CONTRASTING DIAGNOSTIC AND PRESCRIBING PATTERNS IN TRADITIONAL THAI PAEDIATRICS

by

Jean Mulholland

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This thesis is the result of my original work as a research scholar in the Department of Asian History and Civilizations, Faculty of Asian Studies, the Australian National University.
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ABSTRACT

Thai traditional medicine is one of two legally recognized systems of medicine practised in Thailand, the other being Western medicine. The authorised teaching syllabus for the licensing examinations in Thai traditional medicine and pharmacy is a group of medical texts handed down for generations.

This thesis is the first scholarly study of one of these medical texts.

Khamphee prathom chindaa, the text examined, was compiled in 1871 from earlier texts of unknown origin. Similar texts were in evidence during the seventeenth century, and may have been in existence for hundreds of years prior to this.

Khamphee prathom chindaa is the most interesting of this group of medical texts, and is the only one concerned specifically with paediatrics. It was studied for its own intrinsic interest as well as to gain an understanding of the theories of medicine and of pharmacy which guide the traditional Thai doctor in his diagnosis and medicinal treatment of diseases.

By identifying the systems of classification of diseases, and by applying the systems of classification of drugs used in Thai traditional medicine and pharmacy, some of the theories of the traditional practitioner have been clarified.

The therapeutic uses of a select group of drugs which occur as ingredients in many of the recipes for medicine in the text have been compared, where possible, with uses known in Thailand and in Western medicine, and some examples of the various types of medicinal treatment are given.
ABBREVIATIONS

<table>
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<td>ASOMPS IV</td>
<td>Fourth Asian Symposium on Medicinal Plants and Spices, Bangkok, 1980.</td>
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<td>BEFE0</td>
<td>Bulletin de l'École Française d'Extrême-Orient.</td>
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<td>DT</td>
<td>Dr Dabba Tansubharp, one of the leading traditional doctors practising in Bangkok.</td>
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<td>IAHA</td>
<td>International Association of Historians of Asia.</td>
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<td>ICTAM</td>
<td>First International Conference on Traditional Asian Medicine, Canberra, 1979.</td>
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<td>JSS</td>
<td>Journal of the Siam Society.</td>
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<td>KPC</td>
<td>Khamphee prathom chindaa.</td>
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<td>KSY</td>
<td>Khamphee saphakhun yaa</td>
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Lewis, Walter H., and Elvin-Lewis, Memory P.F.  


Martindale. The Extra Pharmacopoeia. 26th ed.  

Martindale. The Extra Pharmacopoeia. 27th ed.  


The National Standard Dispensatory. 3rd ed. revised.  

Pharmaceutical Botany.  
Bangkok: Faculty of Pharmaceutical Sciences, Chulalongkorn University, n.d.

Phochtanaanukrom phaet phesat Thai chabap maattrathaan (Dictionary of Thai medicine and pharmacy, standard ed.).  
Bangkok: Samaakhom phesat lae ayurawet boraan haeng prathet Thai (Association of Traditional Pharmacy and Ayurvedic Medicine of Thailand), B.E. 2507 (A.D. 1964).

Prasoe Phrommanee, and Parinyaa Uthitchalaanon. eds.  
Tamraa phesatchakam Thai phaen boraan (Text-book of Thai traditional pharmacy).  
Bangkok: Samnak phaen boraan Wat Mahathat (College of Traditional Medicine, Wat Mahathat), B.E. 2516 (A.D. 1973).

Professor Payom Tantivatana, Head of the Department of Pharmaceutical Botany, Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok.

Ross, M.S.F., and Brain, K.R. An Introduction to Phytopharmacy.  


Sanskrit.

Trease, George Edward, and Evans, William Charles.  


VJ  Professor Vichiara Jirawongse, President of the Thai Pharmacognosy Society, and formerly Head of the Department of Pharmacognosy, Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok.

The System of Transcription Used in the Thesis

This system of transcription is used in preference to the Library of Congress system for two reasons. (1) It is used in the latest official Thai publication on Thai plant names, Tem Smitinand, ed., Chue phan mai haeng prathet Thai (Thai plant names) (Bangkok: 1980) (abbreviation TS3. (2) In order to handle the large numbers of drugs and prescriptions in the text, a computer was used, and diacritics could not be included.

This system has two unconventional features. (1) It represents the long vowel  evils [i:] as 'ee', and (2) does not distinguish between the vowels ews [o?], ews [o:], and ews [u:], which are all transcribed as 'o'.

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CHAPTER 1
INTRODUCTION

Thai traditional medicine is a unique and sophisticated system based on the assimilation of elements of a complex, almost mathematical theory borrowed from Indian Ayurvedic medicine, with a system of medicine which is, in all probability, indigenous, and derived empirically.

The diagnosis and treatment of diseases, according to Thai traditional medicine, is not arbitrarily defined by the random grouping of symptoms and of drugs to treat these symptoms, but follows regular patterns.

We propose to demonstrate some of these diagnostic and prescribing patterns by examining an ancient Thai medical text, Khamphee prathom chindaa, confining our research to the theory of Thai traditional medicine, not the actual practice. Moreover this is a study of the material presented in a text, not a philological study.

KPC was selected for this study because it starts with an explanation of human reproduction, and then goes on to describe diseases of infants and young children, and this seemed to be a fitting place to begin a study of Thai medical texts. This is the only text on paediatrics used in the teaching of Thai traditional medicine to-day.

1 Since very few translations of medical texts from other parts of South-East Asia commented upon in the literature have been published, similarities with medical practice in neighbouring countries cannot yet be established. The comments made in numerous papers referring to medical texts in South-East Asia, some of which are mentioned in Chapter 2, often suggest similarities, but seldom give translations.

2 Khamphee prathom chindaa คำอธิบายประยุกต์ [abbreviation KPC].
Material for this research was collected during several earlier visits to Thailand, as well as during two periods of field work in that country; the first, from 8 September 1978 to 18 February 1979, and the second, from 29 December 1980 to 20 March 1981.

