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SOURCES FOR THE STUDY
OF SCIENCE, MEDICINE AND TECHNOLOGY
IN PORTUGAL AND BRAZIL

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I. DELIMITATION OF THE PROJECT: PERIODS AND KINDS OF SOURCES

The history of Portuguese and Brazilian science, medicine and technology is still badly known. A bibliographical project is being developed in order to provide an easy way to find out primary and secondary sources for the study of this subject.

From its discovery in 1500 to 1822, Brazil was not an independent country: it was a Portuguese colony. During this period, it is impossible to draw any clear-cut distinction between Brazilian and Portuguese science. After the independence of Brazil in 1822, there was an increasing cultural divergence between the two countries, but even in this period it is useful to compare their academic productions. For these reasons, this project was devised to include both Portuguese and Brazilian works.

For practical reasons, the project was first restricted to the period from the beginning of printing to 1822 (the year of the independence of Brazil). For this period, several parts of the project are now fairly advanced. They include data-bases on: published scientific, medical and technological books, theses, pamphlets and articles; secondary literature (bibliographies and historical studies) about this period; printed and manuscript maps; manuscripts of scientific and technological import; and biographical data on authors of those works. More recently (since 1994), the project has been broadened to include the period from 1823 to 1900. For this period, however, only *published* works have hitherto been included.

II. SUBJECTS INCLUDED IN THE PROJECT

The following subjects were included as «science, medicine and technology»: astronomy, mathematics, physics (or natural philosophy), geography, geology, chemistry, metallurgy, natural history (or biology, zoology, botany, mineralogy), farming, medicine, pharmacy, veterinary sciences, engineering, architecture, mechanics, naval techniques, military techniques, education, philosophy, philology, anthropology, sociology, statistics, psychology, and (partially) history. Studies on arts (music, drawing, handicrafts, cooking, etc.) were included. The so-called «pseudo-sciences» (astrology, alchemy and magic) were also included. It was necessary to include works that were not properly scientific studies, such as travel descriptions and historical descriptions of the period, as these are essential for the study of the development of scientific, medical and technological knowledge.

The following subjects were *excluded*: religion, law, fiction literature (romance, poetry, drama, etc.), politics. However, some religious works were included for their linguistic relevance (for instance: religious texts written in indigenous or Asiatic languages). A few law and fiction works directly related to science and technology (for instance, Gil Vicente's comedy «Auto dos físicos», that depicts the author's view of Portuguese Renaissance medicine), were also included.

Works *about* Portugal and Brazil written and published in other countries were not included. For instance, many foreign travelers have described the geography, flora and fauna of Brazil, but their works cannot be considered as part of the Brazilian scientific production.

History was *partially* included in the search. It was not desirable to include all works that might interest an historian working on the history of Portugal or Brazil (in that case, *nothing* could be excluded). The selection was made from the assumption that this data-base was to be used by historians of science, medicine and technology. For this reason, the search included historical works that present an account of the general historical context of Portugal and Brazil during the period, but excluded specialized works of political import, diplomatic correspondence, discourses, laudatory biographies of kings and princes, etc.

All manuscripts that corresponded to scientific, medical and technical monographs were included, of course. Individual letters were included only when written by an important author, or when the content was clearly relevant. Institutional papers (those, for

instance, of Coimbra University) were included as large units, without detailed description.

A very broad delimitation of «Portuguese and Brazilian» authors was used. The search included any works written or published in Portugal, Brazil and other Portuguese colonies, as also works written by authors that lived in those countries, but were published elsewhere. Portuguese translations of foreign works were also included.

III. METHOD OF INFORMATION SEARCH

The survey of sources employed both published bibliographies, catalogues and historical studies, and the direct search of relevant material in libraries and archives.

Four important Brazilian and Portuguese bibliographies of bibliographies were used to find reference works.¹ They list several thousand items. A selection of those items was used in the project.

There are several Brazilian and Portuguese general bibliographies (not restricted to any specific subject or period) that were used in the present project.² There are also some important general bibliographies restricted to a specific time period.³ It was necessary to examine those works page by page, in search of relevant information.

