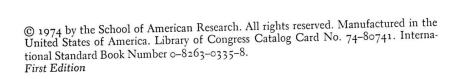
# SIXTEENTH-CENTURY MEXICO

The Work of Sahagún

edited by MUNRO S. EDMONSON

A SCHOOL OF AMERICAN RESEARCH BOOK

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## Contents

Foreword	
DOUGLAS W. SCHWARTZ, GENERAL EDITOR	ix
Introduction	1
MUNRO S. EDMONSON	
Early Work (1529-47)	3
The Tlaltelolco Drafts (1547-62)	4
The Madrid Codices (1562–75)	4 7 8
The Florentine Codex (1575–85)	8
Last Years (1585–90)	9
Sahagún's Mexico	12
Sahagún in His Times	17
ARTHUR J. O. ANDERSON	
The Ethnographic Works of Andrés de Olmos, Precursor	
and Contemporary of Sahagún	27
S. JEFFREY K. WILKERSON	
Codex Tudela	30
"European" Figures	33 36
The Eighteen-Month Calendar	36
Daily Ritual Life	39
The Tonalamatl and Divination	45
Relationship with Contemporaneous Manuscripts	
and Authorship	47 68
Relationship with Subsequent Manuscripts	68
Implications	71
	xi

4	The Rhetorical Orations, or Huehuetlatolli,	
Т	Collected by Sahagún	79
	THELMA D. SULLIVAN	0.6
	Prayers to the Gods	86
	Court Orations	88
	Orations of Parents to Offspring	91
	Orations of the Merchants	92
	Orations Relative to the Life Cycle	94
	Pregnancy	94
	Childbirth	95 96
	Infancy and Childhood	
	Marriage	97
	Death	97 98
	Miscellaneous	90
_	The Research Method of Fray Bernardino de Sahagún:	
5	The Questionnaires	111
	ALFREDO LÓPEZ AUSTIN	
	Introduction	111
	Sahagún's Purposes	112
	Sahagún's Method	115
	The General Plan of the Work	120
	Sahagún's Questionnaires	122
	First Book	122
	Second Book	125
	Third Book	127
	Fourth Book	1 30
	Fifth Book	132
	Sixth Book	133
	Seventh Book	134
	Eighth Book	1 37
	Ninth Book	1 39
	Tenth Book	141 144
	Eleventh Book	147
	Twelfth Book Conclusion	148
	Conclusion	
6	The Treatment of Architecture in the Florentine	
	Codex of Sahagún	151
	DONALD ROBERTSON	153
	European Architecture	157
	Native Architecture	- > /

### Contents

7	The Last Years of Fray Bernardino de Sahagún (1585–90): The Rescue of the Confiscated Work and the Seraphic Confiscated Documents.	165
	Sahagún and Commissary Fray Alonso Ponce. New Documents for the Period 1586–87. The Partial Rescue of the Confiscated Ethnographic Work. The Religious Subjects Chosen in 1585 and	165
	Their Meaning.	179
	"Calendario Mexicano, Latino y Castellano"	182
	"Arte Adivinatorio"	183
	Conclusion	184
8	The Sahagún Texts as a Source of Sociological Information EDWARD E. CALNEK	189
	Kinship through Tlacamecayotl	195
	The Pilli "Class"	200
	Conclusions	204
9	Sahagún's Work and the Medicine of the Ancient Nahuas: Possibilities for Study ALFREDO LÓPEZ AUSTIN Introduction Steps in the Elaboration of the Texts	205 205 207
	Illnesses and Their Remedies	207
	On Medicines	210
	On the Parts of the Human Body	212
	The Information on Medicinal Species in Book 11	212
	The Possibilities for Study of the Texts The European Influence	213 214
	The Human Body	214
	Morbidity	215
	Etiology	216
	Illness	218
	Therapeutics	220
	Pharmacology	223
	Conclusion	223
10	The Nahuatlization of Christianity	225
	CHARLES E. DIBBLE	

xiii

11	The Problematics of Sahagún: Certain Topics Needing Investigation	235
	Need for an Index or Descriptive Bibliography of Sahagún's Manuscripts, Published and Unpublished The Question of the Originality of the Enterprise of Sahagún. Possible Influences on the Conception	240
	of His Work, the Methodology Adopted, and Its Elaboration The Role of the Native Informants and Fray	241
	Bernardino's Other Native Collaborators	243
	The Origins and Categories to which the Native Texts Collected by the Franciscan Can Be Attributed Sahagún's Intention in Writing the General History of	246
	the Things of New Spain in Spanish and Its Relation to the Information Collected in Nahuatl The Problems of the Spanish Editions of the General History Derived from the Tolosa Manuscript or	248
	from Copies of It  Questions Concerning the Forms Adopted to Date in the Translation of the Nahuatl Texts Collected by	249
	Fray Bernardino into European Languages	250
	References	257
	Index	275
	Figures	
1. 2. 3.	Towns Mentioned in the Codex Tudela General Relationships of the Codex Tudela	35 57 79
4.	Kinship Terms Embodied in Tlacamecayotl	199
5.	Medicine	208

## Sahagún's Work and the Medicine of the Ancient Nahuas: Possibilities for Study

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### INTRODUCTION

Sahagún was above all an evangelist, dedicating his life to the conversion of infidels. But in the prologue of his *History*, where he explains his purpose in preparing this work, he compares his endeavor with that of a doctor. His work shows a consistent preoccupation with the health of the body along with that of the soul.