To the best of our knowledge, no scholarly work has hitherto been done on this subject. Some work has been done on traditional medicine at village level in Northern Thailand by Bjørnland, Brun, and Schumacher,\(^1\) and on Northern Thai texts on medicinal plants,\(^2\) and there are many scientific publications on Thai medicinal plants, but these are not particularly relevant to our topic.

Medical treatment of many kinds is available in Thailand. The practice of Western medicine is established in Bangkok and some of the larger provincial centres;\(^3\) Chinese herbalists are found in the cities and most of the smaller towns, but not in the villages; Thai traditional doctors offer treatment in the cities, towns, and most, but not all, villages; and every village is reported to have at least one spirit doctor.\(^4\) Faith healers, injection doctors, astrologers, and many others offer medical treatment; and domestic or folk medicine is often used.

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1. Examples of research into traditional medicine in Northern Thailand, which illustrate some of the local variations in traditional medical thought and practice may be found in: Terje Bjørnland, Viggo Brun, and Trond Schumacher, *Herbalism in Northern Thailand: An Ethno-medical, Botanical and Chemical Survey* (unpublished preliminary draft sighted at the National Research Council of Thailand, 1981).

2. *Chue samun phrai nai phaasaa Thai nuea - klaang lae chue witthayasaat* (Medical plants in traditional Lanna Thai medicine and their local and scientific names), compiled by the Palm Leaf Text Studies Program (Chiang Mai: 1979).
   *Tamraa yaa samun phrai laamaa* (Traditional Lanna Thai medical text), compiled by the Palm Leaf Text Studies Program (Chiang Mai: 1979).

3. The term 'Western' medicine is interchangeable with 'European', 'modern', and 'cosmopolitan' medicine, meaning the system of medicine which developed in Europe.

4. Reliable statistics concerning the numbers and location of all kinds of medical facilities are not available.
Of the three established systems of medicine - Western, Chinese, and traditional - traditional medicine reaches the greatest number of people in Thailand,¹ the majority of whom are rice farmers, living in villages, with little immediate access to modern medicine. Even where modern medical facilities are available, it is quite common for Thais of every class and status to turn to the traditional doctors before or after consulting Western trained practitioners. For these reasons, it is important that this system of medicine should be understood by those interested in the health and in the culture of the Thai people. A study of this text is also important for its own intrinsic value.

Considering the local variations in social norms and values, as well as other influences arising from historical and geographical differences pertaining to the peripheral provinces, it cannot be assumed that the practice of traditional medicine is uniform throughout Thailand. Even within Central Thailand, there is evidence that theory and practice diverge. This divergence is not unique to any one system of medicine, but may be observed in most systems throughout the world.

Thai traditional medicine is taught in at least ten special schools, eight of these being in Bangkok, usually attached to a wat or monastery.² To conform with the Western professional classifications, what was once called simply 'medicine' in the Thai system has been divided into two subjects, medicine and pharmacy. An important difference between the Thai traditional and the Western trained doctor is that the Thai doctor must qualify as a pharmacist before he can study medicine. He then has a practical knowledge of the drugs he


²
prescribes,\textsuperscript{1} and usually dispenses himself. Both Western and traditional medicine are legally recognized, and doctors and pharmacists are licensed to practise.\textsuperscript{2}

The teaching syllabus authorised by the Ministry of Health for the licensing examinations of traditional doctors and pharmacists consists of five volumes. These are \textit{Phaetthayasaat songkhroh} Vols. I and II, and \textit{Wetchasueksaa phaetthayasaat sangkhep}, Vols. I, II, and III. The first contains a group of ancient medical texts revised, compiled, and collated by a committee appointed by King Chulalongkorn (Rama V) in 1871.\textsuperscript{3} These are known as the Royal texts. The second is an abridged version of the first, and the three volumes are published under one cover. A third volume of \textit{Phaetthayasaat songkhroh}, comprising other texts found after the syllabus was set in 1957, is also in use.\textsuperscript{4} But the language of the ancient texts is archaic, and unintelligible to most Thais, so the lecturers at the schools of traditional medicine have published modern handbooks to help their students understand the ancient texts. The handbooks summarize the theories of medicine and pharmacy scattered amongst the old texts, and rearrange the material for easier understanding.

\textit{KPC} is one of these ancient Royal texts. As yet, very little of the history of the Thai medical texts is known. In Chapter 2, \textit{KPC} is placed in historical perspective, to the extent that this is possible, when we trace the history of the texts, rather tenuously, only 300 years back, to the earliest written references to their existence found to date. Also, in Chapter 2, the origin of the recension of

\begin{itemize}
\item \textsuperscript{1} The term 'drug' is used throughout to mean 'medicinal substance'.
\item \textsuperscript{2} Mulholland, \textit{JSS}, p. 82.
\item \textsuperscript{3} \textit{Phaetthayasaat songkhroh} (The study of medicine), Vols. I and II (Bangkok: B.E. 2504 [A.D. 1961]), pp. \textsuperscript{a}, \textsuperscript{a}, I; also mentioned in Mulholland, sub-thesis, pp. 8-12. See Appendix I.
\item \textsuperscript{4} \textit{ibid.}, Vol. III, foreword. A list of the ancient medical texts given in \textit{Phaetthayasaat songkhroh}, Vol. I, pp. \textsuperscript{a}, \textsuperscript{a}, can be found in Mulholland, \textit{JSS}, pp. 112-114.
\end{itemize}
KPC used to-day is established.

KPC is not a single text, but a compilation of extracts from several texts. In Chapter 3, its composition is delineated. Unfortunately, a complete translation of KPC cannot be included in this dissertation, owing to limitations of space - in addition to the descriptive sections of the text, there are almost 660 prescriptions for medicine, and with these set out in an easily legible form, the translation occupies almost 400 pages of single-spaced typing. To overcome this difficulty, a summary of the contents of the text is included in Chapter 3, and translations of passages of importance to the thesis precede our interpretation of these sections, as stated below.