For the search for printed books it was useful to use printed catalogues of important Portuguese and Brazilian libraries⁴ and

¹ ANTÔNIO J. ANSELMO, *Bibliografia das bibliografias portuguesas* (Lisboa, Biblioteca Nacional, 1923); ANTONIO S. DOS REIS, *Bibliografia das bibliografias brasileiras* (Rio de Janeiro, Instituto Nacional do Livro, 1942); BRUNO BASSECHES, *A bibliography of brazilian bibliographies* (Detroit, Blaine Ethridge Books, 1978); JORGE PEIXOTO, *Bibliografia analítica das bibliografias portuguesas* (Coimbra, Universidade de Coimbra, 1987).

² DIOGO BARBOSA MACHADO, *Bibliotheca lusitana historica, critica e chronologica* (Lisboa, Oficina de Antonio Isidoro da Fonseca, 1741-1759), 4 vols.; INNOCENCIO FRANCISCO DA SILVA and PEDRO V. DE BRITO ARANHA, *Diccionario bibliographico portuguez* (Lisboa: Imprensa Nacional, 1858-1923), 23 vols.; MARTINHO AUGUSTO FERREIRA DA FONSECA, *Aditamentos ao Diccionario Bibliographico Portuguez* (Coimbra, Imprensa da Universidade, 1927); AUGUSTO V. A. DO SACRAMENTO BLAKE, *Diccionario bibliographico brasileiro* (Rio de Janeiro, Typographia Nacional, 1883-1902), 7 vols.; JOÃO F. VELHO SOBRINHO, *Diccionario bio-bibliográfico brasileiro* (Rio de Janeiro, Irmãos Pongetti, 1937-1940), 2 vols.

³ ACADEMIA DAS CIÊNCIAS DE LISBOA, *Bibliografia geral portuguesa* (Lisboa, Imprensa Nacional, 1941-1983), 3 vols.; ANTÔNIO JOAQUIM ANSELMO, *Bibliografia das obras impressas em Portugal no século XVI* (Lisboa, Biblioteca Nacional, 1926); RUBENS BORBA DE MORAES, *Bibliografia brasileira do período colonial* (São Paulo, Instituto de Estudos Brasileiros, 1969).

⁴ MARIA TERESA PINTO MENDES and JORGE PEIXOTO, *Catálogo dos reservados da Biblioteca Geral da Universidade de Coimbra* (Coimbra, Biblioteca Geral da Universidade, 1970); BENJAMIN FRANKLIN RAMIZ GALVÃO, *Catálogo do Gabinete Portuguez de Leitura no Rio de Janeiro* (Rio de Janeiro, Typ. do «Journal do Commercio» de Rodrigues & C., 1906-1907), 2 vols.; BIBLIOTECA MUNICIPAL MÁRIO DE

printed catalogues of book-sellers (including some auction catalogues of private libraries).⁵ There are many works of this kind that were published in the 19th century and at the beginning of the 20th century. Unfortunately, there are no general printed catalogues from the two largest libraries: the *Biblioteca Nacional de Lisboa* and the *Biblioteca Nacional do Rio de Janeiro*.

Thematic bibliographies and historical studies provided important information. There are a few good works on nautical studies,⁶ medicine,⁷ history and geography,⁸ mathematical science,⁹ ethnology and indian linguistic,¹⁰ on works published in specific languages or places,¹¹ etc. Of course, they are far from complete, but they provide a lot of useful information.

Some highly specific studies (sometimes on a single author) were

ANDRADE, *Catálogo de obras raras da Biblioteca Municipal Mário de Andrade* (São Paulo, Secretaria da Educação e Cultura, 1969-80), 2 vols.; ANTONIO JOAQUIM LOPES DA SILVA JUNIOR, *Os reservados da Bibliotheca Publica de Evora* (Coimbra, Imprensa da Universidade, 1905); JOÃO A. DOS SANTOS PORTO, *Catálogo da biblioteca da Marinha* (Rio de Janeiro, Imprensa Nacional, 1904), 2 vols.