Sahagún elaborated no other subject so thoroughly in his General History; the only informants whose names he mentioned were the doctors, whose names appeared in two extensive lists. He acknowledged that the experienced doctors "cured publicly," contrary to the opinion of

other reliable authors, among them Francisco Hernández (1959-67), who explicitly disdained the knowledge of the native specialists.

In the valuable material concerning medicine in the General History, we can distinguish the information arising spontaneously from answers the Franciscan obtained while asking about other subjects. Among these spontaneous data are references to the gods who protect medical practices and to the causes of different illnesses and misfortunes; to the transgressions causing the acquisition of certain ills; to therapeutic methods and rituals; to the classification of illnesses like gout, numbness, or sluggishness among the "cold" diseases and to the promises made to the gods of the wind, water, and mountains in order to be cured of them; to the actions of the gods visited upon those who drank pulque before the general offering, and the effects of these actions, such as paralysis of the face or of a limb and trembling of the face; to the preventive measures against the penetration of worms into the eyes; to the participation in social and religious life of the specialists in the art of curing or of bringing children into the world; to the magical measures taken to make children grow; to those sick from particular diseases who died and were offered to the gods; to the activities of the experts on the calendar of destinies who indicated the gods to whom the offerings of ritual paper should be directed; to the amulets that should be hung around the necks and wrists of children; to good and bad days for health; to the animals that were agents of the gods and announced disaster and death; to the consequences of minor transgressions like licking the grindstone or eating tamales that were stuck to the pot; to the supreme will of Titlacahuan as dispenser of fortune and disaster, health and illness, life and death-in short to an enormous amount of information that makes Sahagún's work one of the greatest monuments of historical literature.

The second kind of material, that which Sahagún sought out with the specific purpose of recording the medical knowledge and the therapeutic properties of different species in New Spain, includes two main categories, one on the illnesses of the human body, the other on medicines. Two more categories can be added: the facts Sahagún collected on the parts of the human body for the purpose of compiling a vocabulary; and the general information on flora, fauna, and minerals, containing valuable data on pharmacology. In this chapter I will examine these data in close detail.

#### STEPS IN THE ELABORATION OF THE TEXTS

#### Illnesses and Their Remedies

Sahagún's inquiry into illnesses and their remedies was early. In the Tepepulco documents are two brief texts that I have entitled "Illnesses of our body, I," (Figure 5A) and "Illnesses of our body, II," (Figure 5B) corresponding respectively to Folios 69 and 81. The first, originally entitled "On the Divers Illnesses That Are Produced in Our Body," is written in a clear and uniform handwriting with few corrections. It is a list of illnesses in which we can discern no clear order of mention on the part of either Sahagún or the informants. There exist ills that do not correspond to the Franciscan's medical concepts: tlanatonahuiztli, yohualehecatl, necihuaquetzaliztli, tlalatonahuiztli, and others (see below). After the name of the illness is that of the corresponding medicine, or an indication (in six of the fifty-six cases) that no remedy exists. The information consists of brief accounts of one or more of the necessary medicines, the part of the plant needed, and, in some of the many cases in which the prescription belongs to the vegetable world, the indication of whether the product is native to the locale and whether it grows everywhere or comes from a specific place and environment. In 10 percent of the cases there is mention of its preparation or administration.

The second text is very different; the writing is very bad, and the text is messy, with many blotches. Two-thirds of the descriptions of illnesses refer to preparation or administration of the medicines; in only one case is the place of origin of an herb mentioned. In spite of the fact that this text (again in contrast to the preceding one) does not have a heading specifying its placement in the work, it undoubtedly precedes the data later collected in Tlaltelolco, for a certain similarity of sequence is discernible.

Once in Tlaltelolco, Sahagún used the Tepepulco material as a foundation for the continuation of the investigation on a much larger scale. This was the pattern for the elaboration of all his work, but that relating to illnesses and remedies had a particularly complex history, which can be discovered both by the comparison of folios 163r-72v of the Madrid Codex of the Royal Academy of History with folios 97r-113v of Book 10

