the other world; but one we transferred from the old world to the new, our Pharmacist, found worthy of Christ's holy missions in the East Indies.)

The entrance of foreigners—i.e. non-Spaniards or non-Portuguese as the case might be—into the Missions of the New World or the Far East was carefully controlled by the mother countries with the purpose of excluding undesirable aliens. Consequently for German or Czech priests and brothers appointed to the missions the course to be followed in reaching Spain was carefully marked out. This was via Tirol and Milan to Genoa and thence by ship to Cadiz or Seville. We may pre-

sume that this was the route followed by Brother Kamel in 1687. In June we find him at Cadiz, "lego hermano Jorge Camel" with six others destined for the Philippines and the Marianas, waiting to embark. There were 41 missionaries in all in this expedition. The list still exists in the Archives of Seville. The seven at Cadiz were "El P°. Rodulfo Seniqui, El P°. Jorge Sarao, El P°. Adamo Call, El P°. Daniel Prunsnez, El P°. Juan Berdica, El Herm°. Jorge Kamel, El Herm°. Juan Miller." Father Antonio Baraona was the superior of the expedition.

Not frequently such expeditions were forced to delay many months in port, held there by the threat of English pirates. but this expedition got under way promptly and set sail on July 9, 1687. Brother Kamel was on the galleon "Santísima Trinidad", Juan Antonio Ruiz de Eguila, Captain. Though the journey to New Spain was highly hazardous because of pirates and storms, this particular passage seems to have proved uneventful. Ordinarily missionaries for the Far East were landed at Vera Cruz in Mexico and transported on mules to Acapulco and thence by galleon to Manila.

We have no details of Brother Kamel's passage but we may presume that it followed the usual route. Murillo Velarde simply says that he arrived in 1688; in 1689 he is listed in the catalog of the Philippine Province as attached to the College of Manila.

The successive entries in the Province catalogs help us to understand Brother Kamel's growing scientific stature. At first he is infirmarian (*infirmarius*); then in 1695 he is called pharmacist (*apothecarius*); after 1699 he is botanist (*botanicus*). His first task was to establish or reform the pharmacy according to the latest and best European standards. To the European *materia medica* he soon added native medicinal herbs, and in the course of time made his pharmacy entirely independent of European importations.

Murillo Velarde has left a short account of him which perhaps it would be convenient to give here in its entirety:

Brother Jorge Kamel, Temporal Coadjutor, was born in Brünn, Moravia, April 21, 1661. He entered the Bohemian Province in 1682 and came to this Province in 1688. He worked hard

here in his position of pharmacist, and gave himself to it with much diligence, establishing in our college a pharmacy for the relief of the members of this province. This turned out to be a great service to the whole neighborhood of Manila and to all the islands, because of the supply and variety of remedies it offered for every kind of illness. The citizens began to come to him with great confidence, and much more so when they saw his great ability. It happened occasionally that some one committed a slip of the pen, or that the "curanderos" (of whom there are plenty here without science or art) prescribed a greater dose than the case required. Then the brother would change this and reduce it to the proper dose with very definite improvement.

He devoted himself to the study of the many medicinal herbs that grow in these islands and wrote two good-sized books on them, sketching their roots and leaves and fruits. He included the names which they have in the different languages so that the books would be of more general utility. This was a work which won much praise among foreign nations. John Ray and James Petiver made use of it in their printed works and referred to it in laudatory terms.

Because of the knowledge which the Brother had of medicine, many persons of authority wanted to be treated by him, and they placed themselves entirely in his hands with happy results. Nevertheless the Brother never took such cases except with the previous authorization of Superiors, who proceeded in this matter with great caution, as was proper.

The doors of the pharmacy were always wide open to the poor, towards whom the Brother always exercised the most generous charity. He not only gave them various medicines but administered these medicines himself and cured their ills and ailments. With the natives and servants of the College his charity was especially great, and he gave much time to help them and to relieve their sicknesses. In an epidemic which took place at that period, his care of the sick was extraordinary; he saw Christ present in the poor and gave himself to them with such alacrity that it was obvious that God was the moving force of his ministrations.

He did not limit his charity to those who were present in Manila and its environs. He sent medicines even as far as the Visayan islands for the natives and for the poor of whom he always had special care, since in their case charity was exercised with greater disinterestedness.