⁵ CASIMIRO DA CUNHA, *Catálogo da preciosa livreria antiga e moderna que pertenceu ao distinto bibliófilo e bibliógrafo Annibal Fernandez Thomaz* (Lisboa, Centro Typographico Colonial, 1912); ARNALDO HENRIQUES DE OLIVEIRA, *Catálogo da riquíssima biblioteca Victor M. d'Avila Perez* (Lisboa, Of. Gráficas da Sociedade de Papelaria Ltda., 1939-1940); MANUEL DOS SANTOS, *Bibliografia. Alguns livros raros e curiosos à venda na livreria de Manuel dos Santos*, (Lisboa, Tip. Mendonça, 1914-1919).

⁶ ABEL FONTOURA DA COSTA, *Bibliografia náutica portuguesa até 1700* (Lisboa, Agência Geral das Colónias, 1940).

⁷ MAXIMIANO LEMOS, *Historia da medicina em Portugal* (Lisboa, Publicações Dom Quixote, 1991), 2 vols.; CARLOS ANTONIO DE PAULA COSTA, *Catálogo da exposição medica brasileira realizada pela Bibliotheca da Faculdade de Medicina do Rio de Janeiro a 2 de dezembro de 1884* (Rio de Janeiro, Typographia Nacional, 1884); LYCURGO DE CASTRO SANTOS FILHO, *História geral da medicina brasileira*, São Paulo, HUCITEC, 1977).

⁸ BENJAMIN F. RAMIZ GALVÃO, *Catálogo de Exposição de Historia do Brazil* (Rio de Janeiro, Typ. de G. Leuzinger & Filhos, 1881), 3 vols.; JORGE C. DE FIGANIERE, *Bibliographia histórica portuguesa* (Naarden, Anton W. Van Bekhoven, 1970); Z. CONSILGIERI PEDROSO, *Catálogo bibliográfico das publicações relativas aos descobrimentos portugueses* (Lisboa, Imprensa Nacional, 1912); BARÃO HOMEM DE MELLO, *Catálogo da exposição de geographia sul-americana* (Rio de Janeiro, Imprensa Nacional, 1891).

⁹ FRANCISCO B. GARÇÃO STOCKLER, *Ensaio histórico sobre a origem e progressos das mathematicas em Portugal* (Paris, P. N. Rougeron, 1819); RODOLPHO GUIMARÃES, *Les mathématiques en Portugal au XIX siècle* (Coimbra, O Instituto, 1909).

¹⁰ HERBERT BALDUS, *Bibliografia crítica de etnologia brasileira* (São Paulo, Comissão do IV Centenário da Cidade de São Paulo, 1954); PLÍNIO M. DA SILVA AIROSA, *Apontamentos para a bibliografia da lingua tupi-guarani* (São Paulo, Cruzeiro do Sul, 1943).

¹¹ VITOR RAMOS, *A edição de língua portuguesa em França (1800-1850)*, (Paris, Fundação Calouste Gulbenkian, 1972); CHARLES R. BOXER, «A tentative check-list of indo-portuguese imprints, *Arquivos do Centro Cultural Português* IX (1975), 567-600; JACK M. BRAGA, «The beginnings of printing at Macao», *Studia* XII (1963), 29-137; DOMINGO GARCIA PÉRES, *Catálogo razonado biográ-*

also consulted.¹² They usually provide fairly complete information on a very limited topic.

A few international catalogues and bibliographies were also searched for relevant information. In general, the probability of finding Portuguese or Brazilian works in international catalogues is, of course, small. However, it was useful, for instance, to consult Sommervogel's bibliography¹³ because, up to 1770, teaching in Portugal and its colonies was directed by Jesuit priests.

Many of the above-mentioned secondary works contain information about maps and manuscripts, besides printed works. However, for maps and manuscripts other specific works were used.

The older Portuguese and Brazilian cartography has deserved several good studies.¹⁴ Catalogues of map collections,¹⁵ expositions¹⁶ and specific studies¹⁷ were also used.

fico y bibliográfico de los autores portugueses que escribieron en castellano (Madrid, Colegio Nacional de Sordomudos y de Ciegos, 1890).