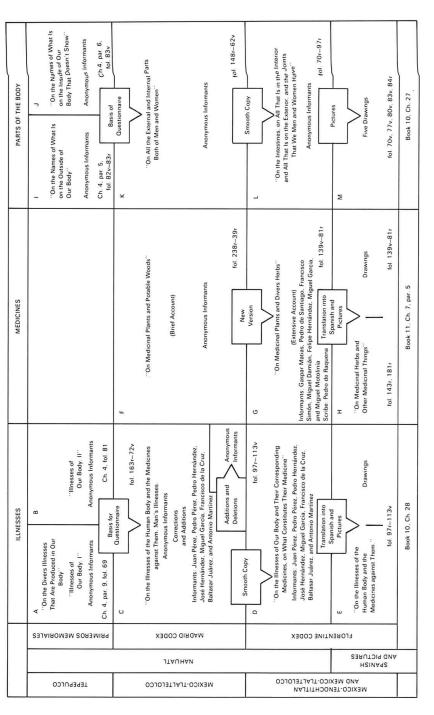


FIGURE 5. PROCESS OF ELABORATION OF THE PRINCIPAL TEXTS OF SAHAGÚN ON MEDICINE.

of the Florentine Codex and by the erasures and corrections in the Madrid Codex. A summary of this history, whose erasures I specify in the translation I have made into Spanish (López Austin 1969b), affirms that the Acolhua original served one or more Mexican doctors in drawing up the first five paragraphs of the six that made up "On the Illnesses of the Human Body and on the Medicines against Them. Man's Illnesses," Chapter 28 of Book 10 (Figure 5C), with several corrections and additions made at the moment of preparation. Later Doctors Juan Pérez, Pedro Pérez, Pedro Hernández, José Hernández, Miguel García, Francisco de la Cruz, Baltasar Juárez, and Antonio Martínez revised and corrected the text, added the last paragraph, and included their names. The differences in opinion indicate that the first part was not written by exactly the same people as the second. The Madrid version was recopied into the Florentine Codex with the usual changes or additions in the headings of the paragraphs and chapters. Also added in some twenty words at the end of the fifth paragraph was an account of infections, wounds, and cuts.

Twenty-seven illustrations of patients and doctors were added to the text of the Florentine Codex. The drawings are very simple, but some benefit can be obtained from a detailed study of them. Several instruments which appear minute in the drawings can be mentioned; they show how to administer medicaments against ocular and hemorrhoidal problems. There is also a glyph giving us to understand that the fever caused by tooth infections was considered aquatic, in a system of classification that I believe to have been the basis for the modern folk taxonomy of "cold" and "hot" diseases.

From the section of the Florentine Codex entitled "On the Illnesses of Our Body and Their Corresponding Medicines, on What Constitutes Their Medicine" (Figure 5D) was translated into Spanish what we know from the General History as "On the Illnesses of the Human Body and the Medicines against Them" (Figure 5E). But although in the manuscripts of the Florentine Codex and of the General History the preparation of the definitive version continued, in the Madrid Codex someone (who from his differing opinions may be supposed not to have belonged to the group of doctors who left us their names) corrected the text, eliminated important parts, and added to it, aided by the same scribe used by the previous group. It may even be that the work of incorporat-

ing the material was done by various people, for in Folio 163r there is a notation in a very different hand.

Sahagún's purpose in collecting the material probably derived from his confidence in the native doctors and in their knowledge. Sufficient proof of this confidence is the recording of their names and the request that they intervene in a work which could have been considered already finished. One must remember, too, that whatever did not serve therapeutic ends was blocked out of the original data. The deleted material was linked to magical and religious ideas. In Tlaltelolco a whole series of headings was not repeated: necihuaquetzaliztli, a form of death sent by Huitzilopochtli and Quilaztli to the women they wanted as escorts during the solar course; netlahuitequiztli, the death used for the same purpose by the aquatic gods; tlalatonahuiztli, yohualatonahuiztli, and yohualehecatl, sicknesses that may be supposed (and the problem deserves careful study) to be connected to spirit entities originating from the dead or to aquatic and terrestrial gods. A man broad-minded enough to bequeath us such valuable information on the native religion would not have been frightened by these ideas; they had to be eliminated if the purpose of Chapter 28 of Book 10 was its utility in the search for health.

#### On Medicines

The history of this type of text begins later. It was not started in Acolhuan country but rather in Mexico, in Book 11 of the General History, dedicated to animals, vegetables, and minerals. The original version had as its title "On Medicinal Plants and Potable Woods," and it is found in folios 238r-39r of the Madrid Codex of the Royal Academy of History (Figure 5F). Initially numbered Chapter 15, later numbered paragraph 5 of Chapter 7, it is but a small part of the extensive chapter on herbs. It is obviously in two parts, the first written on a broad, full scale, the names of the plants constituting the headings of the lines and making up both the heading and the text in the last three sections; the second a sketch or plan, filling in the spaces marked by the headings with brief accounts of the plants listed. The informants who dictated the broad plan and those who dictated the sketchy one were not the same, for the latter left fifteen of the fifty-nine sections blank, and disagreed over whether chichi-

### The Medicine of the Ancient Nahuas

pilli was a medicine. The remaining sections indicated the illnesses against which the medicine was useful, the great majority explaining its preparation or administration. In thirteen cases the part of the plant to be used is specified, and in eleven something about its appearance.