Notwithstanding all this he not only saved the College the doctor's salary—since he himself filled this office—but, with what he got from the various medicines which he made, and with other alms that the neighbors gave him, he paid the expenses of the

pharmacy and even came to the assistance of the College and of other needly causes. Alms are like a seed. When scattered they seem to perish. But afterwards they give back fruit with interest, not only for eternal life—which is the main thing—but even for temporal provision. *Faeneratur Domino, qui miseretur pauperis* [He lends with interest to the Lord, who has mercy on a poor man].

He was very retiring and always busy at his office, He was never idle; nevertheless he always had time for the exercises of his state as a Coadjutor Brother, in which he was a perfect model of obedience, humility, poverty and religious observance. He was so resigned to the plans of God that in his last illness, which resulted from diarrhea that had been wearing him down, when they informed him of his danger, he answered with great peace and without any change that since he had to die sometime, he had no objection to its being then. And so he died in Manila, May 2, 1706, and God straightway repaid his charity, for Brother Kamel immediately received the suffrages which it is customary to offer in the Society for its dead, since a Provincial Congregation of the Fathers of the Province was then in session.⁷

Murillo Velarde does not mention, but we know from other sources, that Brother Kamel pronounced his final vows on August 15, 1696 in the Church of the Society in Manila, before Father Antonino Tuccio, a Sicilian Jesuit, who was twice Rector of the College of Manila, twice vice-Provincial and for three years Provincial.

We see from Murillo's account that Brother Kamel exerted a wide influence by the effectiveness of his pharmaceutical skill. But meanwhile he was also very active in other scientific areas. Very early his interest in medicinal plants led him into wider botanical studies. In 1698 a shipment which he sent of botanical reports and drawings was lost at sea, and he laments this blow as representing the work of *almost ten years*. This is an indication that he began his botanical collecting about 1688, the year he arrived. This conclusion is further borne out by the fact that before 1696, Brother Kamel's reputation was already sufficiently established in Manila to cause merchants to bring his name to the attention of Dr. Samuel Browne in Madras.

It was this contact which brought Brother Kamel into international renown as a scientist. Dr. Samuel Browne, a physi-

cian of the East India Company, stationed at Fort St. George near Madras, India, was an accomplished botanist and enthusiastic collector of plant specimens. Striving to establish relations with other territories, he learned from merchants of Manila that there was in that city a kindred spirit interested in the collection and study of medicinal plants. Browne immediately took steps to put himself in touch with Brother Kamel. Soon there began an exchange of letters, plant specimens and other collectors' items. Browne himself was in communication with John Ray and James Petiver, two of England's foremost naturalists, both members of the Royal Academy.

About the same time, and probably by similar steps, Brother Kamel began correspondence and exchange with a physician and botanist of Batavia (now Djakarta) on the island of Java, by name Willem ten Rhyne, collaborator and correspondent of many of the outstanding botanists of his time. But the results of Kamel's relations with ten Rhyne were not as far reaching as the results of his relations with Ray which began through Browne.

John Ray, of whom the *Encyclopaedia Britannica* says that he is "sometimes called the father of English Natural History," was born in 1628 and died 1705. He studied at Cambridge University and returned there to teach. Refusing to subscribe to the so-called "Act of Uniformity" he left Cambridge and devoted himself to the study of science, especially botany. He was the first to abandon the traditional Aristotelian classification of plants and animals in his *Methodus Plantarum* (1682) and his *Synopsis Methodica Animalium Quadrupedum et Serpentinae Generis*. The first named book was long England's outstanding work on Botany. The second work prompted Cuvier to call Ray one of the founders of modern Zoology.

John Ray was an enthusiastic admirer of Kamel, whom on one occasion he addressed as "celeberrime vir, historiae botanicae promovendae nate, immortalī laude dignissime." (Most famous man, destined by nature to advance the history of botany, most deserving of immortal praise.)

The various steps in Kamel's contribution to Ray's *Historia Plantarum* help us to understand at once the importance of Kamel's work and the enormous difficulties under which it was carried on. Ray published Volumes I and II of his *Historia* in 1687. It seems to have first come to Kamel's attention about 1694 or 1695 in Manila, where a friend owned a copy. Kamel said of it, writing later to Ray, "Opus, me Hercle, omnium consummatissimum, pro quo tibi tota posteritas gratias referat promeritas et condignas tanto et utilissimo labore." (A work, I vow, of consummate perfection for which all posterity should thank you, and deservedly, for so great and useful an effort.)