From the explanations given in the modern handbooks, the basic principles of Thai traditional medicine and pharmacy have been published; also, the theory concerning the treatment of the group of diseases said to be the most common, those caused by the tridosa.

The principles of medicine and pharmacy, as presented by Matthayat Daarot, and borne out in Wetchasueksaa, Tamraa phesatchakam Thai phaen boraan, and other handbooks are, to a large extent, derived

1 Mulholland, JSS, pp. 84-112.
4 Matthayat Daarot, Nae naeo kaan sop wichaaw wet-phetthahakam phaen boraan (Guidelines for examinations in medicine and pharmacy), 2nd ed. (Bangkok: B.E. 2515 [A.D. 1972]). [Abbreviation MD.]
5 Prasoet Phrommanee, and Parinyaa Uthitchalaanon, eds., Tamraa phesatchakam Thai phaen boraan (Text-book of Thai traditional pharmacy) (Bangkok: B.E. 2516 [A.D. 1973]) [abbreviation PP].
from Indian *Ayurvedic* medical theory. The texts themselves, which have also been summarized by MD, supply all the details. The texts from which the principles of medicine are mainly gathered are *Khamphee rok nitha*n and *Khamphee tha*at wiphang.*

Briefly, the principles of Thai traditional medicine are as follows: the human body consists of four elements - earth, water, air or wind, and fire. There is a fifth element, ether, which comprises the senses, but this is seldom mentioned in the literature published on Thai traditional medicine. There are 42 main body elements, 32 being substantial. Of the 32 substantial elements, 20 are classified as earth elements, meaning that their chief quality is that of earth, or solidity. The other twelve are liquids, or water elements. The remaining ten are six elements of wind, having the quality of movement; and four of fire, having the quality of heat.

The main causes of disease are abnormalities of the body elements arising from changes in the season of the year, the age of the patient, the time of day when the person became ill, the place where he lives, his behaviour, and disorders of the body elements themselves. Usually, regardless of the origin of the disease, one of three elements, wind, bile, and mucus, is ultimately affected, and these are the immediate causes of illness. Often, two or all three become involved, and when all three are disordered, the disease is called *sannibaat.* These three elements, wind, bile, and mucus, are called the *tridosa.* Sometimes blood is included with these three elements as an immediate cause of disease.

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1 Mulholland, *JSS*, pp. 84-112.
2 วินิจฉัยโรคแพทย์, วินิจฉัยโรคสมบูรณ์ *Wetoahasueksaa*, p. 9; also mentioned in Mulholland, sub-thesis, p. 24.
3 สันทิปตา  Skt *sannipāta*.
4 This is explained more fully in Mulholland, *SEAR*, pp. 29-38.
5 Mulholland, *JSS*, p. 103.
In addition to understanding the causes of disease, the Thai doctor must know the three ways of naming diseases: that is, according to the abnormalities of the elements; according to the five senses, that is, the anatomical site; and as named by the authors of the texts, for example, cold, cough or fever.¹

The central theme of KPC is a group of children's diseases called birth saang or saang of the seven days,² and several other disease conditions which tend to occur with or following birth saang. Consequently, our study concentrates on the diagnosis and treatment of these diseases. First, we elucidate, as far as we are able, the descriptions of these diseases, which, in the form presented are almost incomprehensible; and then we examine the prescriptions for medicine recommended for their treatment. In this way, it is hoped to gain some insight into the ideas underlying the practice of medicine of the traditional Thai doctors, both ancient and modern.

Chapters 4, 5, and 6 comprise translations of those sections of KPC most relevant to this study. Chapter 4 shows the aetiology of birth saang; Chapter 5 describes the seven kinds of birth saang; and Chapter 6 consists of excerpts from the text concerning the main disease conditions associated with birth saang. These translations are set out, not as they are ordered in KPC, but, as far as is possible, in chronological order of the development of the symptoms of birth saang, and so on, in the patient. Birth saang and each of the associated diseases is dealt with separately and in a similar manner.

One of the reasons for the difficulty in understanding the descriptions of the diseases is that there are up to six separate explanations of some diseases, and these are scattered about in various parts of four of the six Books of KPC. For the sake of

¹ MD, pp. 3-20.
² saang ฯ ฯ or ฯ ฯ means children's disease.
clarity, and for easy comparison, when there is more than one account of a particular disease or condition, these are presented all together, in the appropriate Chapter (4, 5 or 6), in order of their occurrence in the text.

Chapter 7 sums up the salient features in the aetiology and diagnosis of birth saang and associated diseases, and explores the patterns of classification of diseases thus revealed.

Medicine, massage, magic spells and incantations, and occasionally minor surgery, such as the lancing of boils, are used in the treatment of diseases by doctors of Thai traditional medicine, but, in this thesis, we confine our study of treatment to the use of medicine.

The principles of pharmacy, mentioned above, are taken from Khamphee sappakhun yaa, and Khamphee samutthaan winitchai. The treatment of diseases follows a very complicated pattern derived from the following system. Individual drugs are classed as plant, animal or mineral substances, in much the same way as in Western medicine. The therapeutic uses of drugs are usually determined by their taste (rot), although the word 'rot' has a wider connotation than simply 'taste'. The taste implies the therapeutic uses of a medicinal substance. As in all aspects of Thai traditional medicine, knowledge gained from experience is added to the knowledge gained from the ancient medical texts, and when experience shows that the taste and the actions of a drug do not correspond, then allowance is made for such an exception to the above guiding rule. There are three principal tastes - hot, cool, and mild - and nine medicinal tastes. These are the astringent,
sweet, toxic, bitter, hot-and-spicy, oily, cool-and-fragrant, salty, and sour tastes, as well as a bland taste. Some drugs have a combination of tastes.