From this meager beginning it was necessary to move on to a more complete investigation. The task was entrusted to seven doctors from Tlaltelolco who inscribed their names on the document. They seem to have used the previous list as a basis for their work, although they did not follow it strictly. They doubled the number of plants and added the names of stones, animal products, and something on steam baths, considerably augmenting the information in each section. The resulting data were recorded in the Florentine Codex under the title "On Medicinal Plants and Divers Herbs" in the original text (Figure 5G) and under "On Medicinal Herbs and Other Medicinal Things" in the Spanish version, in folios 139v-81r of Book 11 (Figure 5H). The names, cosigned in both the Nahuatl and Spanish columns were: Gaspar Matías, Pedro de Santiago, Francisco Simón, Miguel Damián, Felipe Hernández, Miguel García, and Miguel Motolinía, and as scribe Pedro de Raquena (whom I have identified with the kind assistance of Howard F. Cline). The information replies to a questionnaire which can be reconstructed as follows:

- 1. What kind of plant is it?
- 2. What does it look like?
- 3. What are its useful parts?
- 4. Against what illnesses are they useful?
- 5. How is the medicine prepared?
- 6. How is it administered?
- 7. Where is it found?

These questions were frequently answered. In addition there is information about diet in about 17 percent of the cases, and in a smaller percentage there is complementary information of some interest. The greatest attention is paid to the botanical characteristics of the species. As throughout the work, the manuscript of the Florentine Codex is enriched with drawings, very important ones in this section since they are a magnificent means of scientific identification. The Spanish version is incomplete, for the first thirty-four plants are missing, and in the editions of the General History seven more have been omitted.

The close attention Sahagún paid to the data and the fact that he soli-

cited the participation of professionals in medicine again suggest that he was interested in the topic because he expected it to be therapeutically useful.

### On the Parts of the Human Body

Fray Bernardino begins worrying about the names of the parts of the body in Tepepulco. Two very brief texts, "On the Names of What Is on the Outside of Our Body" (Figure 5I) and "On the Names of What Is On the Inside of Our Body That Doesn't Show" (Figure 5J) constitute respectively paragraphs 5 and 6 of Chapter 4 in the "Primeros Memoriales" and are found in folios 82v-83v. They are simple lists of sixtyeight body parts, most being accompanied by one to six words, mainly verbs, whose purpose is the enrichment of the Nahuatl vocabulary planned by Sahagún.

In Tlaltelolco the Franciscan collected enough material to form a whole chapter (Chapter 27 of Book 10 of the Florentine Codex), and he had terms for everything from the names for the skin to those related to excrement. In each case the associated words are abundant, very often synonyms, which would have constituted valuable material for the aforementioned vocabulary. This text, which in folios 148r–162r of the Madrid Codex goes under the title "On All the External and Internal Parts, Both of Men and Women" (Figure 5K), is passed on into clean copy in folios 70r–97r of Book 10 of the Florentine Codex, where it is called "On the Intestines, on All That Is in the Interior and All That Is on the Exterior, and the Joints That We Men and Women Have" (Figure 5L). It has a few unimportant drawings (Figure 5M).

There was no point in translating materials like these into Spanish. In the *General History* Sahagún made a notation indicating their replacement by a noteworthy account of pre-Hispanic education and the education given by the missionaries.

### The Information on Medicinal Species in Book 11

Paragraph 5 of Chapter 7 in Book 11, which treats the medicinal species and to which we have already referred, attained such magnitude, independence, and importance that it can well be considered a booklet

### The Medicine of the Ancient Nahuas

inserted into an already complex book, from which it differs greatly. Even discounting the paragraph in question, Book 11 is still an important source of information about native medicine. For the most part—with the exception of paragraph 1 of Chapter 12, referring to intoxicating plants—the information is very scattered, and the characteristics of the paragraphs in which it is found are highly variable. Because of the diverse origins of these texts and of those of the medical informants, the species to which they allude are often also mentioned in other parts of the book, and the data are complementary.

The book on flora, fauna, and minerals has no direct antecedents in Tepepulco. It was initiated in Tlaltelolco and also contains very important illustrations.

#### POSSIBILITIES FOR STUDY OF THE TEXTS

A consideration of the possibilities for study of these texts should necessarily begin with due acknowledgment of fundamental previous works. It is not possible in this brief exposition to mention all of even the most outstanding works, but the following should be recalled: the works on the identification of species and anatomy by Rafael Martín del Campo (1938-40; 1959); the translation into German by August Freiherr von Gall (1940); the collaboration in botanical identification of George S. Diumenti and Aaron Margulis for the translations of Dibble and Anderson (Sahagún 1950-69); and in a special place, because of their quality and magnitude, the studies of Arthur J. O. Anderson and Charles E. Dibble themselves, including the complete English translation of the Florentine Codex-in which the parts relating to medicine are translated and annotated with singular erudition—and the articles the two authors have written separately on medicine in general, pharmacology, and anatomy (Anderson 1961; Dibble 1959; Rogers & Anderson 1965; 1966).