As we have already said, Dr. Samuel Browne wrote to Kamel about 1696. It may have been even a little earlier, since there is a letter of Father Paul Klein, S.J. dated July 15, 1696, saying of Kamel: "He has scientific correspondence with European savants and sends them his observations and collections." Browne asked for Kamel's collaboration and told him that he himself was in correspondence with the renowned naturalists John Ray and James Petiver. At the same time Browne sent Kamel one of Petiver's publications. In answer to Browne's request, Kamel sent, in January 1697, drawings and descriptions of various Philippine plants, among them *Strychnos S. Ignatii* which was forwarded to Ray or Petiver. This was the first appearance of this source of strychnine in European pharmacy. At the same time Kamel sent a letter for Ray and requested his *Historia* and other books.

The letter of Browne inspired Kamel to prepare a supplement to Ray's *Historia* from his own knowledge of Philippine plants. This he did in three parts or "books." The first book was about "humble" (*humiles*) or ground plants. The second was about *volubiles et scandentes*, namely vines; and the third was about bushes, shrubs and trees (*frutices et arbores*). He called this work *Supplementum Historiae Plantarum Domini Joannis Raij*. In January 1698 he sent two copies of it to Browne. Unfortunately the ship carrying them met with pirates and "the evidence of ten years work was lost, as I fear, in a day."

News of the disaster somehow reached Kamel, and the following year, on Jan. 1699, he sent Browne another first book made from the copy he had kept with him. He was not able at that time however to send books two and three.

This new first part also ran into trouble. When it reached Madras, Browne was dead, and so the whole business remained uncared for. When Kamel learned of this he requested Dr. Edward Bulkly, who was Browne's successor in office and interests, to see to the forwarding to Ray of the *Supplementum*, as well as of a letter that had been sent with it. This Bulkly did.

While the fate of the first part was still obscure, Kamel received the request from Dr. Willem ten Rhyne, naturalist and collector of Batavia, for information on Philippine plants. In answer Kamel sent him—at different dates in early 1700—his *Supplementum*. By the time the third book reached Batavia, ten Rhyne was dead, and so the book was returned to Kamel.

Kamel was now in a position to gratify Ray and send the rest of the *Supplementum*. By this time the first book had been rescued from Browne's widow and forwarded to Ray, who received it and acknowledged it in a letter of May 20, 1701, a letter which Kamel received on Sept. 23, 1704. Ray asked for the other two books but Kamel had already sent them, the third book in 1701 after it had been returned from Batavia, and the second later, on October 9, 1702, to Petiver.

The first and third books were actually published by Ray as appendices to his *Historia*. The first bore a title page as follows:

APPENDIX. / HERBARUM / Aliarumque / STIR-
PIUM / IN / Insulâ LUZON E Philippinarum /
Primariâ Nascentium, / A Rev^{do} Patre GEORGIO
JOSEPHO CAMELLO, S.J., / Observatarum & Des-
criptarum / SYLLABUS: / Ad JOANNEM RAIUM
transmissus; / Additis etiam plurimarum Iconibus,
ab Autore propria manu ad vivum / delineatis; quas
ob sumptuum in Chalcographos erogandorum defe-
/ ctum impraesentiarum emittere non licuit.

This first appendix had 42 pages. The second appendix (but 3rd book) had 53 pages and the title *Descriptiones Fruticum et Arborum Luzonis* A Rev. Georgio Josepho Camello, S.J. ad Jacobum Petiverium, Pharmac. Londinens., missae anno 1701. The second book did not appear in Ray's *Historia*. Possibly it arrived after Ray's work had been published. Perhaps Petiver decided—since it was sent to him—that he would publish it. Kamel sent the later shipments to Petiver because he had heard that Ray was a sick man. Ray misunderstood Kamel's motive and wrote indignantly to Petiver: "Kamel hath not dealt ingenuously in this."

It may have been Petiver who had failed to deal ingenuously. With the second book of Kamel's *Supplementum* came additional information on the previous two treatises. Petiver published most of this in *Philosophical Transactions*, except the additional observations on Trees—i.e. on Kamel's third Book and Ray's second appendix—which he published in his *Gazophylacea Naturae*.

