



MISSOURI BOTANICAL GARDEN

The Botanical Catalogues of Auguste De St. Hilaire

Author(s): John D. Dwyer

Source: *Annals of the Missouri Botanical Garden*, Vol. 42, No. 2 (May, 1955), pp. 153-170

Published by: Missouri Botanical Garden Press

Stable URL: <http://www.jstor.org/stable/2394600>

Accessed: 30/08/2009 12:04

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=mobot>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit organization founded in 1995 to build trusted digital archives for scholarship. We work with the scholarly community to preserve their work and the materials they rely upon, and to build a common research platform that promotes the discovery and use of these resources. For more information about JSTOR, please contact support@jstor.org.



Missouri Botanical Garden Press is collaborating with JSTOR to digitize, preserve and extend access to *Annals of the Missouri Botanical Garden*.

<http://www.jstor.org>

THE BOTANICAL CATALOGUES OF AUGUSTE DE ST. HILAIRE

JOHN D. DWYER*

The recent essay of Jenkins¹ serving as an introduction to Auguste de St. Hilaire's *Esquisse de mes voyages au Brésil et Paraguay* focused considerable attention on this French naturalist who collected plants and animals in southeastern Brazil during 1816–1822. Few of the 30,000 plant specimens collected by St. Hilaire² have found their way into other botanical institutions from the herbaria of the Muséum National d'Histoire Naturelle in Paris or the Université de Montpellier³. This has contributed to the failure of many modern monographers of Brazilian plants to cite St. Hilaire material.

While studying at the Muséum National d'Histoire Naturelle in Paris I came upon the ten handwritten books constituting the catalogues of plants collected by St. Hilaire⁴. It is my hope to demonstrate the importance of these catalogues and also to rectify some errors made in the handling of the St. Hilaire collections.

I wish to express my thanks to Prof. H. Humbert, Directeur Laboratoire de Phanérogamie, Muséum National d'Histoire Naturelle, Paris, France, for permission to examine and to have microfilmed the catalogues of Auguste de St. Hilaire, as well as to use the facilities of the Herbarium. I owe especial gratitude to Monsieur J. Leandri, Sous-Directeur of the same institution, for his substantial assistance. To Mr. George Swett, Examiner of Questioned Documents, Clayton, Mo., I extend my heartfelt appreciation for his comparison of handwritings found in and related to the catalogues.

ST. HILAIRE IN BRAZIL

St. Hilaire set foot on Brazilian soil at Rio de Janeiro on June 1, 1816. He was destined to be the first French naturalist to penetrate into the interior of southeastern Brazil. Rio de Janeiro, the infant capital of Portuguese Brazil, was from the time of Vellozo in 1780 the hub of botanical activity in South America. Three years before the arrival of St. Hilaire, Georg von Langsdorff, a German, found the capital an ideal center for his botanical work. Two English collectors who botanized in Rio de Janeiro and in São Paulo, Brazil, James Bowie and Alan

¹Jenkins, A. E., in *Chron. Bot.* 10¹:5–21. 1946.

²*Rapport sur le voyage de M. Auguste de Saint-Hilaire dans le Brésil et les Missions du Paraguay*, lu à l'Académie Royale des Sciences, de Jussieu Rapporteur. 8 pp. Paris, 1823. This rare reprint may be found in the library of the Missouri Botanical Garden, St. Louis, Missouri, as well as the Oliveira Lima Library, Catholic University, Washington, D. C.

³In America, for example, there are less than 100 sheets of St. Hilaire material deposited in the Smithsonian Institution (U. S. National Herbarium), Washington, D. C., and less than 40 sheets in the Missouri Botanical Garden, St. Louis, Mo.

⁴I wish to express my gratitude to the National Science Foundation, Washington, D. C., for the grant of money to defray in part the expenses of travelling to the VIIIth Botanical Congress held in Paris in the summer of 1954; at the Muséum d'Histoire Naturelle I had the opportunity to examine the catalogues first hand. I prefer to speak of the books as *catalogues*, despite the fact that it may be more accurate to designate the ten books collectively as a *catalogue*.

* Missouri Botanical Garden and St. Louis University.

Cunningham⁵, in their unpublished (Brazilian) diary speak of visiting "Mr. Langsdorff's garden" on January 10, 1815. Four fellow-countrymen of Langsdorff had already penetrated into the interior of southeastern Brazil: Sellow, von Chamisso, Eschscholtz, and Maximilian, Prinz zu Wied-Neuwied. The most illustrious German systematist of this era, von Martius, was soon to arrive (July, 1817). Urban's account of St. Hilaire's five "voyages" informs us that St. Hilaire met two of these botanists, Langsdorff and Sellow⁶.

One of the most concise and accurate summaries of the travels and activities of St. Hilaire during his five journeys into the interior from Rio de Janeiro in search of plants, animals, minerals, etc. is to be found in the report of St. Hilaire's travels presented to the French Academy by Baron Cuvier and five other members. This represents the acceptance by the Academy of St. Hilaire's *Aperçu d'un voyage dans l'intérieur du Brésil* of the previous year⁷. I have taken the liberty of translating a section of this "summary" from the French. Wherever possible, the spelling of geographical names has been changed to that of modern usage.

After speaking of St. Hilaire's arrival in Brazil we read:

In the following December he proceeded northwards, in the province of Minas [Gerais], a territory as vast as France, where he sojourned for 15 months in order to explore its various parts. At first he headed in the direction of Villa Rica, penetrating into old and very extensive forests, covering in turn open country with a different flora, with different birds and insects. There he discovered a "quinquina" unlike the Peruvian kind, but used in the same way, and serving as an indicator of iron. Likewise he observed a grass sticky to the touch, growing luxuriantly in habitats formerly covered with virgin forests. After an illness of a month's duration in Villa do Príncipe, he travelled through other forests, situated to the east of this town and studied the survivors of several ancient Indian tribes. He noted in the "district" of Minas Novas a change in the flora, with woods composed of only small shrubs. Further on, other trees of greater stature appeared, called *Catingas*, which are leafless during the dry season. He spent fifteen days on the banks of the Jequitinhonha in the midst of the Botocudos, warlike Indians who live in the forests, naked and without definite dwelling places. From there he turned toward the mighty San-Francisco river, followed along its banks and entered the District of the Diamonds [Diamantina] and visited the areas where he had previously noted their methods of extracting gold from the mountains and rivers. Returning to Villa Rica by a long detour, he again headed for Rio (de) Janeiro arriving in March of 1818, whence he sent to the Muséum d'Histoire Naturelle a shipment of 200 birds, some quadrupeds, 800 species of insects, and two hundred packets of seeds, as well as two botanical papers which have been printed in the publication of the Muséum.