Those who prepare future studies will have various translations to deal with. That of Dibble and Anderson into English (Sahagún 1950–69), von Gall's into German (1940), and mine into Spanish (López Austin 1969a; 1971b; 1972) can be the bases for research to be carried out by specialists in various branches of scientific knowledge, either individually or in teams. This interdisciplinary collaboration is not only desirable but

indispensable. We historians, and particularly Nahuatl translators, must often have recourse to doctors and botanists. When our work of translation is concluded, the roles will be reversed, and we shall be the assistants in the investigation.

Sahagún's work offers to contemporary and future investigators an extensive range of possibilities for study. It would be very pretentious to try to point out all the possibilities, many of which will be discovered by specialists in the course of investigation. I want to limit the contents of this exposition to a few ideas that have come up in the process of translation, and a few examples.

### The European Influence

The native medicine recorded by Sahagún is a product not only of pre-Hispanic ideas, but also of an incipient confluence of native and Spanish concepts and techniques. One of the first desirable steps in research is the specification of this cultural process. In another work I have pointed out the use of lint packing for deep wounds, a procedure with a possible distant origin in the classic Mediterranean world, and the use of metal instruments like the syringe, of greater efficiency than the native ones made of clay. There are prescriptions which call for wine or wheat, and some which forbid the meat of animals imported by the Spanish. Germán Somolinos D'Ardois has suggested to me the possibility that Galen was the source of the physiological concept of the liver as the "pot of blood" (textecon), as it appears in "The Internal Parts of the Body" in the "Primeros Memoriales" (and not in Book 10). It should also be noted that in the remarks accompanying the parts of the body it is said that our brains reason and warn, and that with the celestial part-the head-we remember and think. This concept was foreign to the natives, who made the heart the organ of consciousness.

### The Human Body

The data referring to the human body were not collected for the purpose of recording the native concepts, but in order to create an extensive anatomical vocabulary. The possibilities of investigation, however, are not limited to simple vocabulary, as evidenced by the work of Rogers

### The Medicine of the Ancient Nahuas

and Anderson (1965; 1966) with other Nahuatl vocabularies, comparing the inventory of the terms referring to the different parts of the body with the ancient vocabularies of Scandinavian, English, Norwegian, and High German.

The topic can be approached through etymological study. Not only the names of the parts of the human body but also those of illnesses can give an idea of the way an organ was supposed to function. Cuitlatexcalhuaquiztli, which means constipation, is literally translated as "dryness of the excremental oven." The texts studied say that our stomach purifies the food and cleans it, so we can imagine a digestive process in which the food descends to the stomach, where, by means of heat, the nutritious content is separated from what will make up the excrement, and we can infer that an excess of heat causes defecatory difficulties. Other ideas on physiological processes and anatomical conformations may be deduced from information relating to illnesses and therapeutics, such as the supposed organic connection permitting an enema to wash the interior of the kidneys and remove parasitic worms, or the supposition that a purge can evacuate the phlegms causing pressure on the heart.

### Morbidity

In spite of the great concern at the time for knowledge about endemic diseases, shown in the questionnaire that was the background for the Relaciones Geográficas (Paso y Troncoso 1905–6), there are not many direct references to the presence and incidence of specific illnesses in Sahagún's documents. Some relevant material may nonetheless be obtained, not from the lists of illnesses but from the lists of remedies, since it is logical to suppose that the number of medicines recommended for each illness was in direct relation with the attention given to it by the natives, and the attention with its frequency. For example, in the Madrid Codex, out of sixty ailments mentioned, nine are problems of childbirth fever and as many more of other kinds of fever. Mentioned four times each are abscesses, the inability to eat, infant problems, eye problems, and "aquatic" or intermittent fevers. Twice mentioned are mange, being struck by lightning, and gout; the rest of the diseases are listed once each. In the Florentine Codex, of more than three hundred

and sixty mentions of diseases, forty-five are of fever in general, three of white fever, three of head fever, eight of "aquatic" or intermittent fevers, and three of other types of fevers. There are twelve mentions of relapses, five of shortness of breath, five of extreme consumption, six of blistered body, five of rotten body, nine of body swelling. There are eleven of anal hemorrhage, four of diarrhea with blood, three of bloody stools, ten of swollen abdomen, fourteen of diarrhea, four of constipation, one of pus in the abdomen, two of noise in the intestines, one of worms in the abdomen, one of acidity, one of aminaliztli or the ills produced by water, one of stomach ache, one of hemorrhoids, four of cysts, nine of damages caused by sexual excesses or coital problems, eleven of illnesses of the penis, three of diseases of the groin, and one of normal sexual desires that must be calmed in the widower. There are twenty-two mentions of urinary problems, nine of gout, one of numbness, four of nerve diseases, one of swollen feet. There is one mention of the inability to conceive because of vaginal problems, three of delivery problems, four of childbirth fever, four of the purification of maternal milk, and one of the sickness of a child as a consequence of his mother's new pregnancy (chipilez). There are seven mentions of cough, six of back or chest ailments, five of nasal hemorrhages, two of phlegms, one of rotten lungs. There are more than eight apparent cases of illnesses produced by supernatural beings, and ten mentions of eye problems. In short, the total account would be very long and, if made by one who lacked the necessary medical knowledge, of little significance. Hence I believe it is better to leave the recounting in the hands of specialists, who will be able to relate the resulting figures to the very particular problems of a population situated on a lake and presumably burdened with sanitary difficulties.