¹² LUÍS GRAÇA, *A visão do oriente na literatura portuguesa de viagens: os viajantes portugueses e os itinerários terrestres (1560-1670)* (Lisboa, Imprensa Nacional/Casa de Moeda, 1983); ANTÔNIO ALBERTO DE ANDRADE, «Edições do 'Verdadeiro método de estudar'», *Boletim Internacional de Bibliografia Luso-Brasileira* III (1962), 474-482; JOAQUIM BARRADAS DE CARVALHO, «As edições e as traduções de 'Crônica dos feitos de Guiné'», *Revista de História XXX* (São Paulo, 1965), 181-190; MARIA HELENA DE TORRES COSTA, «Livros escolares de latim e grego adoptados pela reforma pombalina dos estudos menores», *Arquivos do Centro Cultural Português XIV* (1979), 287-329; JORDÃO DE FREITAS, «Subsídios para a bibliographia portuguesa, relativa ao estudo da língua do Japão», *O Instituto LI* (1904), 762-768, *LII* (1905), 115-128, 310-320, 349-356, 437-448, 499-512; JAIME WALTER, «Garcia de Orta – bibliografia principal», *Garcia de Orta XI* (1963), 857-875.

¹³ CARLOS SOMMERVOGEL, *Bibliothèque de la Compagnie de Jesus* (Bruxelles, Oscar Schepens, 1890-1932), 11 vols.

¹⁴ MANOEL F. DE BARROS CARVALHOSA, and SOUSA M. DE MACEDO LEITÃO, *Estudos de cartographia antiga* (Lisboa, Imp. Portugal-Brasil, 1931); ARMANDO CORTESÃO, *Cartografia e cartógrafos portugueses dos séculos XV e XVI* (Lisboa: Seara Nova, 1935); ARMANDO CORTESÃO, and AVELINO TELHEIRA DA MOTA, *Portugaliae monumenta cartographica* (Lisboa, Casa da Moeda, 1960), 6 vols.

¹⁵ ISA ADONIAS, *Mapas e planos manuscritos relativos ao Brasil Colonial conservados no Ministério das Relações Exteriores* (Rio de Janeiro, Ministério de Relações Exteriores, 1960); BRASIL, ARQUIVO NACIONAL, *Catálogo dos mapas existentes na Biblioteca do Arquivo Nacional* (Rio de Janeiro, Arquivo Nacional, 1944); BRASIL, MINISTÉRIO DA GUERRA, *Catálogo das cartas históricas da mapoteca da Diretoria do Serviço Geográfico do Exército* (Rio de Janeiro, Imprensa Militar, 1953).

¹⁶ BRASIL, BIBLIOTECA NACIONAL, *Ensaio de cartographia nacional extrahido do Catálogo da exposição de História do Brasil* (Rio de Janeiro, Typographia de G. Leuzinger, 1883); MARIA N. R. PAIS CARQUEJEIRO, *Catálogo da exposição cartográfica e iconográfica comemorativa do V Centenário da morte do Infante D. Henrique* (Lisboa, Arquivo Histórico Ultramarino, 1960); DUARTE DA PONTE RIBEIRO, *Exposição dos trabalhos historicos geographicos e hydrographicos que serviram de base á Carta Geral do Imperio* (Rio de Janeiro, Typographia Nacional, 1876); ERNESTO DE VASCONCELLOS, *Catálogo da exposição de cartographia nacional* (Lisboa, Sociedade de Geographia de Lisboa, 1904).

¹⁷ ISA ADONIAS, *A cartografia da região amazônica: catálogo descritivo, 1500-1961* (Rio de Ja-

In the case of manuscripts, printed catalogues of several important archives are available¹⁸ and were used. There are also some useful thematic manuscript catalogues and studies.¹⁹

A few computerized data-bases were also used. There is a Portuguese national net of libraries database, directed by the *Biblioteca Nacional de Lisboa*. Unfortunately, however, only a small proportion of old books have been entered in this database. The CD-ROM versions of the *British Library* and *Bodleian Library* catalogues have been consulted, as they provide the possibility of search by place and year of publication. Several important on-line databases (such as the *Library of Congress* catalogue) could not be efficiently used, since they do not allow primary search by place of publication or language.