A second voyage of several months duration brought him to the maritime districts, to the north of Rio de Janeiro, as far as the Rio Doce, and yielded just about the same materials as those collected in the woods adjacent to the capital with the exception of those markedly different ones found on the sandy expanses. He visited Cabo Frio, the town of San Salvador de Campos, the entire province of Espírito Santo, the unhealthy banks of the Rio Doce, and having embarked at Villa da Victoria, he returned by sea to Rio de Janeiro, whence he sent a new shipment of animals and of seeds to the Muséum.

His third voyage, the longest and most important, begun in January of 1819, was at first toward the northwest in the eastern section of the province of Minas [Gerais] where he saw a beautiful waterfall at the source of the São Francisco, and the sulphur springs of Araxá whose waters cattle drink unhesitatingly. To arrive at Goiaz he followed a barren plateau

⁵Bowie and Cunningham were to depart from Rio de Janeiro in October of 1816, the former to collect at the Cape of Good Hope, the latter in Australia. Their unpublished Brazilian journal is at the Royal Botanic Gardens, Kew, England.

⁶Urban, I., in Martius' *Flora Brasiliensis* 11:93-98. 1906.

⁷St. Hilaire, Auguste de, in *Mém. Mus. d'Hist. Nat.* 9:307-380. 1822.

whose opposite sides form the sources of the São Francisco river and the Dos Tocantins both entering the sea from different directions. The vegetation struck him as being little different from that seen on the banks of the São Francisco. The pastures were at times entirely barren, at times covered with small stunted trees. M. de St-Hilaire after having visited Villa Boa, capital of the province of Goiaz, spent a few days among the Coyapos Indians, then went to the border of Matto Grosso; from here he took a southeastern route to São-Paul. He arrived there in December 1819, after a long and arduous journey marked by great heat and dryness, and here he deposited his various collections, packed with care, to permit him to continue southwards.

At first he skirted the western side of the vast chain of mountains which separate the interior of the country from the seashore, and saw in succession the following villages: Sorocaba, Itu, Pôrto Feliz and their environs; he noted the boundaries of the most important colonial industries. Then he entered Campos Gerais, such delightful country because of its diversified countryside. He made a goodly collection of plants which indicated a more temperate climate. There he observed the erroneously named *herbe du Paraguay*; this he correctly identified as a tree of the genus *Ilex*. He also identified the local *quinquina* which is in reality a *Solanum*. Crossing over a chain of mountains at a difficult spot called Serra de Paranagoa, he found himself at the sea coast at a much lower altitude and hotter than the interior plateau whose crops approximate more those of the tropics even as far south as 27° latitude. He was able to visit the islands of St. Francis and of St. Catherine and their whaling-posts. Here the ground beyond is a sandy and dry stretch enlivened only by the presence of a prodigious number of aquatic birds.

The province of Rio Grande, which he soon entered, is very fertile, with a more vigorous population. He observed that the culture of sugar-cane stops at about 30° while cotton-growing extends to 31°, palms to 34°, just as noted in New-Holland [Australia]. He spent the winter, already severe in these areas, at Pôrto Alegre and at Rio Grande, departing in October 1820, that is in the springtime of this country. The plants which flourish at this time belong to the same genera as those constituting the spring flora in Europe, such as the *carex* [sedges], *anemones*, *centunculus* [chaffweeds], *arenaria*, etc. He recognized, too, the influence of climate on vegetation: thus, in the coldest season, the trees retained their foliage, up to a degree north of Pôrto Alegre; a third lose their leaves at Rio Grande, and at two degrees further south scarcely a tenth have retained their leaves.

M. de St. Hilaire then entered the Spanish possessions, passed through several towns and beautiful estates along the banks of the Rio de la Plata, arriving at Montevideo where the vegetation appeared to him to be so closely related to that of Europe that he scarcely found fifteen plants which could not have been assigned to European families. He also noted around certain towns that several of our own plants were well acclimated; he called attention to this especially near Montevideo, where vast waste-lands were covered with our *cardon* [thistle] growing wild and used solely as fuel. Proceeding then in the direction of the Rio Negro, a river rushing headlong into Uruguay, he found beyond a country considerably less populated and with customs agreeing with the descriptions of Azzara. His journey became more difficult between Belem and the province of the Missions, and he spent thirteen days in an uninhabited desert, populated only by *autruches* [rheas], *cerfs* [deer], and *jaguars*, against which he had to defend his own life, and especially that of his horses; unfortunately he could not save all of the horses. It was in this district that curious accidents befell him and his two companions after having eaten several spoonfuls of a honey made by a species of wasp. He visited the seven small villages which are all that remain of thirty which constituted in time past the ancient missions of Paraguay. Observing these carefully, he could naught but groan at finding only ruins and the sight of such misery in a fertile land whose former splendor our writers have not exaggerated. Then re-entering Brazil proper and traveling in the rainy season, he frequently ran the risk of losing his notes and collections; he returned at the end of a year by a detour to Pôrto Alegre, embarked on Lake Patos for Rio Grande; returned by sea to Rio Janeiro, where he arrived toward the end of 1821, after an absence of nearly three years.

St. Hilaire has elaborated on his travels in his own *Esquisse* (loc. cit.) and his *Voyages*. These are in need of careful study by contemporary scholars.

The recent remarks of the Brazilian P. R. Reitz (Anais Botânicos do Herb. Barbosa Rodrigues 1:86. 1949) on St. Hilaire reflect the warm affection of the Brazilians for the French naturalist. I have taken the liberty of translating freely the same from the Portuguese:

He had a kind heart, adapting himself to the environment in which he lived and likewise to the uneducated people with whom he often traveled, treating with the manners of a gentleman those who helped him, censuring amiably those who treated him badly.

He described objectively the customs of our lands. St. Hilaire stands in marked contrast to those pseudo-investigators who, as tourists, describe our country as a grand carnival from the seats of gambling halls or even from the summit of Corcovado⁸ where they sit to write their observations, their memoirs of the people, of the Brazilian way of life and customs. Only a St. Hilaire, a Martius or a Bonpland who came to Brazil with great sacrifice, who traveled through inhospitable areas, could sense the pulse of the Brazilian heart not only in the cities but in the back country and small villages, could see in their habitats great diversity of plants, animals, and minerals. Only these or others of their calibre could describe, in the role of investigators, our natural riches and our people.

There is an excellent map of the itinerary of St. Hilaire's five "voyages", prepared by J. Santos for *Chronica Botanica* (loc. cit. p. 12), from St. Hilaire's original in the back of his *Voyage à Rio Grande do Sul*. A large map found in the first volume of Martius' *Flora Brasiliensis* labelled "Itinera Botanicum" with inked-in itineraries of the majority of the principal botanists who collected in Brazil from 1780 to 1852 is unfortunately inaccurate, at least with respect to St. Hilaire. For example, the delineator indicates that St. Hilaire collected as far north on the eastern coast of Brazil as Villa de Porto Seguro (Bahia); this is almost 225 miles north of the Rio Doce, the most northeastern limits of St. Hilaire's collections.