In theory, the basis of prescribing medicine for the treatment of disease is a system of classification of groups of two or more drugs into three classes of compounds called phikat, meaning 'fixed' or 'set', which we might call standard prescriptions or recipes. These are the Small Class, the Large Class, and the Great Class. Pairs of similar drugs of different names, which vary only in minor respects, such as colour, source, taste, gender, shape or size, and are used mainly as additives to improve the colour, flavour or palatability of medicines, or as preservatives, make up the Small Class. In the Large Class are placed standardized recipes, each having a name, to simplify the writing of prescriptions, in which equal quantities of each ingredient are used. The Great Class is similar, but the quantities used vary according to circumstances. For example, phikat Treephalaa (Large Class), and mahaaphikat Treephalaa (Great Class); both refer to the same three drugs, but the quantities of these drugs differ in each phikat.

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1 mao huea was previously translated 'pungent', Mulholland, sub-thesis, pp. 54-56, and left untranslated in Mulholland, JSS, pp. 107-108. In the context of the 'taste' of drugs, mao huea can mean 'narcotic', 'poisonous' or 'toxic', and 'toxic' is now considered a more satisfactory translation than 'pungent', even though this does not cover the full meaning. See p. 120.

2 See Mulholland, JSS, p. 109.

3 phikat Treephalaa

4 mahaaphikat Treephalaa

5 The use of some of these phikat is explained more fully in Mulholland, SEAR, pp. 33-37.
A knowledge is also required of the drugs used in medicine, their therapeutic uses, and how to dispense them. Diagnostic procedures, and the choice of treatment must be understood. Ultimately, the treatment is symptomatic.¹

Armed with this theory, in Chapter 8, we take a general overview of the hundreds of prescriptions set out in KPC, most of which contain from 10 to 20 ingredients, some, more than 60. The prescription ingredients are investigated in Chapter 9, in Chapter 10 the therapeutic uses of some of the drugs are examined, and in Chapter 11 we look closely at a few select prescriptions to reveal the way they are formulated.

Let us now trace the history of KPC, and then examine this text to see to what extent the foregoing diagnostic and prescribing patterns apply to the diagnosis and treatment of children's diseases; to find out whether there are other theories of medicine underlying the imported Ayurvedic ideas; and if so, what are the perceptions of the ancient Thai doctors concerning diseases and medicinal treatment; and how do these contrast with the stated basic principles?

¹ MD, p. 27. Also Mulholland, sub-thesis, pp. 45 ff.
CHAPTER 2

THE BACKGROUND OF THE TEXT

Ever since the first European contacts with the people of central South-East Asia living in the valleys of the Chao Phraya (Menam) and Mekhong Rivers, there have been reports of indigenous medical practices which, although differing in many respects, nevertheless bear a common stamp.

Studies of Lao, Thai, and Kamphuchean medicine all show evidence of the adaptation of some aspects of Ayurvedic medical theory to local medical traditions.¹

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B. Menaut, Matière médicale Cambodgienne (Hanoi: 1930).
D.B. Bradley, 'Siamese Theory and Practice of Medicine,' Bangkok Calendar, (1865), pp. 53-95.
Tamraa yaa samun phrai laanaa.
From Burma, Malaysia, Indonesia, and Sri Lanka comes similar testimony, with the emphasis on Ayurvedic medicine greatest in Sri Lanka, and the addition of Arab influences in the Islamic states of Malaysia and Indonesia.

The Annamese, according to French reports of 1902 and 1907, unlike the Lao, gave no evidence of a medical tradition of their own, but practised Chinese medicine. Chinese medicine is extensively and exclusively practised by Chinese in most countries where there is a Chinese community, but this always seems to be kept distinct from any other medical practices of the host country. In the case of what is now North Vietnam, Chinese medicine has become traditional. However, Vietnamese writers say that there is a Vietnamese medical tradition, and that their knowledge of the therapeutic uses of medicinal plants was passed on to the Chinese during the fourteenth century.

C.V. Foll. 'An Account of Some of the Beliefs and Superstitions about Pregnancy, Parturition and Infant Health in Burma,' *Journal of Tropical Paediatrics*, (September, 1959), pp. 51-59.
G.P. Wickramarachchi, Presidential Address, 26th Annual General Meeting of the All Ceylon Ayurvedic Conference (Colombo: 1955).


3 Nguyen Khac Vien, ed., *Vietnamese Studies No. 21* (Hanoi: n.d.), pp. 68, 147. A resume of the practice of medicine in Vietnam was given by Megan Matthews in a paper, 'Traditional Medicine in Vietnam', delivered at the Asian Studies Conference, Melbourne, 1982, but details of this paper were not received in time for inclusion here.
Although it would be an oversimplification to divide the knowledge of medicine in Laos, Thailand, and Kamphuchea (excluding the more recent importation of Western and Chinese medicine) into two basic components, still, it appears possible to discern two approaches to medical treatment, which are not mutually exclusive, but are both adopted to a greater or lesser extent by most practitioners. These are the treatment of disease by means of occult powers, or 'applied' psychology; and treatment with naturally occurring substances, or medicine. Massage is also commonly used, but surgery is not.

The shamans, who manipulate the occult, and the 'traditional' doctors, who dispense medicine, are the two most obviously different kinds of indigenous healers. Neither has a monopoly on his methods, and the shaman, or spirit doctor, will resort to the use of medicine, just as the traditional doctor will practise magic when all else fails.

The real difference lies in the order of priorities. As it is the use of medicine by the traditional doctor which is our concern, his use of magic and massage will not be pursued except when its relevance makes this necessary.

The practice of traditional medicine in South-East Asian countries is not uniform, but covers the treatment of illness by uneducated people who have inherited their art from their forbears; by those who have taught themselves from experience; by others who have gained their knowledge from a combination of these factors; and, in some cases, by a select group of court physicians whose education is based on canonical texts handed down through the centuries, in conjunction with practical experience.