The publication of Kamel's work as appendices to Ray's *Historia* and by Petiver in the *Philosophical Transactions* and *Gazophylacea* is an indication of the high esteem in which these scientists held him. In a letter to Petiver, written Aug. 14, 1700, Ray says: "I cannot but look upon it as an effect of Providence to stir up a man so well skilled in plants to apply himself to the inquisition, delineation and description of the plants growing in those remote parts of the world, and giving an account of their virtues and uses." And in another letter, Dec. 22, 1703, he speaks of him as "being made, as I may say, for the advancement of natural knowledge." In the correspondence of the two savants Kamel is always "the learned Jesuit." He is "well skilled in Botany," a "virtuoso" of Botany.

Kamel's contribution to Ray's *Historia* is by no means his only influence on European science. Petiver published in *Philosophical Transactions*—in addition to the four articles carrying Kamel's observations on vines—twelve articles between January 1699 and September 1711, recounting and discussing specimens and information sent him by Kamel. These ranged far beyond botany: "A Description and Figure of the True Amo-

APPENDIX HERBARUM Aliarumque STIRPIUM

IN

Insulâ *L U Z O N E* Philippinarum
Primariâ Nascentium,

A Rev^{do} Patre GEORGIO JOSEPHO CAMELLO, S. J.
Observatarum & Descriptarum

SYLLABUS:

Ad *JOANNEM RAIUM* transmissus;

Additis etiam plurimarum *Iconibus*, ab Autore propria manu ad vivum
delineatis; quas ob sumptuum in *Chalcographis* erogandorum defe-
ctum impræsentiarum emittere non licuit.

Title page of Kamel's work on Philippine plants, added as an appendix to Ray's *Historia* (Reprinted from Gicklhorn)

Yo Jorge Camel prometo à Dios todopoderoso
 delante de su Madre, y Virgen Santissima, y
 de toda la Corte celestial, y à Vos Rdo. P.
 Antonino Tuccio que teneis las vezes de
 Preposito General de la Compia. de JESUS,
 y de sus Sucesores que estais en su lugar,
 perpetua Pobreza, Castidad, y Obediencia,
 segun el modo expreso, en las letras Apostolicas
 y Constituciones de la dha Compia. En la
 Iglesia de la Compia. de Jhs de Manila, à
 quinze de Agosto. El Año de Mil seiscientos,
 y noventa, y seis.

Antoninus Tuccio & Jorge Camel.

Last vows of Brother Kamel, pronounced Aug. 15, 1596 in the Church of St. Ignatius, Manila, before Father Antonino Tuccio, S.J.

(From Archives, S.J., Rome.)

'Yo Jorge Camel prometo a Dios todopoderoso delante de su Madre, y Virgen Santissima, y de toda la corte celestial, y a Vos Rdo. Pre. Antonino Tuccio que teneis las vezes del Preposito General de la Compia. de JESUS, y de sus sucesores que estais en su lugar, perpetua Pobreza, Castidad, y Obediencia, segun el modo expreso, en las letras Apostolicas, y Constituciones de la dha Compia: En la Iglesia de la Compia de Jhs de Manila, a quinze de Agosto El Año de Mil seiscientos y noventa, y seis. Antoninus Tuccio Jorge Camel

I, George Kamel, promise almighty God before His Mother and the most blessed Virgin, and the whole court of heaven, and to you Reverend Father Antonino Tuccio, who take the place of the General of the Society of Jesus and of his successors, in whose stead you are, perpetual poverty chastity and obedience according to the manner expressed in the Apostolic Letters, and Constitutions of the said Society of Jesus. In the Church of the Society of Jesus in Manila, the fifteenth of August, the year sixteen hundred and ninety-six. Antonino Tuccio Jorge Camel

num or Tugus"; "De Igasur seu Nux Vomica Legitima Serapionis"; "Some Animals observed in the Philippine Islands by Father G. J. Camel"; other articles on birds, on corals and other submarines; one on Ambaro; an article on fish, mollusks and crustaceans; one "de Monstris et Monstruosis"—on monsters and monstrosities—and on serpents; one on quadrupeds; one on "conchyliis, Turbinatis, Bivalvibus et Univalvibus, item de Mineralibus, Fossilibus et Thermis"; one on various Philippine animals; and others on spiders, beetles, orchids.

We know also from the correspondence that he sent information, sketches and specimens of butterflies, moths, praying mantis, walking leaves, "unusual" flies. One item is the skin of the snake *sawa* (serpentis...Sauvae pellem). This is probably the python (Tagalog—Sawa), and if it was really a big one, the English scientists must have been impressed by the 30 foot sheath of the world's largest snake.