THE CATALOGUES OF ST. HILAIRE

The catalogues are made up of separate books in St. Hilaire's own handwriting. Approximately 8900 collections are entered in the 1575 pages⁹. My count from the catalogues stands in marked contrast to Urban's statement (*Martius' Flora Brasiliensis* 1:92-98. 1906) of the number deposited in three herbaria, that: "Collectio princeps (cr. 7600 numeri) in herbario musei historiae naturalis Parisiensis. Dupla in Montpellier, parca in museo Berolinensi". Urban's estimate may have been the result of adding up the collection numbers in the catalogues *without considering that often single collection numbers were subdivided one to several times*, or from St. Hilaire's own statement (*Esquisse*, p. 61) that: "Le nombre des plantes que j'ai recueillies s'élève à environ sept mille . . .". In the *catalogues* there are approximately 835 collection numbers which are subdivided *a la "bis", "ter", "4", etc.* In one instance (in series C₂) the collection number 2791 is subdivided thirteen times and applied to eleven different families of angiosperms. The failure on the part of monographers or copyists to add "bis", "ter", etc. to a specific collection number has caused considerable confusion in the citing of specimens.

Following each collection number is (usually) the specific plant family (written in French) to which the collection belongs. Occasionally only the generic name is given. For approximately 550 collection numbers St. Hilaire fails to supply any taxa although usually one finds an "analysis" or a few words. In more than one

⁸A high peak overlooking Rio de Janeiro easily reached in our times by street-car.

⁹In a letter recently received, M. Leandri writes: "Our catalogue of entries bears actually 7692 gatherings [collections] from St. Hilaire; maybe the others have been lost or kept by A. de Jussieu and Cambessedes (and others)."

third of the entries a detailed description ("analysis") of the plant is given in French. In some families, for example in the Orchidaceae, these descriptions may take up three full pages. St. Hilaire paid particular attention to listing the common names of the plants as well as their economic uses. The place of collection is usually found at the end of the "analysis".¹⁰ The "analyses" are models of precision and critical observation. St. Hilaire himself states (*Esquisse*, p. 61) ". . . . je les ai toutes analysées sur les lieux-mêmes, et me suis principalement attaché à la dissection des parties dont la connoissance répand le plus de lumières sur les rapports naturels".

Dreuzy, a great-nephew of St. Hilaire, in an appendix to the *Voyage à Rio Grande do Sul*, refers to the difficulties encountered by Saint Hilaire in preparing his "journal botanique", the name by which Dreuzy apparently designates St. Hilaire's diary and his catalogues collectively:

Nous donnons ci-dessous quelques extraits de ce volumineux journal pour faire comprendre au lecteur quel travail s'imposait l'auteur au soir de chacune de ses fatigantes journées de voyage, assis sur ses malles sous un rancho, éclairé par la lueur tremblante d'une chandelle fumeuse, dévoré par les moustiques qu'attirait la lumière.

Dreuzy then supplies two samples of St. Hilaire's "analyses" from catalogues C², Section 2, one collection number 2682, and the other 2787^{bis}. To my knowledge these are the only "analyses" which have been published *in toto*. In fact, I have found no reference of any length in the literature concerning St. Hilaire's catalogues. We may use Dreuzy's sample 2682 as typical of an "analysis" of St. Hilaire:¹¹

ESTANCIA DE SANTO-REI, 1^{er} mars, n° 2682. Graminée. Sur chaque dent de l'épi sont 2 fleurs, l'une sessile, l'autre pédiculée. Épillets sessiles, 1 fl. herm., lancéolé, sous-falciformes, glumes 2-valves, à valves ext. hérissée, lancéolée, tantôt simplement aiguë, tantôt courtement 1 ou 2 arrêtées à valv. int. un peu plus courte que l'autre lancéolée-aiguë, pubescente. Glumelles 2-valv., à valv. membraneuses sous-violettes, sous-pubescentes presque égales, obtusiuscules, 2 paléoles tronquées; 3 et 2 styles sétacés, 2 stig., complets, continus, plumeux, ovaire glabre ovoïde. *Épillets pédicelles* mâles. Glumes 2 valv. à valve ext. pubescente, lancéolée-linéaire-aiguë, plane, à valve int. lancéolée-aiguë, presque égale à l'autre pubescente carénée, 2 paléoles tronquées. 2 ét. glumelles 2 valv. à valves lancéolées, linéaires, aiguës, presque égales, ciliées, membraneuses, un peu violettes. Toute la plante répand une forte odeur de citron. Nom. vulg. *capim limao*.

Unfortunately, St. Hilaire made no great effort to list binomials in the catalogues. In the more than 8900 collection numbers there are approximately 160 binomials, the majority in St. Hilaire's handwriting and a few in Spach's. Most of

¹⁰The catalogues do not list as many specific localities as does Urban in his elaborate list of the itineraries of St. Hilaire in *Martius' Flora Brasiliensis* (loc. cit.). Here more than 800 localities are given arranged in proper sequence as well as according to the years of St. Hilaire's five "voyages". It is probable that Urban gleaned this detailed itinerary from St. Hilaire's own published reports of his trips.

¹¹Unfortunately, in 2682 Dreuzy terminates this "analysis" of a Graminée with the binomial *Echites guaranitica* Aug. de S.-H. This binomial, despite the fact that it appears in the catalogues to be written into this "analysis" at the upper right-hand corner, obviously refers to collection number above, 2681 (Apocynacée). To make matters worse, the second "sample" analysis is labelled "*Composée* 2787^{bis}." From the catalogues the collection number is simply 2787.

the binomials are addenda to the "analyses"; those written by St. Hilaire belong as a rule to families on which he published extensively: e. g., Violaceae (including certain genera now assigned to the Ochnaceae), Droseraceae, etc. For some reason "analyses" of certain families, e. g., Malvaceae, Malpighiaceae, etc. are often cross-hatched in ink. In the case of the Rutaceae the numbers of the family were designated by a scrawled name which looks like "Oranger" (pl. 17, under 2791¹²).

Figures 1 and 2 show the number of collections made in specific families (with the exception of the ferns) according to the catalogues of St. Hilaire. Figure 1 lists the families represented by more than 50 collection numbers; fig. 2 lists those represented by less than 50 and more than 20 collection numbers. The family Leguminosae is considered *in sensu lato* to include the Mimosaceae and Caesalpinaceae. The Ochnaceae includes certain genera which St. Hilaire related to the Violaceae, e. g., *Sauvagesia*, *Lavradia*. To avoid confusion I have combined the Liliaceae with the Amaryllidaceae.