The search for information about periodical articles used a twofold technique: direct search of important periodicals, and use of secondary literature. In the case of known scientific, medical and technical

neiro, Conselho Nacional de Pesquisas, 1963); ISA ADONIAS, MARTA MARIA GONÇALVES, and YOLLETTE SOARES DE MIRANDA, *Catálogo das plantas e mapas de cidade de Rio de Janeiro* (Rio de Janeiro, 1966); ALBERTO IRIA, «Inventário geral da cartografia brasileira existente no Arquivo Histórico Ultramarino», *Studia XVII* (1966), 35-116.

¹⁸ TRISTÃO DE ALENCAR ARARIPE, *Catálogo dos manuscritos do Instituto Histórico e Geográfico Brasileiro existentes em 31 de Dezembro de 1883* (Rio de Janeiro, Typographia Perseverança, 1884); BRASIL. BIBLIOTECA NACIONAL, *Catálogo dos manuscritos da Bibliotheca Nacional do Rio de Janeiro* (Rio de Janeiro, Typ. de G. Leuzinger & Filho, 1878); COIMBRA. BIBLIOTECA GERAL DA UNIVERSIDADE, *Catálogo de manuscritos* (Coimbra, Biblioteca Geral da Universidade, 1935-1972), 22 vols.; LISBOA. BIBLIOTECA NACIONAL, *Inventário - Secção XIII. Manuscritos* (Lisboa, Biblioteca Nacional, 1896); JOAQUIM H. DA CUNHA RIVARA, and JOAQUIM A. S. TELLES DE MATOS, *Catálogo dos manuscritos da Bibliotheca Publica Eborensis* (Lisboa, Imprensa Nacional, 1850), 2 vols.

¹⁹ ARTHUR DE MAGALHÃES BASTO, *Catálogo dos manuscritos ultramarinos da Bibliotheca Municipal do Porto* (Lisboa, 1839); BRASIL. BIBLIOTECA NACIONAL, *Catálogo de manuscritos sobre São Paulo existentes na Bibliotheca Nacional* (Rio de Janeiro, Biblioteca Nacional, 1954); JOSÉ HONÓRIO RODRIGUES, «Alexandre Rodrigues Ferreira. Catálogo de manuscritos e bibliografia», *Anais da Bibliotheca Nacional LXXII* (1952), 11-151; CARLOS ALBERTO FERREIRA, *Inventário dos manuscritos da biblioteca de Ajuda referentes à América do Sul* (Coimbra, Instituto de Estudos Brasileiros, 1946); FREDERICO FRANCISCO DE LA FIGANIÈRE, *Catálogo dos manuscritos portugueses existentes no Museu Britannico* (Lisboa, Imprensa Nacional, 1853); MARIANA AMÉLIA MACHADO SANTOS, «Manuscritos de filosofia do século XVI existentes em Lisboa», *Boletim da Bibliotheca da Universidade de Coimbra XIX* (1950), 241-382; XX (1959¹), 295-525; LUIS SILVEIRA, «Pelas bibliotecas e arquivos. Manuscritos de filologia. Bibliotheca da Ajuda», *Revista de Portugal, Série A. Língua portuguesa IV* (1944), 78-80, 232-237; V (1944) 66-70, 204-209; 338-343; VI (1945), 118-122; 201-204, 275-278; PEDRO SOUTO MAIOR, «Nos arquivos de Hespanha. Relação dos manuscritos que interessam ao Brasil», *Revista do Instituto Histórico e Geográfico Brasileiro LXXXI* (1918), 7-208; E. A. VORETZSC, «Manuscritos das bibliotecas de Portugal relativos ao Extremo Oriente», *O Instituto LXXII* (1925), 266-286.

periodicals, the best approach is, of course, to consult the periodicals themselves and list their contents. However, in the 18th and 19th century many relevant articles were published in general periodicals – and even in newspapers. It is impossible to check all general periodicals in search of those articles. Besides that, several Portuguese and Brazilian authors published articles in foreign periodicals – and it is very difficult to trace them. Fortunately, many articles of those kinds are referred in bio-bibliographical dictionaries.²⁰ There is, of course, another practical problem: sometimes it is difficult to find complete collections of some old periodicals. Secondary literature also helps to fill those gaps.