The appendices to Ray's *Historia* and the communications which Petiver incorporated into his *Philosophical Transactions* and *Gazophylacea Naturae* are Kamel's only known published works. Sommervogel says that Kamel "left two big volumes on medicinal herbs, which were never printed except partly in the *Philosophical Transactions* and in Ray's *Historia Plantarum*." He is evidently echoing Murillo Velarde here who speaks of "dos Libros de bastante cuerpo." However, it is not clear that these were even partly different from the materials sent to Ray and Petiver with the illustrations. The total of published pages in Ray and Petiver was 95 folios and about 160 quartos. Adding to these the 300 pen sketches, we have material enough here perhaps to account for the two sizeable volumes of Murillo Velarde.

Among the papers Petiver published in *Philosophical Transactions* was one "De Igasur seu Nox Vomica Legitima Serapionis." The sub-title of the paper goes on to describe this study as "An account of the Virtues of Faba St. Ignatii, mentioned last transaction. A further and more exact account of the same sent in a letter from Father Camelli to Mr. John Ray and Mr. James Petiver." Petiver's article bears the date March, 1699. *Strychnos S. Ignatii* or Igasur is the plant from which

strychnine was derived in 1818. Kamel sent an excellent sketch of the plant showing the fruit, the leaf—front and back—on a twig and some seeds. This seems to be the first time that this important plant, its properties and medicinal value were described in Europe. The seeds of the plant from which the drug is derived were known in the Philippines as St. Ignatius beans—*faba S. Ignatii* or *semen Ignatii*—information which Kamel must have conveyed to Ray.

The authors of *El Archipiélago Filipino* in discussing "Medicinal Plants" give a prominent place to Igasur, or Igasud as it was also called. "Among all the vines which are found in these islands, that called by the inhabitants Igasud (*Strychnos Ignatii*, Berg.) . . . is most highly esteemed and valued. The Spaniards, following the name which the missionaries in the Visayas gave it, call it seed of St. Ignatius, because it grows only in the territory of which the Jesuits formerly had spiritual charge. The Portuguese and Dutch call it also bean of St. Ignatius. The fruit of this vine enjoys a great reputation everywhere." This same work says that Igasud grows principally in Catbalogan, Samar,⁹ but quotes Delgado to the effect that it is abundant in general in the mountains of the Visayas, whereas it is not found on Luzon. Delgado grows positively lyric: "It is so useful and helpful as a medicine that I believe that there is neither its like nor its equal in the whole world."¹⁰

We observe that the authors of *El Archipiélago*, following Delgado, attribute the name to the fact that the plant grew in Jesuit mission territory. The seed was also known as the bean of Catbalogan, a town in which the Jesuits were working at that time. It is possible that, with their founder beatified on July 27, 1609 and canonized on March 22, 1622, the Jesuits were inclined to name things after him, not only their College in Manila, but also the powerful vine that enjoyed such esteem in their vineyard. Nevertheless it seems likely that the similarity of sounds "habas de Igasur" and "habas de Ignacio" also may have had something to do with the name.

The plant itself was named *Strychnos Ignatii* by Bergius who first identified it. Obviously he was naming the plant

from the seed. Kamel called it "Igasud seu Igasur, quam alii Pangaguason vocant, sive nucis vomicae legitimae Serapionis." Elsewhere it is "Nux vomica vera Serapionis." Ray speaks of "Higasur. Faba St. Ignatii dicta in insulis Philippinis proveniens." Actually Strychnos St. Ignatii and Nux Vomica are not the same thing, though strychnine is derived from both.

In as far as Brother Kamel has not been completely forgotten in our day, it is in connection with the *camellia* shrub and flower, which Linné, the Swedish botanist, named after him. Around this fact a considerable mythology has developed. In some writings Kamel is said to have brought the *camellia* to a certain Lord Petre and presented him with it. Elsewhere it is said to have been Linné to whom he gave it, which is obviously false since Kamel died the year before Linné was born. The historical fact seems to be that Kamel never sent or brought a picture or description of the *camellia* to anybody in Europe, much less a living plant or a specimen. Linné simply named the plant in his honor; it had previously been called *Thea Chinensis* or *Thea Japonica*.