NUMERICAL SEQUENCES OF ST. HILAIRE COLLECTIONS

In preparing a collection of plants for herbarium deposit the most convenient sequence of collection numbers is a continuous linear one which is correlated with the date of collection and the itinerary of the collector. In examining the more than 8900 collections of St. Hilaire we find the following numerical sequences¹² in the ten books:

Book 1—	1— 758	Book 6—	86— 96
Book 2—	{ 464— 650 1B— 132B	Book 7—	{ 1— 60 (not in St. Hilaire's handwriting) 1—1175
Book 3—	1— 63, 103—2085	Book 8—	{ 1176—1899, 2000—2797 1— 219
Book 4—	1— 112	Book 9—	692— 709, 1858—1869, 2004—2120
Book 5—	{ 2101—2489 1— 408	Book 10—	1— 818

Despite the patch-work pattern of these sequences of numbers definite correlations exist between sets of numbers and the itineraries of St. Hilaire's five voyages. It is not impossible that St. Hilaire prepared the catalogues *following* his return to Paris in 1822. I have seen certain individual "analyses" attached to herbarium sheets in the Paris Herbarium, e. g. to one of several of St. Hilaire's unnumbered collections of *Lavradia capillaris* (Ochnaceae). It may be that the "analyses" were written on separate sheets of paper in the field, inserted separately with the unmounted specimens and then removed in Paris to be gathered together and recopied into a catalogue. The mounting of his 30,000 specimens in Paris may have resulted in some confusion in the re-organization of the "analyses" in the catalogues. Occasionally, one finds the date 1822 at the end of an analysis, suggesting that an addendum was made to the original more-abbreviated "analysis". The "analyses", too, are generally written in a neat (but often difficult to decipher)

¹²In a given run of a number in the catalogues it is not uncommon to find occasional numbers missing or out of place. For the sake of brevity I am not specifying these, although the absentees have been taken into account in computing the sum-total of collection in the catalogues.

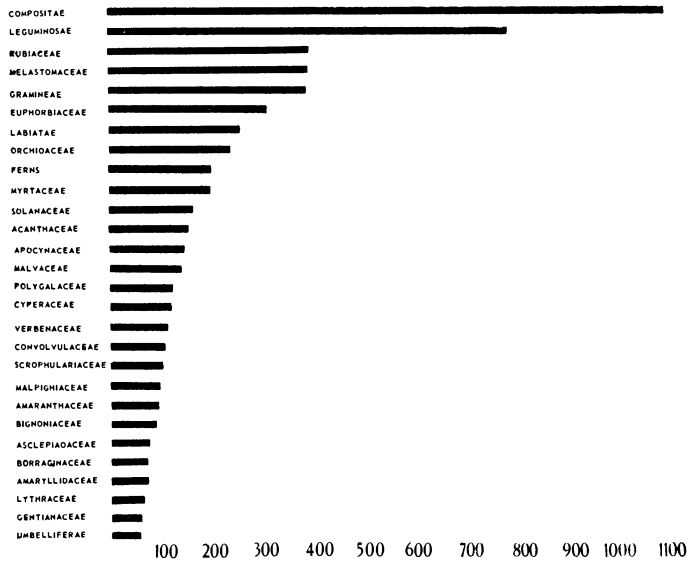


Fig. 1. Approximate numbers of collections listed under specific families of Angiospermae (except for Ferns) in the botanical catalogues of Aug. de St. Hilaire. Only those families with collections in excess of 50 are shown.

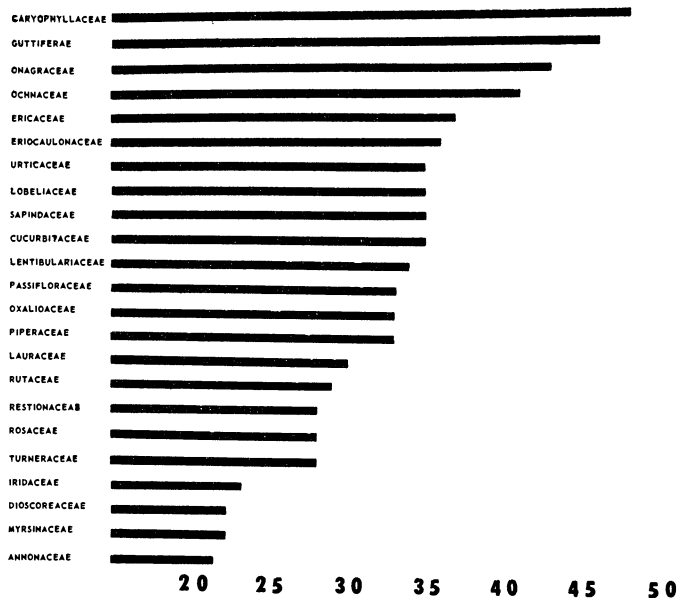


Fig. 2. Approximate numbers of collections listed under specific families of Angiospermae in the botanical catalogues of Aug. de St. Hilaire. Only those families with at least 20 and not more than 49 collections are shown.

hand. Perhaps legibility is too much to expect of a scientist working in the evening after an exhaustive day in the field.

In Book 5 Weddell writes that certain notes for collection numbers 2085–2101 were not sent to the Museum for insertion. Several points argue against this possibility, however. In the first place, it is more logical, if not more safe, to insert the “analyses” initially into a field book; again we note, especially in the early books, that St. Hilaire often fails to complete an “analysis” before beginning the next collection number but occasionally completes the “analysis” on another page and consequent to a different collection number. It is difficult to believe that he would do this if he were preparing the catalogues in Paris. The fact that volume 6 has only 11 collection numbers sandwiched in with what is obviously a segment of his diary written in the field is another substantial point of evidence.

St. Hilaire and his contemporaries used these numbers in the catalogues of collections and for herbarium sheets, and not for purposes of citation in the literature. St. Hilaire and his co-workers in the *Flora Brasiliae Meridionalis*, Jacques Cambessèdes and Adrien de Jussieu, never cite collections by number. No doubt, they did not consider individual collections to be as important as do our botanists of today who adhere to the principles of the type concept.

Obviously, if a collection of St. Hilaire had been cited, e.g., No. 26, the reader would wonder to which sequence to assign it unless the locality were given. Weddell¹³, no doubt stimulated by the pioneer efforts of certain authors in *Martius' Flora Brasiliensis* in citing collectors and collection numbers, attempted (probably in the 1860's) to organize the catalogues in a manner more suitable for citation and for labelling of specimens. Unfortunately, Weddell did not publish his “Key” to the catalogues¹⁴. The facts that Spach, who was curator of the herbarium at the Muséum d'Histoire Naturelle, employed Weddell's system on printed labels and that certain monographers have used the Weddellian system give some status to the key. We shall discuss the popularity of Weddell's key in following paragraphs.