About 300 secondary works (bibliographies, historical studies, catalogues) have already been used in the search for relevant information. The sources presented in the footnotes of this article represent only a sample of those effectively used.

Direct search for information in libraries and archives is the other way of finding out relevant works. This method has hitherto been sparsely employed, because it is too expensive and provides a relatively small amount of information. Direct search is useful, however, to complement the search based on published catalogues, to check bibliographical data, etc. Some very rare works have also been found by direct card catalogue search in some libraries.

IV. STRUCTURE AND CONTENT OF DATA-BASES

The project uses the CDS-ISIS software, developed by UNESCO.²¹ This software can run in both personal computers and mainframes (VMS version). Nowadays the project uses the PC version (Micro-Isis) in seven personal computers. The data-bases can only be consulted on site. As soon as possible, the project data-bases will be opened to external Internet users.

The original CDS-ISIS software did not include facilities for accentuation of words. Portuguese uses a lot of accents and for this

²⁰ See note 2. A work specially useful for finding foreign publication of Portuguese authors is MANOEL BERNARDES BRANCO, *Portugal e os estrangeiros* (Lisboa, Imprensa Nacional, 1879-1895), 5 vols.

²¹ A short description and evaluation of this software can be found in: PAUL NIEUWENHUYSEN, «Computerized storage and retrieval of structured text information: CDS/ISIS version 2.3 program», *Journal of Documentation* XXV (1991) 1-18.

reason two resident programs were introduced to allow the easy digitization of accented words and their exhibition on VGA screens. It even became possible to use a few special symbols that were only used in old Portuguese (such as a tilde over the letters «u» and «q»).

For practical and historical reasons, there are several independent data-bases:

HTC	printed works of the Colonial period (up to 1822) and secondary works;
MAN	manuscripts of the Colonial period;
PES	biographical information on authors of the Colonial period;
MAP	printed and manuscript maps of the Colonial period;
IMP	printed books from 1823 to 1900;
ART	printed articles from 1823 to 1900;
PER	general information on periodicals, from 1823 to 1900.

There are also some auxiliary data-bases:

HIS	a chronological data-base of relevant facts and periods of the history of Portugal and Brazil;
BIB	contains information about libraries and archives;
DIC	establishes equivalence between old and current orthography of words that appear in the data-bases; ²²
CDU	a subject data-base, grounded upon Universal Decimal Classification, intended to help searching the main data-bases. ²³

In the case of printed books of the Colonial period (HTC), whenever it is possible, a copy of the title page of the work is obtained and scanned. This set of images is not yet directly included in any data-base, because this cannot be done using CDS-ISIS.

In the case of printed works (HTC, IMP, PER, ART), each entry includes: (a) name of author(s), editor, etc.; (b) title of the work (and of the periodical, in the case of articles); (c) place and year of publication, printer or publishing house; (d) number of volumes, number of pages or sheets, illustrations, format, size (for books and pamphlets); (d) volume, pages and year (for articles); (e) date of the

²² This auxiliary data-base is fully operational. It automatically allows one to find old forms of words appearing in the title of works, when the current form of the word issues in the search.

²³ This data-base uses the thesaurus sub-program of CDS-ISIS to connect to other data-bases. This auxiliary data-base will be operational in 1996.

original work (if different from the date of publication); (f) number of the edition (if different from 1) and reference to entries of other editions and/or translations;²⁴ (g) subjects of the work; (h) language(s) of publication; (i) reference to biographical entry in PES data-base (if available); (j) reference to associated manuscript in MAN data-base (if available); (k) sources of information (code of secondary work and page); (l) location of the work (libraries where it can be found and signature – shelf code – if known); (m) reference to image of title-page (when available) – only for pre-1822 books; (o) other comments and observations.

The biographical data-base (PES) contains information about: (a) complete name, pseudonyms and variants of name of authors; (b) data of birth and death; (c) place of birth and death; (d) profession and fields of interest; (e) institutional links, places where the author lived; (f) reference to entries in other data-bases connected to this person; (g) sources of biographical information; (h) other comments and observations.