There are certain aspects of Kamel's life which illustrate his highly scientific temperament. The first was his great desire to acquire scientific books and to establish relations with other scientists wherever he discovered them. We have already studied his relations with Ray and Petiver, and touched on his relations with ten Rhyne, Browne and Bulkley. But these are not all. When ten Rhyne died, Kamel wrote to Batavia trying to find someone to continue the collaboration he had maintained with ten Rhyne, but to no avail. He also tried to exchange letters with his countryman "compatriotae meo" Brother Johann Steinhöfer, another Czech from Iglau in Moravia, who was stationed in Mexico. The name of this Brother, as changed into Spanish, was Juan de Esteyneffer. He was the author of *Florilegio medicinal de todas las enfermedades, sacado de varios y clásicos autores para bien de los pobres... Escrito por el Hermano Juan de Esteyneffer, Mexico, 1712*. This work had sufficient vogue to receive reprinting in Mexico as late as 1888-1889. Kamel was unable to get an answer from Steinhöfer.

One of the things he wanted very much to obtain from Steinhoefer was Francisco Hernández's well-known *Thesaurus Novae Hispaniae* with the notes of Jiménez and Recchi. Kamel was always trying to get books for his work. As soon as he heard of Ray's *Historia* he moved to acquire a copy. He sought and obtained books and writings from Browne and Petiver. He asked Petiver to purchase him ("pretium libentissime rependam") the *Thesaurus Medicæ Practicæ* of Thomas Burnet, an English authority.

A second characteristic which manifests Kamel's scientific approach was his sensible scepticism regarding the numerous myths that were so common in the natural history of the period. Mice were said to be born from leaf mold. Certain insects—the praying mantis and the walking leaf—had a similarly strange origin. Twigs falling to the ground were changed into worms. Kamel's reaction to such theories was sober and objective. Regarding the praying mantis and the walking leaf he says simply: "I do not accept this because I have observed that the sexes are distinguished and the young are born from eggs." As for mice being born from leaf mold, "I think it more likely that they are born not *from* but *in* leaves, from mice nesting there." That twigs become worms, he says: "Valde dubito"—"I doubt this very much. Maybe they were caddis worms or wood destroying insects."

Kamel's death we have seen described above by Murillo Velarde. He was a relatively young man, just passed 45, when he died. Wasted by some kind of diarrhoea or dysentery, he finally succumbed to its effects. Murillo Velarde makes it clear that side by side with Brother Kamel's scientific inquiries into the life of nature had gone an even more assiduous quest of a higher life. The report of Krummau may have said, when Kamel left them, that the old world was being exchanged for the new, but Brother Kamel never had any doubt in his mind that it was this world being exchanged for the next. When death came it found him with no ties to make his departure difficult, no wealth, no worldly ambition. He had long before left family and country. Even his science he had loved without loving himself in it, playing an obscure role of unselfish

charity equally with the poor at his door and the English savants of the Royal Society.

What is to be thought of Kamel? Linné dismisses him rather summarily: "Descriptiones imperfectae, florum nulla notitia." (Imperfect descriptions, no knowledge of flowers.) Guerrero holds the same opinion. He says "Species... cited in the works of Kamel... continue to be enigmas of no easy solution." The reasons given by Guerrero are the following. First, Kamel gives the native names, and these have various meanings in various places. Secondly, he gives no descriptions, or, if he does, it is hard to interpret them. Finally, he accepts the testimony of the quacks regarding the qualities of the herbs.¹¹

James Britten in his *Sloane Herbarium* (London, 1954) finds Linné's judgment on Kamel simply incomprehensible, in view of the perfect and exact descriptions he gave of most of his discoveries. It is possible in the case of Linné and certain in the case of Guerrero that they did not take into account that Kamel sent many unpublished drawings (over three hundred in the British Museum and the Jesuit Louvain archives) and specimens and supplementary information. The drawings are referred to by Ray in his *Appendix*, as seen above, and the supplementary information was published by Petiver in the *Philosophical Transactions* and his *Gazophylacea*. A few of the drawings were also published in the latter work. If Linné and Guerrero were basing their opinions solely on the Ray appendices, then their judgments are a little more understandable.

To do justice to Kamel we must recognize certain things about him. First, not one of his writings was published by himself. He was content to help others and to remain himself in the background. It is to the credit of the English savants that they recognized the superlative services of Kamel and gave him such clear recognition. We have already seen how highly they esteemed his work.

It must be remembered too that whatever Kamel did was done amidst manifold other duties and under the most un-

favorable conditions. His determination to overcome all obstacles and to make his findings available is itself a proof that he recognized the great importance of Philippine fauna and flora for European science.