¹³H. A. Weddell (1819–1877), an “aide-naturaliste” to Adrien de Jussieu, collected extensively in Brazil; in addition he was a distinguished taxonomist at the herbarium of the Muséum d'Histoire Naturelle, Paris.

¹⁴In recent years some members of the staff of the Muséum d'Histoire Naturelle, Paris, prepared a typewritten copy of Weddell's key. Weddell's handwritten key may be found scattered in the front of the catalogues of St. Hilaire (see pl. 18). An accurate handwritten summary (not figured here) of the sequences of numbers (accompanied by broad geographical data) of St. Hilaire's botanical collections occurs in the initial two pages of Book 8 of the catalogues. Mr. Swett, Examiner of Questioned Documents, Clayton, Missouri, expresses the probability that this was prepared by a person (or persons) other than St. Hilaire, Weddell, or the author or authors of the page shown in pl. 19. It was obviously not prepared by Spach. I have elected to credit Weddell with the establishment of the key to St. Hilaire's collections. That Weddell inserted notes in numerical sequences and geography in many of the books of St. Hilaire seems certain. M. Leandri of the Laboratoire de Phanerogamie, Muséum D'Histoire Naturelle, Paris, writes me that the typewritten key was “copied from notes in the books [St. Hilaire's catalogues] partly of the handwriting of Weddell”. While Weddell may have based his insertions on the well-organized summary found in book 8, it seems safer to suppose that the latter was prepared from his notes.

WEDDELL'S KEY TO THE CATALOGUES OF ST. HILAIRE

Weddell divided the *books*¹⁵ constituting St. Hilaire's catalogues into four series: A (books 1, 2, 3, and 4); B (books 5 and 6); C (books 7, 8, and 9); and D (book 10). Series A is divided into two volumes, B, into two volumes, C, into three volumes, and D consists of one volume. The following revised outline is based on a recent typewritten summary of Weddell's key found in the herbarium at Paris:

SERIES A (TWO VOLUMES)

*A*¹, comprising numbers 1-758.—

Plants collected during the year 1816, some in the vicinity of Rio de Janeiro (1-469 and 651-758), others in the vicinity of Uba, on the Rio Paranyha about 25 leagues from Rio de Janeiro, and in the same province (470-650).

*A*², in two sections.—

Section 1, comprising numbers 464-650, which are duplications of the same numbers in Volume *A*¹.

Section 2, comprising numbers 1^B-130^B (or 132^B). Plants from the environs of Rio de Janeiro collected in 1818.

SERIES B (TWO VOLUMES)

*B*¹, comprising numbers 1-2085 (December 1816 to March 1818).—

Plants collected in the province of Minas Gerais, with the exception of 1-25, which are from the province of Rio de Janeiro.

*B*², in two sections.—

Section 1, comprising the numbers 2101^{b18} to 2493; these follow in order the series of plants of Minas Gerais which constitutes the three previous volumes.

Section 2, comprising the numbers 1-408. Plants collected during a "voyage" on the seacoast of Brazil, from Rio de Janeiro to the Rio Doce in the provinces of Rio de Janeiro and Espírito Santo, from August to November, 1818.

SERIES C (THREE VOLUMES)

*C*¹, comprising numbers 1-1175.—

Plants collected in the following districts:

- 1- 10—Province of Rio de Janeiro. 1819.
- 11- 625—Province of Minas Gerais. 1819.
- 926- 985—Province of Minas Gerais. 1819.
- 626- 920—Province of Goiaz. Sept. 1819 to May, 1820.
- 986-1175—Province of São Paulo. Sept. 1819 to May, 1820.

*C*², divided into two sections.—

Section 1, comprising numbers 1176-2797. Plants collected in the following regions:

- 1176-1704—Province of São Paulo. May, 1820.
- 1705-1806—Province of Sta. Catarina. May to June, 1820.
- 1807-1874—Province of Rio Grande do Sul. 1820.
- 2569-2797—Province of Rio Grande do Sul. 1820.
- 1875-1899 } —From San Pedro de Rio Grande to Montevideo. 1820.
- 2000-2260 }
- 2261-2568—From Montevideo to the Brazilian frontier on the banks of the Uruguay. 1820.

Section 2, comprising the numbers 1-219c.

Plants collected in the environs of Rio de Janeiro, in July, 1821.

*C*³.—

Comprising three small series of numbers (692-709, 1858-1870, and 2004-2020) to be intercalated in the large series of numbers contained in volumes *C*¹ and *C*².

¹⁵Weddell referred to these as *volumes*.

SERIES D (ONE VOLUME)

D, comprising the numbers 1–818.—

Plants collected in 1821 and 1822 during the last voyage of St. Hilaire, in the following places:

1– 30—Province of Rio de Janeiro.

31– 587—Province of Minas Gerais.

588– 818—Province of São Paulo.

Certain elements of confusion exist in the interpretation of these numbers. In Book 2 the numbers 464–650 are simply duplicates (“double emploi”) of the same numbers in the 1–758 sequence of Book 1. The numbers 1–112 in Book 4 are duplicates of those found in Book 3 except for 64–102 which are missing in Book 3. The numbers 86–96 in Book 6 (if one should refer to this as Book 6 inasmuch as it is apparently one of St. Hilaire’s diaries) belong to the sequence of numbers in Book 5 from which they have been omitted. In Book 7 the initial sequence of numbers 1–60 are not in St. Hilaire’s handwriting¹⁶. In Book 8 numbers 1900–1999 are missing, apparently due to carelessness.