### Etiology

This is undoubtedly one of the most interesting points. The origin of illness is complex, including and often intertwining two types of causes: those that we would call natural—excesses, accidents, deficiencies, exposure to sudden temperature changes, contagions, and the like—and those caused by the intervention of nonhuman beings or of human beings with more than normal powers. For example, a native could

think that his rheumatic problems came from the supreme will of Titlacahuan, from the punishment sent by the Tlaloque for not having performed a certain rite, from direct attack by a being who inhabited a certain spring, and from prolonged chilling in cold water; the native would not consider it all as a confluence of diverse causes but as a complex. This complexity, which is obvious not only in other sources on pre-Hispanic Mexico but also in Sahagún's work, is not evident in the texts with which we are presently concerned. These texts were unquestionably influenced by the firm decision and censorship of Sahagún and by the caution of the native doctors, whose contact with the missionaries enabled them to see what matters were best omitted. As a result, illnesses that were totally related to magical or religious concepts were eliminated from the lists, and only the "natural" etiology remained, usually by elimination of the rest, or sometimes by a tacit substitution influenced by the conquerors.

Thus there remained those documents that attributed lip blisters to heat, wind, or cold, or tooth decay to eating hot things (especially if cold things were eaten afterward), and to the presence of decomposed food, especially meat. An eye disease originated from the presence of a parasitic worm. There are other diseases whose causes must have seemed strange to the Europeans of the time: stuttering or overly childish speech were said to be caused by persistence in nursing in spite of the advanced age of a child, and serious sexual problems were thought to be caused by erotic dream visions (perhaps those not accompanied by discharge), by fright during copulation, and in a woman by having sexual relations or lifting heavy things immediately after giving birth. Breech births are attributed in Book 11 to nonabstention from coitus immediately before delivery, a pathogeny which is not described in that book but rather in the advice to pregnant women in the speeches of Book 6.

We must take into account that much can be obtained from information implicit in the language. It is said of many illnesses, particularly fevers, that they establish themselves in or inhabit certain parts of the organism: one causing blisters on the tongue, called nenepilchacayolihuiztli ("formation of rings on the tongue"), is so localized: "totonqui tocamac nemi," "the fever lives in our mouth." The same can be said of verbs used in reference to certain diseases known from their origin or their effects to be caused by divine beings. In speaking of the effects of

air (and in this case air cannot be understood as simply the natural fluid or its current) the verb quiza, "go out," is used, preceded by -pan with a possessive prefix. The possessive refers to the patient, and the person of the verb to the agent. Exactly the same thing occurs in other books of the Florentine Codex, for example in Book 1, Chapter 10 and in Book 4, Chapter 22, where we find a description of the paralysis caused by the celestial goddesses, escorts to the sun. In both of the above-mentioned places the expression "ipan oquizque in cihuapipiltin," "the noble women came upon him," is used to refer to the moment of the unpleasant meeting. Another very obscure expression is the verb pehua, "begin," used to indicate the presence of an illness with a similar origin. It appears not only in the texts we are now examining but also in Book 4, Chapter 22: ". . . auh intla aca opeuh mococoa," "and if one began to get sick." Dibble and Anderson translate this as "when someone begins to get sick," and I have given the same translation. I suspect, however, that we have not fully understood the phrase. Another verb used in similar cases is piqui, which also merits study. Another that has been studied is the verb ehua preceded by -tech with a possessive prefix. Its apparent meaning is "intrusion," but the problem remains.

### Illness

Many have argued for the absence of a theory of medicine in the Mesoamerican world. Nevertheless it is obvious that like all aspects of the culture—and the aspect of a culture corresponding to the limits of life, death, health, disease, and suffering is one of the most important—medicine was immersed in a scheme of classification of everything that exists. This classification provided the elementary principles of knowledge, tailoring the techniques to the problems. Superior and inferior, cold and hot, the four directions, the possibilities of temporal and spatial intervention by each divinity, the lucky and unlucky days were all applicable to this subject matter.

I do not believe it necessary to reconsider here the origin of the hotcold concept in native medicine (see López Austin 1971b). Nevertheless it is worth pointing out that "cold" medicines and their effects are mentioned often. One plant is said to be cold and to counteract heat; another forces heat out because it is cold; another mitigates the effects of a purge because it is cold; another is used for the same reason against inflammation of the eyes; another is spoken of kindly because it helps the digestion: it cools the heat (which must be presumed harmful if excessive) and with it one does not feel the heat of the steam bath. It is said that the cold nature of the *coaxihuitl* (ident.?) lowers the blood of one who has twisted his neck, so the heart will not be damaged. And *cococ tlacotl* (ident.?) is said to be a cold root. Contrary to what is supposed by those who affirm that the distinction between hot and cold is a degeneration of the Old World concept of the four elements, no reference is made to the opposition of wet and dry.