In Thailand, the court texts belonging to the King, the phratamraa khaang phrathee or phratamraa luang (Royal texts), were made available
to the people during the nineteenth century.\(^1\) KFC is one of these Royal texts.

There is a common belief in Thailand that medicine was brought to that area, with Buddhism, 700 to 1000 years ago, but, as yet, we have no proof of this. The earliest historical evidence of the existence of Thai texts on medicine comes from two sources — one Thai, and one European. The first of these, Tamraa phra osot Phra Naarai (The medical texts of King Naaraai),\(^2\) as the title implies, contains prescriptions for medicine presented to that king (1657-1688); and the second source is The Kingdom of Siam, an eye-witness account of conditions in Siam observed by Simon de la Loubère, who was there in 1687 and 1688 as an envoy from Louis XIV to King Naaraai.\(^3\)

The Medical Texts of King Naaraai is a small cremation volume published for the first time in 1917. H.S.H. Prince Damrong Rajanubhap selected these texts, which he found recorded on palm-leaf manuscripts in the Royal Library, and presented to H.M. Somdet Phra Borom Raatchineenat Phra Borom Raatchachonnanee for publication as a fitting tribute in memory of the late physician, Phraya Phaetthayaphongsaa. Mentioned on p. 16 of this volume are Khamphee roknithaan, and Khamphee mahaachotarat (here spelt 'mahaachotirat'),\(^4\) two of the Royal texts previously spoken of. They are here given as sources of information concerning diseases related to the three seasons (see Chapter 1, p. 6).

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2 Tamraa phra osot Phra Naarai (The medical texts of King Naaraai), cremation volume for Phrayaa Phaetthayaphongsaa (Bangkok: B.E. 2460 [A.D. 1917]). This was brought to my attention by H.S.H. Prince Subhadradis Diskul, who very kindly arranged for me to examine the collection of medical books housed in the library of his late, esteemed father, H.S.H. Prince Damrong Rajanubhap.

3 De la Loubère, Preface.

4 ต้นใบเพร่หีไลจัด (ใบท้ายติวิต)
Apart from these references, the tone of the language used, the style, as well as the content of the prescriptions, and the type of medical knowledge presented all clearly belong to that body of literature which, in 1982, still comprises the theoretical foundation of Thai traditional medicine. The dating of *The Medical Texts of King Naaraai* appears to be authenticated by the inclusion, in some cases, of the name of the doctor and the year of presentation.

In the Foreword which he wrote for this volume, Prince Damrong says that these texts were presented to King Naaraai during the third to the fifth years of his reign, that is, B.E. 2202 to B.E. 2204 (A.D. 1659 to A.D. 1661). There is also one presented by a *farang* doctor to Naaraai's successor, King Phettharaatchaa (1688-1697), and for this reason, Prince Damrong suggests that the texts may not have been compiled before the reign of King Thaai Sa (1709-1733), or of King Borommakot (1733-1758).

*The Kingdom of Siam* was first published in two volumes in Paris and Amsterdam in 1691 as *Du royaume de Siam*. Considering the brevity of his stay in the country, de la Loubère's observations are quite remarkable for their accuracy and detail. In his comments on various beliefs and practices concerning health and medicine, he took note of the ancient texts.

They trouble not themselves to have any principle of Medicine, but only a number of Receipts, which they have learnt from their Ancestors, and in which they never alter any thing.

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1. *Tamraa phra osot Phra Naaraai*, p. 3.
2. *farang* a person of European extraction.
4. The history of the Thai medical texts, from this point, is explained more fully in Mulholland, sub-thesis, pp. 4-12. See Appendix I.
5. De la Loubère, p. 62.
This report, while not specifically naming any of the ancient medical texts, confirms their existence and use at Ayutthaya during the second half of the seventeenth century. The circumstances of the compilation of *The Medical Texts of King Naaraai* indicate their continued use during the early years of the eighteenth century. And 100 years later, despite the sack of Ayutthaya and the removal of the capital, first to Thonburi, then to Bangkok, the medical texts were soon in evidence, this time to be engraved on stone plaques at Wat Pho to be kept in perpetuity for their continued use by future generations.

According to the 'History of the Medical Texts' given in *Tamraa phesat* (Texts on medicine), a monastery called Wat Pho was originally built by the people of the Bangkok district during the Ayutthaya period, in the reign of King Phettharaatchaa. It used to be called Wat Photaaraam, but was renamed Wat Phrachettuphon Wimonmangkhaaraam after being extensively restored by King Rama I during the years 1788-1790, when he transferred the capital and built a new palace adjacent to this monastery.¹ In 1832, King Rama III commenced further restoration work, this time enlarging the Wat and installing, together with works of art and other treasures, hundreds of stone plaques inscribed with knowledge of all kinds, including medical texts.²

There was no printing of Thai material at that time. Texts were preserved in handwritten palm-leaf manuscripts and *samut khoi*,³ which

1 The new wat was rebuilt from old ruins according to Prince Dhaninivat, 'Buddhism in Siam,' *Encyclopædia of Buddhism*, ed. G.P. Malalasekera (Ceylon: 1957), p. 79.

2 *Tamraa phesat* (Texts on medicine) (Bangkok: 1962), pp. 1, 2.

were jealously guarded and handed down from teacher to pupil. The inscriptions at Wat Pho include parts of some of the Royal texts already referred to, as well as many tried and true remedies offered by numerous people, not all of whom were properly trained doctors.

The Royal texts were first compiled in 1871 by a committee of court doctors appointed by King Chulalongkorn,¹ as explained at the beginning of each book of the 1871 edition of KPC,² and in the prologue to Phaetthayasaat songkhroh, both Vols. I and II.³ This prologue tells how King Chulalongkorn instructed his officials to arrange for all the medical texts to be found, revised, and published (in samut khoi) for the benefit of the people,⁴ as a royal act of merit. It had been the practice to record royal and sacred texts in the Pāli language and the Khmer script in the same way as the Dharma canon,⁵ and the original form of the medical texts was now indicated by the introductory passages to each important section of a text being written in this style. Both the language and the script of the remainder were Thai. The Khmer script was written in gold, and the Thai script in yellow. Investigation of some of the Royal texts held in the National Library in Bangkok shows that the words published in the Pāli language and Thai script in Phaetthayasaat songkhroh replace those written in the Khmer script in the 1871 edition.