The cartographic data-base (MAP) contains information about: (a) author(s) of the map, if known; (b) title of the map, if there is any; (c) date of the map, if available; (d) subject of the map; (e) language used in the text of the map; (f) technical information about the map (printed or manuscript; kind of printing; size; use of colours; etc.); (g) reference to copies or different versions of the map; (h) sources of information used for each entry; (i) location of the map (library or archive, and signature); (j) other comments and observations.

The manuscript data-base (MAN) contains the following descriptive elements: (a) author and/or copyist (when known); (b) title of the manuscript (when available); (c) data and place of the manuscript (when available); (d) subjects of the manuscript; (e) language(s) of the manuscript; (g) size of the manuscript, number of pages or sheets; (h) reference of relevant biographical entry in PES data-base (when available); (i) reference to corresponding printed works in HTC data-base (when available); (j) sources of information (code of secondary work, volume and page); (k) location of the manuscript (library or archive, and signature); (l) other comments and observations.

Beside those main fields, there is other coded information in the several data-bases.

²⁴ Each edition or version of a work is entered as a new entry.

All data-bases allow searches using information in any field (except the «comments and observations» field). It is possible to enter any Boolean combination of parts of the title of the work, parts of the name of the author, date, place, subject, etc. For instance, it is possible, fast and easy to search for medical works written in French, published in Coimbra in the 18th century. A special fast search is possible for decades and centuries (for instance: 176- will find all dates from 1760 to 1769). Words can also be truncated, in order to search for related terms. When the truncated word has 3, 4 or 5 letters (for instance: ast-, astro- or astron-), the search is as fast as with complete words. Accented and non-accented forms of the same word are equivalent, in any search.

The use of the auxiliary DIC data-base allows one to find old forms of authors names (such as «Affonso») and title words (such as «chymica») when the modern form is used in the search. This technique was found to be much more satisfactory than phonetic similarity programs.²⁵ It required, however, the development of an auxiliary data-base and still requires periodical actualization.

V. PRESENT STATE OF THE PROJECT

Nowadays, the size of each data-base is the following:

Data base:	Description:	Number of entries:	Planned size:
HTC	Pre-1822 publications and reference works	9,400	11,000
MAP	Printed and manuscript maps up to 1822	3,100	4,000
PES	Biographical data on authors up to 1822	1,900	3,000
MAN	Manuscripts up to 1822	5,700	7,000
IMP	Printed books from 1823 to 1900	15,600	40,000
ART	Printed articles from 1823 to 1900	4,500	15,000
PER	Periodicals	500	800
	Total:	40,700	80,800

²⁵ See, for instance: H. J. ROGERS, and P. WILLETT, «Searching for historical word forms in text databases using spelling-correction methods: reverse error and phonetic coding method», *The Journal of Documentation* XLVII (1991), 333-353.

The HTC data-base contains entries for about 5,900 books printed up to 1822, 400 articles published in the same period, 1,200 re-editions and works written before 1822 but published after this date, and 1,900 secondary works (bibliographies and historical studies). This part of the project is fairly complete. Most of the future increase will correspond to secondary works and post-1822 publication of Colonial works.

Data-bases IMP and ART were begun only one year ago. They are increasing very fast, as always happens in the beginning of each work. If financial support is maintained, they will attain twice their current sizes by the end of 1996.

In its present state, all these data-bases are fully operational. They can be used on site, but remote access is not possible. Researchers interested in any specific theme can also contact the project by letter or electronic mail.²⁶ Work will continue for several years, in order to complete, revise and improve current data-bases.

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²⁶ Send inquiries to prof. Roberto Martins, UNICAMP, Caixa Postal 6059, 13081-970 Campinas, SP, Brazil. E-mail: rmartins@ifi.unicamp.br.

SUMMARY

This report presents a bibliographical project on sources for the study of Portuguese and Brazilian science, medicine and technology, from the 15th century to 1900. The project has led to the development of a set of computerized databases containing 40,000 entries on primary and secondary sources (including printed works, manuscripts, and maps).