The possible correspondence between different types of phlegms and fevers and the four cardinal points constitutes an interesting problem. Like the directions, phlegms are identified with colors, in which the natives discerned a relationship to illnesses and their seriousness. White, yellow, and green phlegms and pus are frequently mentioned in the texts referring to medicines. This four-part division is also made at the end of the anatomical list in Book 10. A different division appears in the first list of the "Primeros Memoriales," for the Acolhuan informants named phlegm, blood phlegm, white phlegm, and yellow phlegm. A dark green fever and a white one are mentioned by color. White is a strong fever, but it is not apparent, since it locates itself in the interior, not on the surface, of the body. It swells from below and causes rotting. The dark green fever also lodges itself in the interior of the body, but it manifests itself more conspicuously, blackening two or three zones of the skin. Will two other complementary fevers be discovered? It would be interesting to compare Sahagún's data with Hernando Ruiz de Alarcón's (1953).

Research can uncover interesting ideas about pathogeny. The connection between fever and the density of urine, one of the relationships most frequently mentioned, is worth investigating. One of the principal concepts is that of the placement of the illness in the interior of the body, whence the effects sprout to the surface. Before this emergence a difference in temperature may exist between the damaged and the healthy zones, which produces an undesirable sensation of great coldness in the nerves. The emergence may be spontaneous in the form of blistering of the lips, inflammation of the face and eyes, or the presence of spots on the face, this last being a result of rupture of the internal

organs, hemorrhoids, infections, or cysts. When the movement toward the exterior is not spontaneous, it is induced by means of medicines, for it is easier to attack the "mature" illness by applying the medicines from the exterior, directly on the skin. Another serious problem is the accumulation of phlegms, white, green, and yellow, which penetrate the nerves, head, and chest. These phlegms produce pressure on the heart, fever, pulsations of the temple, and muscular and nervous trembling. The pressure on the heart proceeds from one side, injures the viscera (the organs of thought), and produces a loss of consciousness.

These are only examples. A careful reading of the texts awakens doubts, suggests answers, and invites investigation, which should be guided by the premise that knowledge follows a logical tendency to divide and classify, to take the world as a complex but orderly whole. The interrelation of findings on the functioning of the human body, on the nature of illnesses, and on the processes of their development will permit the explanation of the native concept of therapeutic processes.

### Therapeutics

One frequently encounters in Sahagún's texts clear references to the reasons for the choice of certain types of remedies. He mentions, for example, that there are medicines applicable to all kinds of numbness, that bitter products are indicated for infections, and that any purge is medicine for weakness. It is affirmed that the heat of the sweat bath softens the hardened muscles and nerves of those who have been ill or beaten. It is believed that a sudorific causes a fever to exit through the skin, and that some medicines cool the damaged organs and thus reduce swelling. Bruises caused by a contusion are dangerous because beaten blood becomes corrupt and turns into an illness that provokes the drying out of the patient, the swelling of the abdomen, spitting blood, and constant coughing; thus the blood must immediately be made to flow throughout the body to prevent stagnation. The therapeutic medicine is obvious: bleeding to make the blood flow. On other occasions the effect of the remedy is described in very mechanical terms, as in the case of one that pushes the phlegms oppressing the heart until they exit through the anus. It is said of other medicines that they speed the process of the illness, motivating a maturation so that the disease can be more

easily attacked, making the illness appear on the surface where it can be treated directly.

Other therapeutic measures are not so obvious. Among them is the very important one studied by Dibble, who proved not only that what was sought was the elimination of internal heat by means of the evacuation of the intestines and bladder, but also that the indicated medicines were actually very effective purges and diuretics. In another example, it is said that pus, yellow phlegm, and thick blood, which are said to be produced by "the male sickness," are expelled through the anus or urethra, and one is given to understand that with the expulsion of these products, the illness disappears.

There is undoubtedly an important reason why certain diseases—those related to the world of cold and water, such as swelling of the abdomen, gout, the evil effect of lightning, that of "air," perversity, atonahuiztli or "water fever," and others—should be attacked with censers, and why yiauhtli (Tagetes lucida), picietl (Nicotiana rustica), teunanacatl (Panaeolus campanulatus v. sphinctrinus), peyotl (Lophaphora williamsii), toloa (Datura sp.), and ololiuhqui (Ipomea sidaefolia, Rivea corymbosa, Datura metaloides)—all narcotics (in addition to ehecapatli (ident.?), which I do not recall as having this property)—should be prescribed as remedies.