¹ 'In the year of the horse, chulasakaraat 1232, the twelfth month, on the fourth day of the waxing moon...'

² Tamraa wetchasaat chabap luang r. 5 (The royal medical texts of the fifth reign), Khamphee prathom ohindaa (sangkhep), lem 1, p. 1, National Library, Bangkok.


⁴ See p. 22.

The first printed edition of the Royal texts was published in two volumes in March, 1908 by Chao Khun Phitsanuprasaatwet, a lecturer at the Medical College, with the permission of H.S.H. Prince Damrong Rajanubhap. This Royal edition was called Tamraa phaetthayasaat songkhroh. A year later, he published an abridged edition of the Royal texts in three volumes as Wetchasueksaa phaetthayasaat sangkhep, to be used in teaching at the Medical College, and as a handbook for doctors and nurses. Several editions of Tamraa phaetthayasaat songkhroh have since been published as Phaetthayasaat songkhroh, Vols. I and II, and at least one new edition of Wetchasueksaa phaetthayasaat sangkhep, which has retained the original title.

The edition of Phaetthayasaat songkhroh used for this study is that published in 1961 by the Wat Pho Traditional Medical College Association, Bangkok. KPC is to be found in Vol. I, pages 45 to 232. This edition has been compared with earlier editions of 1914 and 1952, and, apart from minor misprints and linguistic changes, these are, for our purposes, the same.

KPC is one of the most interesting of the Thai Royal medical texts. In the next Chapter we will investigate its composition and general contents.

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1 Phaetthayasaat songkhroh, Vols. I and II, pp. 61, 62.
CHAPTER 3
THE COMPOSITION OF THE TEXT AND A SUMMARY OF ITS CONTENTS

In the National Library in Bangkok, there is a collection of eleven handwritten samut khoi labelled Tamraa wetchasaat chabap luang r. 5: Khamphee prathom chindaa (sangkhep). The individual books are identified by the following numbers and letters: 6, 6/\(n\), 6/\(u\), 6/\(n\), 6/\(s\), 6/\(r\), 6/\(s\), 6/\(v\), 6/\(u\), 6/\(u\), 6/\(n\). There should be twelve books, but the second is missing, and must have been missing when the remaining eleven were numbered, since there would otherwise be no book 6/\(n\). Whether this is the original 1871 edition of the Royal text, KPC, is not certain, as there are one or two points which lead one to believe that this may be a copy of the original. The main reason is that the 1871 text bears no signatures in the spaces provided in the introductory pages to each Book of KPC, but the names of the members of the committee who compiled it are written in the hand of the scribe. These names follow the words 'Khaa phraphuttha chao' meaning 'I'. This suggests that the names, and the rest of the text have been copied.

The other points result from the comparison of the 1961 edition of KPC (see p. 18) with the above 1871 text, which indicates that the 1961 edition was copied either from the original Royal text of 1871, or from another copy other than that described above. These conclusions were reached after considering the following facts:

1. Many of the alterations written in another hand on the 1871 text have been incorporated into the 1961 text.

2. There are two errors specifically commented upon by the compilers of the 1961 edition as occurring in the older text, which do not, in fact, occur in the 1871 text examined.

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1 The samut khoi books, 6 to 6/\(n\), in which the 1871 text is written will be referred to as 'books', as opposed to the 'Books' of the text, KPC, into which the subject matter is divided.
The first is found on KPC III, 1; 139: 'There are 40 followers on each of the shins (this should be 20 on each)'. The 1871 text examined correctly has '20', not '40'. (See p. 48, note 1.) The other occurs on KPC II; p. 98, where the compilers again questioned an error, but were not prepared to alter the text as they had received it. In this case, the 1961 edition has 'from the age of three months to ten years (or ten months)', and the 1871 text has 'ten years' without comment. (See p. 62, note 2.)

We cannot, therefore, be certain of the content of the original Royal text of 1871. The two versions which have been compared are, for the most part, identical. Such variations as do occur can be put down to minor scribal errors, to changes in spelling, and sometimes to changes in the use of words which, nevertheless, convey the same meaning. In other words, an effort has been made, in the 1961 edition, to bring the language and spelling up to date for easier understanding by the modern reader.

There are a few major, intentional changes in the 1961 edition of KPC, namely:

1. The positions of some of the prescriptions for medicine have been rearranged.

2. In a few instances, the 1961 edition omits the repetition of descriptions of birth saang and associated diseases. For example, KPC III, 5; 162, 1961 edition merely states that saang kho is the birth saang of children born on Thursday, and gives the names of the associated diseases, before giving some prescriptions for medicine to treat it. The 1871 text, on the other hand, includes, at this point, a description of

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1 KPC III, 1; 139 means Khamphee prathom chindaa, Book III, Part 1, page 139, in Phaetthayasaat songkhroh, Vol. I, 1961. This form of abbreviation will be used throughout this thesis.

2 หน้า
saang kho. There is a similar omission, from the 1961 edition, of a description of saang chaang,¹ at the beginning of KPC III, 6; 168. As can be seen in Chapter 5, nothing is lost by these omissions, since there are already several different descriptions of each kind of birth saang included in the 1961 edition, and the addition of others is unlikely to clarify the position.

3. In the 1961 edition, the order of the 1871 books is changed towards the end of the text, where we find books 6/ ᵉ and 6/ ᵇ (10 and 11) in reverse positions. Consequently, book 6/ ᵇ (11) of the 1871 text becomes pp. 185–199, and book 6/ ᵇ (10) becomes pp. 199–211 of the 1961 edition. However, the new arrangement seems more logical, and is perhaps an indication of an error in numbering the books of the 1871 text.