Weddell (?) used paper labels for all the specimens of the collections except numbers 1–758 in catalogue A¹ (Rio de Janeiro), 1–25 in B¹ (Rio de Janeiro), and 25–2085 in B¹ (Minas Gerais), for which parchment labels were used. All paper labels, except for numbers 2101^{bis} to 2469 of B² section 1 (Minas Gerais), and 2470 to 2493 B² section 1 (Rio de Janeiro) bear, or should bear, symbols. This is summarized as follows:

TABLE I

Labels	Numbers	Catalogues	Localities
Paper δ	1– 240	B ² Sect. 2	Rio de Janeiro
	241– 408	B ² Sect. 2	Espírito Santo
Paper B	1– 130	A ² Sect. 2	Rio de Janeiro
Paper C	1– 219	C ² Sect. 2	Rio de Janeiro
Paper D	1– 30	D	Rio de Janeiro
	31– 587	D	Minas Gerais
	588– 818	D	São Paulo
Paper O	1– 10	C ¹	Rio de Janeiro
	11– 625	C ¹	Minas Gerais
	626– 691	C ¹	Goiaz
	692– 709	C ³	Goiaz
	710– 920	C ¹	Goiaz
	926– 985	C ¹	Minas Gerais
	986–1175	C ¹	São Paulo
	1176–1704	C ² Sect. 2	São Paulo
	1705–1763	C ²	Sta. Catarina
	1764–1775	C ²	São Paulo
	1776–1806	C ²	Sta. Catarina
	1807–1857	C ²	Rio Grande do Sul
	1858–1870	C ³	Rio Grande do Sul
	1871–1874	C ²	Rio Grande do Sul
	1875–2003	C ²	Banda Oriental del Uruguay
	2004–2020	C ³	Banda Oriental
	2021–2568	C ²	Banda Oriental
	2569–2797	C ²	Rio Grande do Sul

¹⁶These 60 numbers have neither families nor “analyses” appended, although the localities of the collections are given. Some of the localities (e. g., Barbacena, Rio Ouro Branco) suggest the beginning of St. Hilaire’s second voyage to Minas Gerais in 1816. On this voyage he was accompanied by I. Gomes and G. H. de Langsdorff. Perhaps these are collections of one or both of these men.

THE ROLE OF THE CATALOGUES OF ST. HILAIRE IN TAXONOMIC MONOGRAPHS

Although only a few botanists such as Weddell, Spach, Dreuzy, etc., are known to have consulted the catalogues of St. Hilaire, the various check-marks and binomials inserted suggest that they may have been studied by others.

Prior to an arbitrary date of 1860 monographers in citing St. Hilaire collections, in imitation of St. Hilaire, Cambessèdes, and de Jussieu failed (usually) to supply collection numbers but gave clear-cut geographical data. Later monographers often used St. Hilaire collection numbers, and, almost without exception, they furnished only a fraction of collections as listed in the catalogues. Mueller, for example, in his classic work on the Apocynaceae (Mart. Fl. Bras. 6¹:1-195. 1860) gave collection numbers for only 23 of the 56 collections of St. Hilaire which he cites. These 56 collections represent about one-third of this family as listed in St. Hilaire's catalogues, all of which have specific collection numbers. In general, in *Martius' Flora Brasiliensis* it is the exception to find collection numbers when St. Hilaire material is cited; collection numbers are missing, for example, in Radlkofer's monograph of the Sapindaceae (1895), Bennett's work on the Polygalaceae (1874), Koehne's work on the Lythraceae (1887), etc. (see Table II).

No doubt much of the confusion and inconsistency encountered in the citation of St. Hilaire's collections, especially by the 19th century monographers, arise from several circumstances: (a) localization of the bulk of the St. Hilaire collections in the Paris herbarium; (b) the fact that the duplicate collections often have labels bearing only a binomial and the geographical data (often undecipherable)¹⁷; (c) the lack of interest in collection numbers by the contemporaries of St. Hilaire; (d) awkward and overlapping sequences of numbers prior to Weddell's groupings; (f) the subsequent failure to apply the Weddellian system to many of St. Hilaire's collections.

Table II, based on an examination of twenty monographs (1832 to the present) which include St. Hilaire's collections, reveals many important points¹⁸. In the Anacardiaceae (D.C. Monograph. Phanerogam. 4. 1883) Engler cites eleven collection numbers of St. Hilaire, none of which has catalogue numbers; in attempting to check them against the catalogues it appears from the blank spaces in the latter that St. Hilaire may not have been certain of the characters of the Anacardiaceae and thus never entered the family name. In Cogniaux's Cucurbitaceae (D.C. Monograph. Phanerogam. 3. 1881) the number of St. Hilaire's collections cited exceeds the total number estimated to be entered in the catalogues under this family. This disparity is a reflection of the number of blanks left by

¹⁷Of the 59 sheets of St. Hilaire reported by Dr. Lyman B. Smith, of the Smithsonian Institute (Washington, D. C.), to be in that herbarium only 34 bear collection numbers; of these only two have the Weddellian series appended to the number. I have been unable to locate ten of the numbered specimens with certainty in the catalogues.

¹⁸When the collection numbers are not listed in a monograph the author may be including more than one collection (of St. Hilaire) for the species in question without making the same clear. This makes an accurate statistical analysis of the number of collection cited impossible.

TABLE II

Specific Monograph	Date	Numb. of St. Hilaire collections cited	Numb. of St. Hilaire collections without coll. numbers	Numb. of St. Hilaire's collections with coll. numbers	Numb. of St. Hilaire collections with coll. numbs. and Weddell's series	Numb. of St. Hilaire collection numbers matching those in cat.	Numb. of collection numbers in St. Hilaire's catalogues
Malpighiaceae	1832	64	64	0	0	?	97
A. de Jussieu							
Melastomaceae	1849-1852	51	51	0	0	?	378
Naudin							
Apocynaceae	1860	58	35	23	0	16	147
Mueller							
Polygalaceae	1874	30	30	0	0	?	122
Bennett							
Erythroxylaceae	1878	8	8	0	0	?	0
Peyritsch							
Alismaceae	1881	7	0	7	6	4	6
Micheli							
Commelinaceae	1881	11	0	11	0	6	18
Clarke							
Cucurbitaceae	1881	36	0	36	35	31	35
Cogniaux							
Turneraceae	1883	15	1	14	9	10	28
Urban							
Anacardiaceae	1883	11	0	11	0	0	0
Engler							
Lythraceae	1887	24	24	0	0	?	62
Koehne							
Rubiaceae Tribes VII-XIX	1889-1889	8	7	1	0	1	386
Schumann							
Guttiferae	1893	4	0	4	1	4	46
Vesque							
Sapindaceae (<i>Serjania</i>)	1896	19	19	0	0	?	35
Radlkofer							
Bromeliaceae	1896	19	0	19	10	7?	14
Mez							
Bignoniaceae	1897	2	1	1	0	1	91
Bureau							
Ochnaceae (Ouratées-Orthospermées)	1902	7	1	6	0	2	41
Van Tieghem							
Passifloraceae	1938	17	0	17	0	11	22
Killip							
Vochysiaceae (<i>Salvertia</i> & <i>Vochysia</i>)	1948	8	1	7	4	4	15
Staffeu							
Labiatae (<i>Hyptis</i>)	1949	100	8	92	2	79	244
Epling							
		497	250	249	67	176	1878

St. Hilaire after collection numbers in the catalogues, some of which are undoubtedly of the Cucurbitaceae.