Measures like the protection of an injured head by wrapping it so the harmful air will not penetrate have persisted until the present and belong to the "evil air" complex. It is interesting to see the degree of personification associated with an illness that can be weakened and dispelled by the odor of a plant hung around a child's neck. The diversity of maladies for which ocelot meat is used (possession by supernatural beings, madness, water fever, perversity, and the illness indicated by the verb *piqui*) suggests that they all form part of a category that can be studied through the common medicaments.

It is curious to note an element in the therapeutics that is also very significant in modern native magic: the time. For a cough with purulent phlegm, it is necessary that the *chichihualcuahuitl* (ident.?) be heated by the sun precisely at dawn, and for white excrement or bloody stools, the lime should be moistened in the afternoon.

The therapeutics contains in addition a conspicuous list of diets and prohibitions. The patient with a cough will have to eat turkey, rabbit,

quail, pigeon, venison, and fried tortillas, and will drink a little wine and pulque, boiled chile water, and atole with honey or chile; he will not, however, be able to take cold water, cacao, fruit, or water pulque. He will be forbidden to face the cold and to drink much water, but it will be recommended that he take steam baths. One who has a turkey cataract should not look at white things. If categories of foods and prohibitions were obtained, no doubt a categorization of the illness could also be found through the counteractions used to reach equilibrium. This would probably lead to results parallel to those obtained from investigations of the modern native world, in which "cold" or "hot" medicines, foods, and drinks are recommended for the illnesses with opposite natures.

This configuration leads us back to the topic of colors, which, just as in modern Mexico, seem to have had great importance in ancient times. Red saltpeter is recommended in Sahagún's texts against the ocular excrescence called ixhuahuacihuiztli, and red medicines in general should be used against the white films and clouds that form in the eye. But the use of dark medicines is more salient: soot, tlilpotonqui (Eryngium beecheyanium), tlaliyac (copperas), nacazcolotl (Caesalpinia coriacea v. coriaria), matlalli (blue), black axin (an unguent), palli (black clay), and many others are used against body swelling, gout, aquatic fever, blisters, head eruptions, split ends, dandruff, diarrhea, white excrement, contusions and head injuries, chest aches, constipation, head fevers in children and old people (perhaps a particular type of fever), nits, tooth decay, and glaucoma. It is specifically stated that the parts of the body swollen by white fever are painted over and that the medicine bursts the tumors. Illnesses for which dark substances are not used are also important, because the diseases have a nature opposite to the previous group and are of the same nature as the medicines: cocopaltic (a tree resin) and soot are used against diarrhea, but the soot is eliminated when the patient's excrement or saliva are bloody. (There is an exception, however, concerning the application of soot in cases of bloody excrement: cozcacuauhxihuitl [Perezia moschata], cuauhyayahual [ident.?], resin, and soot are recommended for those who have been beaten, but if they have fever the resin and soot are eliminated.)

If we pass from the grouping of illnesses to that of therapeutic mea-

### The Medicine of the Ancient Nahuas

sures, we can see that certain diseases that are cured with dark substances are also cured with censers. The same kind of relation exists between bleeding and puncture, which are applied for headaches (if the censing is not enough), aquatic fever of the teeth, tooth decay, nits, abscesses, and swellings.

Many such equivalences could yet be indicated, but I believe these suffice. The only pertinent thing to add is that nowadays the dark colors belong to the domain of heat and the light ones to that of cold. This structure should be taken into consideration when a further investigation is made.

In other cases particular medicaments are used for simpler reasons. If we examine the list of ailments for which urine was used, the urine appears to have served as a disinfectant. Rubber was used to cure excoriations of the skin and irritations of the mucous membranes, and maguey was used in many forms to close up the tissues when there was continuing suppuration.

### Pharmacology

Interest in the study and identification of medicinal plants used by the ancient Nahuas has developed not only for research on the native concepts, but also from the requirements of research in modern pharmacology. The botanical descriptions from Sahagún's texts, the drawings of the plants, and the study that can be made of the etymology of their names, will doubtless aid in taxonomy, the initial step in the research. Useful as Sahagún's texts are, they should be considered as complementary to other works, such as Francisco Hernández's, which is far superior in botanical description. The traditions of those who still use the ancient herbals and who conserve the Nahuatl names of plants should also be taken into account in the process of classification.

### CONCLUSION

From among the many possibilities for the study of Sahagún's texts on medical subjects, I have pointed out several tracks and examples of

### ALFREDO LÓPEZ AUSTIN

topics for investigation, some imagined and others discovered in my work as a translator. I offer them without providing solutions because I am the first to admit that this is a task for specialists in matters in which I am inexperienced. The preceding pages have been suggestions and nothing more, hence bibliographical references are largely omitted. Anyone wanting to follow this path will need to review the material as a specialist.

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Badianus: See Emmart 1940 Borbonicus: See Hamy 1899 Florentine: See Sahagún 1950-69

Franciscan: See García Icazbalceta 1941a

Madrid: See Sahagún 1905–8 Magliabecchiano: See Nuttall 1903

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