4. A passage of thirteen lines on fevers caused by the elements or fevers occurring at certain ages during the infant's first twelve months is transposed from its position in the 1871 text which would otherwise be p. 122 of the 1961 edition, to pp. 118–119.

None of this is of great importance to our study, except to demonstrate that an early version of KPC exists, and is almost identical to the 1961 edition, bearing out the authenticity of the recension used in this thesis as a reasonable interpretation of such a text written in 1871, which is to all appearances a Royal text, or a copy of a Royal text.

As stated on p. 5, KPC is not a single text, but a compilation of several texts. On the one hand, some passages are taken from other texts, and included in KPC, particularly in Books I, and VI. On the other hand, there are included several different versions of

¹ ข้างข้าง
descriptions of diseases, most commonly of birth *saang* and associated diseases, and the student is told, on more than one occasion, that he must decide for himself which interpretation to accept.¹ This suggests that a number of unidentical texts named *KPC* have been incorporated into a single compilation to which material from other texts of other names has been added.

This process of compilation (*ruap ruam lae riap riang*),² often found in Thai texts and publications, has also been noted by Malalasekera to be used in Pali literature.

Often different versions are given of the same story, showing that they were derived from different sources and also, possibly, because of a desire to keep the various traditions as they had been, more or less authorized, with due reverence for their antiquity, and to hand them on unaltered to later generations. The *Dīpi-vamsa* was not the work of a single author, but of several generations, a succession of rhapsodies, added to by succeeding authors, as the Introduction tells us, "twisted into a garland of history from generation to generation, like flowers of various kinds".³

We can hardly call *KPC* 'a succession of rhapsodies... like flowers', but otherwise, this passage could well apply to it. This will be shown below, and in the following three Chapters. The prologue to *KPC* mentioned on p. 17, says that King Chulalongkorn... asked Krom Muen Phuubodee Raatchaharit to arrange for all the medical texts to be found, compiled and edited. This Prince checked the texts and revised them completely, then sent them to Krom Muen Aksonsaatsansophan to have them assembled and published... *KPC* is a very good illustration of this process.

The accidental survival of texts, and the preservation of all those which do survive, even when there are great variations in texts of similar derivation, thus tends to carry forward at least some of

1 *KPC* III, 1; 139; III, 2; 143. See pp. 47, 50.
2 ข้าวหมาป่าเล่ารี่าน
the important features of the original. And this is what appears to have happened with KPC. This point will become clearer in Chapters 4-7.

KPC is a collection of six Books concerning creation - the recreation of the world at the end of the last era, the divine origin of man, and human reproduction - and diseases of infants and young children. The title could be translated the 'Book of Genesis'.

The division into Books has no relation to the structure of the (originally) twelve samut khoi of the 1871 text (see p. 19, note 1), but probably follows the composition of an original set of six palm-leaf manuscripts, since the verb-derived classifier 'phuuk', used for a bundle of leaves, translated 'book', and also meaning 'to tie or fasten with string or rope', is used to designate such a manuscript, and we are told that this was the form of the texts when they were first written down. Prior to this, knowledge was transmitted by oral tradition from master to pupil.

In keeping with a noticeable tendency in Thai educational and instructive literature, the material is presented in a very orderly progression, each Book being reasonably self-contained. Some of the Books are subdivided into Parts, and all have marked sections beginning with words such as 'sitthi kaariya' (so be it) or 'pun cha param' (next). A summary of the subject matter of the text follows. The prescriptions for medicine are scattered throughout the text in groups of various sizes.

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1 ถ
2 That is, excluding engravings and inscriptions on stone or metal. Phaetthayasaat songkhroh, Vols. I and II, p. 4.
3 ibid.
4 sitthi kaariya ปฏิบัติผล  Pāli siddhi kāriya.
5 pun cha param ปฏิบัติอย่าง Pāli puna ca param.
KPC begins with a verse, written in the Pali language and translated into Thai,\(^1\) declaring that the author has paid due homage to the Buddha and to his contemporary, Jīvaka Komārabhacca,\(^2\) who is acknowledged to be the original compiler of this text. Jīvaka's description of the recreation of the world after its destruction at the end of the last era, and the divine origin of man then leads to an explanation of human reproduction.

Much of Book I, Part 1 is taken from other texts, but where each quotation begins and ends is not clear. Those named are Khamphee phrom parohit,\(^3\) Khamphee chakravaantheepanie,\(^4\) Khamphee mahaaachotarat, Khamphee rok nithaan, and Khamphee chatuaraariyasar.\(^5\)

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2. Jīvaka Komārabhacca is the legendary, venerated physician to the Buddha, and to King Bimbisāra of Magadha. Jīvaka is revered by practitioners of Thai traditional medicine as the source of most of their medical knowledge - the original master, or teacher, of medicine. 'Jīvaka' could mean 'vitalizer'; 'Komārabhacca', 'servant of young people'. According to this text, I, 2; 49, 'Jīvaka Komārabhacca' means 'doctor who was adopted by a king's son'. His name is generally taken to imply that he was a specialist in paediatrics.

The opening verse of KPC is a form of wai khruu ไหวครู, which is the Thai custom and duty to pay respect to teachers, and to acknowledge the debt owed to them. The biography of Jīvaka, and the ceremony of wai khruu, to be performed at an auspicious time on a Thursday, during the waxing of the moon, in the sixth month (about May) of each year, are given in Anuson khrop rop reep 2506 rong rian phaet phaen boraan Wat Phrachettuphon (Volume commemorating the [sixth] anniversary, 1963, of the Wat Pho Traditional Medical College) (Bangkok: 2506), pages unnumbered.