Another thing to remark is Kamel's versatility. He not only was pharmacist and botanist. He also sent to Europe as many entomological and zoological descriptions and specimens as he did botanical. And to this scientific diligence he added great proficiency in producing sketches, some of them colored, of the objects reported.

It is Kamel's outstanding accomplishment that he set himself to study carefully the natural life of the Philippines and strove to make the secrets of this remote area available to European science. There are mistakes in his work but they are the errors of the science of his time. Actually it is to his credit that he rose above the contemporary level in so many things and discarded so many contemporary mistakes.

His judgments and reports are made according to the scientific classifications of the period. This was before Linné and would need revision today, but Britten says that the precision and clarity of Kamel's descriptions are such that a modern scientist would have no difficulty in reducing them to modern schemes.

Connor Reilly in an article in the learned London journal *The Month* says:

We must remain satisfied to base our estimate of his [Kamel's] achievements on the admiration expressed by his contemporaries. We have already seen some of Ray's laudatory remarks. Ray, one of the foremost botanists of the pre-Linnean period, was well qualified to judge. Petiver, with his extensive collections, was able to compare Kamel's work with that of other naturalists. Sloane, himself a botanist and collector, was in a similar position. William Sherard, the English botanist, and Edward Lhuyd, the Welsh naturalist, were also competent judges. All these men pronounced favorably on Kamel. His contributions to the *Historia Plantarum* and to the *Philosophical Transactions*, and his collections in the Sloane Herbarium of the British Museum prove that these men were not misled in their judgments.¹²

And elsewhere, he says: "A recollection of Camel's life and scientific achievements in this year, the 250th anniversary of his death, may make amends for long neglect of his memory." Reilly and Britten agree that in any account of Philippine natural history Kamel must be given a prominent place.¹³ The work of Dr. and Mrs. Gicklhorn has cleared the way for a more just judgment upon this scholar. Because a book written in German and published in Germany is not likely to become well-known in the Philippines the present writer has undertaken to make available here what is little more than a resumé of their scholarly efforts.

¹ W. C. Repetti, S.J. *The University of San Ignacio. Manila 1623-1768*. (Manila, 1940) p. 4. Also *Pictorial Records and Traces of the Society of Jesus in the Philippine Islands and Guam Prior to 1768* by the same author (Manila, 1938). See map page 142.

² "Medicinal Plants," *Census of the Philippine Islands*, III (1921) 756.

³ *A Short History of Medicine in the Philippines During the Spanish Regime*. 1568-1898 (1953) p. 13.

⁴ "Chronicle of Philippine Pharmacy During the Spanish Period," *Unitas*, XXVII (1954), 465-529; XXVIII (1955), 5-75, 220-260. A Dissertation submitted for a Doctorate in Philosophy at the University of Santo Tomas, Manila.

⁵ Anton Huonder, S.J., *Deutsche Jesuitenmissionare des 17 and 18 Jahrhunderts*. Ein Beitrag zur Missionsgeschichte. (Freiburg in Breisgau 1899)

⁶ Now Brno. Here, in the 1820s, a century and a half after the birth of Kamel, the famous botanist Abbot Gregor Mendel carried out researches which led to the discovery of the laws of heredity. Cf. Conor Reilly, "George Camel. A Pioneer Jesuit Botanist," *The Month*, CCI (March 1956), 137. Kamel's name is variously spelled: Kamel, Camel, Camelli.

⁷ *Historia de la provincia de Filipinas de la Compañía de Jesús* (Manila 1749) Lib. IV, cap. 27, 892 and 893.

⁸ *Bibliothèque de la Compagnie de Jesus*, II (1891) p. 578.

⁹ *El Archipiélago Filipino*. Colección de Datos Geográficos Estadísticos Cronológicos y Científicos, Relativos al Mismo, Entresacados de Anteriores Obras o Obtenidos con la Propia Observación y Estudio. Por Algunos Padres de la Misión de la Compañía de Jesús en Estas Islas. Tomo I (Washington, 1900) p. 624.

¹⁰ Juan J. Delgado, S.J. *Historia General Sacro-profana, Política, y Natural* (Manila, 1892), p. 785.

¹¹ Art. cit., p. 756.

¹² "George Camel. A Pioneer Philippine Botanist," *The Month*, CCI (March 1956), 137 ff.

¹³ Reilly, p. 138, 141, 142.