In Naudin's monograph of the Melastomaceae¹⁹, we find very few of St. Hilaire's collections cited despite the fact that Naudin must have been well acquainted with them²⁰. What is even more remarkable is the complete absence of St. Hilaire material in the "second half" of the monograph (i. e., vol. 16, after p. 87. 1851), even though such common Brazilian genera as *Clidemia*, *Miconia*, etc. are included²¹. In the several sample monographs from *Martius' Flora Brasiliensis* we note that few collections of St. Hilaire are cited as compared with the total number of collections of the specific families estimated to be in the catalogues.

Killip, in his recent treatment of the Passifloraceae (Field Mus. Nat. Hist. Bot. 19:1-613. 1938), cites six numbers which do not check with the corresponding ones in the catalogues. Of these, three (717, 751, and 970) were probably erroneously copied from labels bearing the numbers, 719, 753, and 976 respectively, all of which are entered in the catalogues under Passifloraceae; a fig. 9 may be easily mistaken for a 7, a 1 for a 3, etc.

Epling, in his monograph of *Hyptis* (Rev. Mus. de La Plata, n. s. Secc. Bot. 30:153-497. 1949) cites more St. Hilaire material than any contemporary monographer²². Unfortunately, only two of the hundred collections cited bear collection numbers with Weddell's series added. This suggests, of course, that the Weddellian system has not been applied in any great degree to the labelling of specimens. Despite the quantity of St. Hilaire material cited by Epling, approximately 65 collection numbers of *Hyptis* were not included in his work. In checking this genus in the Paris Herbarium 13 of the 92 collection numbers (St. Hilaire) cited by Epling, were not located; but eight of these thirteen can be located readily when "bis", "ter", etc. are appended. (Some copyist of course may have failed to insert "bis", "ter", etc. on the labels.) Of the remaining numbers, probably 578 was misread for 518, and 1155 for 1133.

In those monographs using the Weddellian system the collection numbers are usually matched with ease in the proper volume in the catalogue.

¹⁹Ann. Sci. Nat. Bot. Ser. III, 12:196-284. 1849; 13:25-39, 126-159, 273-303, 347-362. 1850; 14:53-76, 118-165. 1850; 15:43-79, 276-345. 1851; 16:83-246. 1851; 17:305-382. 1852; 18:85-154, 258-294. 1852.

²⁰St. Hilaire and Naudin were co-authors of a paper entitled "Revue de la Flore du Brésil Meridionale" which appeared in three sections (Ann. Sci. Nat. Bot. Ser. II, 18:24-54, 209-213. 1842). In addition they were co-authors of a new genus, *Augustinea*, of the Melastomaceae (Ann. Sci. Nat. Bot. Ser. III, 2:145. 1844).

²¹I hope to discuss in another paper the stormy history of the Melastomaceae collected by St. Hilaire.

²²*Hyptis* is one of the few cases where St. Hilaire wrote a genus name with fair consistency into his catalogues in his "analyses" instead of the family name "Labiée". However, in checking Epling's monograph against the catalogues, it is obvious that St. Hilaire did on occasion use the taxon of family in place of *Hyptis*.

A PARTIAL LIST OF THE GENERA COLLECTED BY ST. HILAIRE

In the herbarium of the Muséum d'Histoire Naturelle, Paris, there exists an unpublished list of about 2000 entries of St. Hilaire's collection numbers; these are arranged according to genera (occasionally binomials are listed) and cover eighteen families or tribes. The author of this list is unknown²³. Fortunately, the collection numbers of St. Hilaire are entered according to the Weddellian system. The presence of geographical data increases its value considerably (cf. pl. 19).

In the list the entries from numbers 1 to 364 are of the Graminée only, divided according to 13 tribes. Among the Dicotyledoneae we find the following families and tribes listed in the order given (entry numbers 1-1589):

Chloranthaceae	(entries 1-2)	Nyctagineae	(entries 150-182 ^{b18})
Piperaceae	(entries 3-44)	Chenopodeae	(entries 183-192)
Celtideae	(entries 45-53)	Amarantaceae	(entries 193-307)
Moreae	(entries 54-85)	Aristolochiaceae	(entries 308-322 ^{b18})
Artocarpiées	(entries 85 ^{b18} -95)	Proteaceae	(entries 323-328)
Urticacées	(entries 96-100)	Monimieae	(entries 329-337)
Salicineae	(entries 101-103)	Laurinées	(entries 338-390 ^{b18})
Lacistemeae	(entries 103 ^{b18} -103 ⁵)	Compositae	(entries 391-1572)
Polygoneae	(entries 104-149)	Campanulacées	(entries 1573-1589)

It is obvious that such a list may be of great value to specialists of the above groups working on material from southeastern Brazil. As an example of its usefulness, I was able to ascertain in the model analysis (cf. p. 157) that *Elionurus* is the genus of the grass family described by St. Hilaire.

SUMMARY

Monographers have used only sporadically the Weddellian system in checking the collection numbers of St. Hilaire's material with the specific catalogue series and section, probably due to the absence of these numbers from the majority of the labels of the specimens. The Weddellian system answers the problem of the possible overlapping of collection numbers, and monographers should be encouraged to adopt it. Being aware of the existence of the catalogues of St. Hilaire, they are now able to check collection numbers against St. Hilaire's "analyses"²⁴. The catalogues themselves represent an original source of reference for the 8900 collections of Aug. St. Hilaire in southeastern Brazil.

The discovery of a list (author unknown) of some of the genera collected by St. Hilaire, with some 2000 collection numbers entered according to the Weddellian system, should be of great assistance to monographers.

²³There are 17 collection numbers of St. Hilaire and accompanying data at the end of the list which are obviously in Spach's handwriting. This permits one to give the date of the list as some time prior to 1879, the year of Spach's death. Mr. George Swett, from a comparison of one sheet of the above list (pl. 19, a photo from microfilm) with photographs of the writings of St. Hilaire and Weddell (c.f. pls. 17 and 18) expressed the opinion neither prepared the list; he qualifies this, however, by stating that "no opinion is held as to whether the writers (St. Hilaire and Weddell) executed the word *Andropogoneae* in the above sample sheet."

²⁴The author, through the Missouri Botanical Garden, will be happy to supply sets of collection numbers of St. Hilaire for specific families to specialists.

APPENDIX

Through a letter received during the proofing of this paper I learned that the Bibliothèque Centrale (Mus. Nat. Hist. Naturelle) has no manuscripts of Aug. de St. Hilaire except several fragments of the *Flore du Brèsil Meridionale* and four of his letters. Apparently there are no St. Hilaire manuscripts in the Library of the Division de Phanérogamie of the Museum except the catalogues herein described, and a single letter.

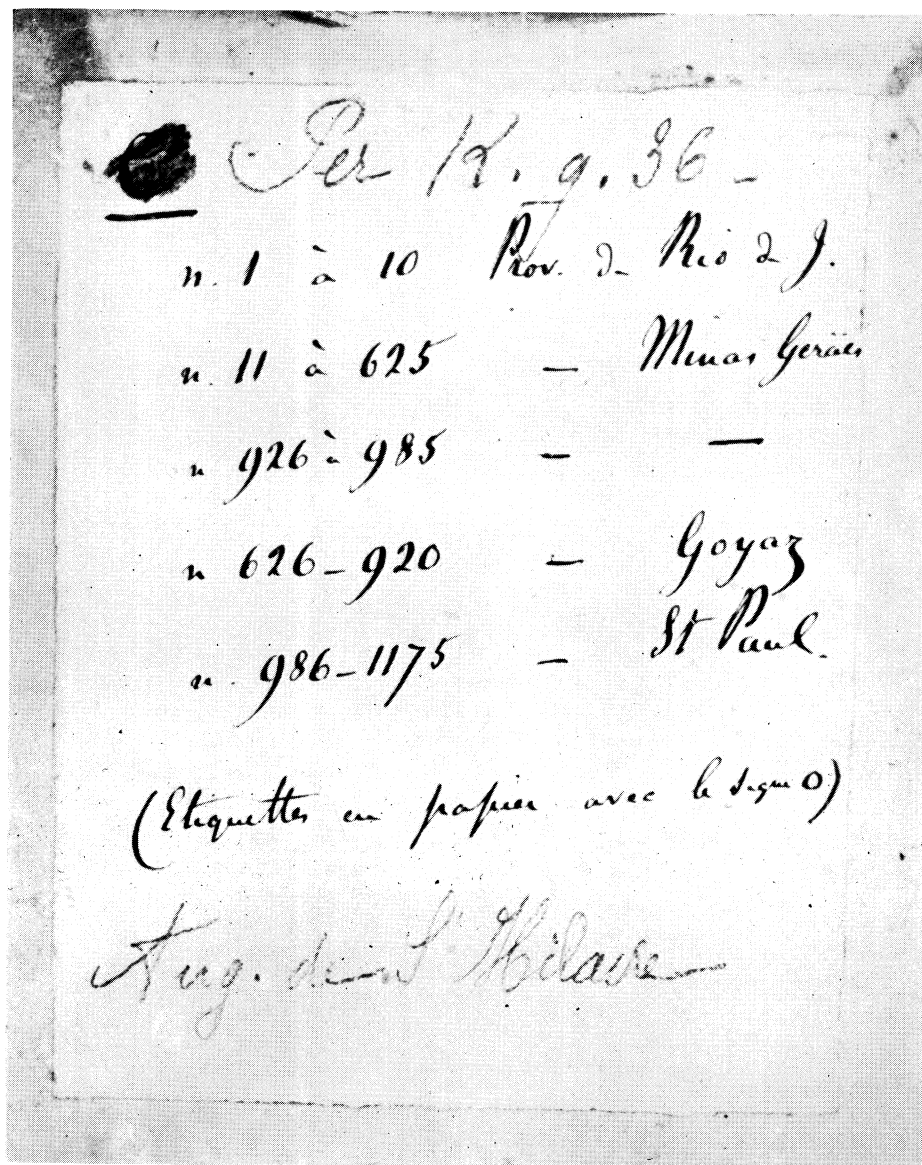
In addition, I learned that the editor of St. Hilaire's *Voyage à Rio Grande do Sul* is Charles Roland de Dreuzy (1837–1899), a native of Nivernais. He was the grand-nephew of St. Hilaire, heir to his estate at Turpinière, and grandson of a sister of St. Hilaire. At his own expense he published the *Voyage à Rio Grande do Sul*, in accordance with the last wishes of his "parent". The chateau at Turpinière is located near Ferté Saint-Aubin, Sennely (Loiret). The present owner is M. Robert de Dreuzy, son of the editor of *Voyage à Rio Grande do Sul*.

The grass described in the model "analysis" (cf. p. 157 of text) was determined by Miss Agnes Chase as *Elionurus candidus* var. *bisetosus* Hack. and Linden.

EXPLANATION OF PLATE

PLATE 17

A portion of one page of Catalogue C² of Auguste de St. Hilaire. This is in his handwriting and covers numbers "2791⁹ *Hypoxis*, 2791¹⁰, Labiée, 2791¹¹, Solanée, 2791¹², Oranger", and "Suite à 2791". The last is a continuation of the "analysis" of *Hypoxis* at the top of the page.



DWYER—BOTANICAL CATALOGUES OF ST. HILAIRE

EXPLANATION OF PLATE

PLATE 18

A portion of the "key" to the botanical catalogues of Auguste de St. Hilaire. This is in Weddell's handwriting and is from Series C, catalogue C¹. The handwriting at the top and bottom of the page is that of the librarian.

EXPLANATION OF PLATE

PLATE 19

A page from a list of approximately 2000 collection numbers of Auguste de St. Hilaire. Note that the Grasses are entered according to tribes and genera. The fourth collection entered under the genus *Elionurus* (C² No. 2682) is that upon which the "model analysis" (see p. 157) is based. The list is deposited in the Herbarium of the Muséum National d'Histoire Naturelle, Paris.

Signes INSCRITS sur l'échantillon	Détermination et Synonymie État des échantillons	Noms vulgaires et usages	Indications géographiques	Origine, Donateur. Signes du Catalogue d'invent.	Placements ou mouvement.
m. 327	<i>Isodonum</i>		Banda oriental	ce n° 2206 b	hg.
m. 328	D.		D.	ce n° 2206 (?)	hg.
m. 329	D.		Rio grande de sul	ce n° 2740 b	hg.
m. 330	D.		Banda oriental	ce n° 2119	hg.
<i>Tribus XII.</i>					
<i>Rottboelliaceae.</i>					
<i>Manisuris</i>					
<i>Tribus XIII.</i>					
<i>Andropogoneae.</i>					
<i>Eriochrysis</i>					
m. 331	D.		Rio de Janeiro	A' n° 186	hg. sp.
m. 332	D.		D.	A' n° 626	hg.
m. 332 b	D.		Minas Gerais	B' n° 131	hg.
<i>Elionurus</i>					
m. 333	D.		St Paul	ce n° 2271	hg. sp.
m. 334	D.		D.	ce n° 2285	hg.
m. 335	D.		D.	ce n° 2332	hg. sp.
m. 336	D.		Rio grande de sul	ce n° 2652	hg. sp.
m. 337	D.		Banda oriental	ce n° 2370	hg.
m. 337 b	D.		St Paul	ce n° 2278	hg. sp.
m. 337 ter	D.		D.	ce n° 2331	hg.