3. คัมภีร์พระเหล่รัก

4. คัมภีร์คำราจีพน

5. คัมภีร์อัฎฐาธิป
KPC I, 2; 49-71.

Tells of the divine origin of the medical knowledge acquired by Jīvaka's teacher, Rokaamarit, whose medical texts had been passed down from doctor to doctor since the time of the Buddha Kakusandha. The remainder comes from Khamphee khanpharakasaa, and gives information on conception, pregnancy, and birth, together with descriptions of some common illnesses of new-born infants, such as vomiting, diarrhoea, and flatulence.

KPC I, 3; 71-76.

This is also from Khamphee khanpharakasaa, and covers the period immediately after a child is born, while the mother is 'lying by the fire', and details some of the dangers encountered at this time by both mother and infant. Next comes advice on burying the placenta, and this section concludes with a list of auspicious signs and symbols for each year of the twelve year cycle.

1  emphasised

2 Buddhism views the Buddha Gotama as one of many Buddhas to have existed in the past and to be expected in the future. Of those past, Kakusandha is the Thai form of the Pāli Kakucchanda, the third Buddha before Gotama. The six commonly mentioned previous Buddhas are Vipassin or Vipaścit, Sikhin, Vessabhū or Viśvabhū, Kakucchanda or Krakucchanda (above), Koṇgilamana or Kanakamuni, and Kassapa or Kāsyapa. The first, Vipassin, lived 91 cycles before Gotama. Edward J. Thomas, The Life of Buddha as Legend and History, 3rd ed. (revised) (London: 1949, paperback 1975), p. 27.

3  emphasised

4 Traditionally, a Thai mother remains in a closed room with her baby, from the time of delivery, for one or more weeks. The length of time depends on the number of children she has borne, and decreases with each birth. Some authorities give the time to be from two to four weeks: (Acharn Chalerm Phongsanit, Wat Pho, Bangkok, personal communication, October, 1978) Others say from seven to fifteen days. The woman is obliged to lie on a hard, narrow board very close to a fire which is kept burning all the time she is there. This subject has been dealt with by numerous authors. For a detailed description, see Jane Richardson Hanks, Maternity and its Rituals in Bang Chan, Data Paper No. 51 (Ithaca, New York: 1963), pp. 49-55. See this thesis, pp. 36 ff.
Probably all taken from *Khamphee sangyot*, this gives a summary of the characteristics of good and bad women, and how these affect their breast milk, making it wholesome or unwholesome for their babies.

**BOOK II**

*KPC* II, 1; 85-97.  
Describes, in the following order, the symptoms induced by certain kinds of paksee, the five stages of development in infants which result in the occurrence of ten kinds of saang, the eight features of woman, four kinds of birth-place, four types of infant, nine kinds of saang, serious diseases of infants, and four kinds of peesaat.

*KPC* I, 4; 97.  
On three kinds of women who have unwholesome milk. While the subject matter is the same as that in *KPC* I, 4; 76-85, this section is not the same, even though both are taken from the same text, *Khamphee sangyot*.

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1 *Photchanaanukrom phaet phesat-Thai chabap maattrathaen* (Dictionary of Thai medicine and pharmacy, standard ed.) (Bangkok: B.E. 2507 [A.D. 1964]), p. 198 [abbreviation PPPT].  
A disease of children. (Dr Dabba Taneubharp, one of the leading traditional doctors practising in Bangkok [abbreviation DT]. Personal communication, 1.2.81.)

2 The 1961 edition has Part 3 for Part 1. This is a misprint which does not occur in the 1871 text or the 1914 or 1952 editions. There is no indication of where Part 1 ends, or whether there is a Part 2, although this is expected because the last three Books, IV, V, and VI, of one Part each are called Book IV, Book V, and Book VI, not Book IV, Part 1, and so on, and a certain uniformity is to be assumed in this matter. The structure of Book II is further complicated by the inclusion, on p. 97, of a section from Book I, Part 4, with no mention of where this ends. It has been taken to finish at the bottom of p. 97, because a new topic is introduced on the first line of the next page. There is no further reference to Parts of Book II, only a statement, on p. 138, that Book II finishes here. Consequently, the various sections of Book II will be referred to as follows: *KPC* II, 1; 85-97; *KPC* I, 4; 97; and *KPC* II; 98-138.

3 *paksee*  a winged creature; a bird.  
*Photchanaanukrom phaet phesat-Thai chabap maattrathaen* (Dictionary of Thai medicine and pharmacy, standard ed.) (Bangkok: B.E. 2507 [A.D. 1964]), p. 198 [abbreviation PPPT].

4 *peesaat*  a spirit (phee  ).  
PPPT, p. 198.
Describes saang chon, saang daeng, saang fai, and nine kinds of la and la-ong. This is followed by a description of the seven kinds of birth saang - saang fai, saang nam, saang daeng, saang sako, saang wua, saang chaang, and saang khamooi - including the aetiology of birth saang, in which each type of birth saang is explained in relation to the mother's symptoms when she is three months pregnant, and in relation to the weekday of birth. KPC II concludes with a brief summary of the fevers of infants, and mention of seven kinds of saang. The last half of KPC II, from p. 119 to p. 138, is devoted entirely to prescriptions, of which there are over 100 here.

BOOK III

KPC III

Comprises seven Parts, each assigned to a separate form of birth saang and its associated diseases, presented in order of the day of birth, starting with Sunday and saang phloeng(fai). At times, some material which has already been included in KPC II is excluded by the authors, with a note to this effect directing the reader to the appropriate page of this 1961 edition. Occasionally the page given is incorrect.

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1 ช้างไชย, ช้างแดง, ช้างไฟ
2 La เลื้อย and la-ong ล้างแดง are two mouth diseases associated with birth saang. See Chapter 6, pp. 78-82.
3 ช้างน้ำ
4 ช้างแดง
5 ช้างฟ้า
6 ช้างเรือน
7 saang phloeng ช้างเผือก
Sunday: saang phloeng (fai), fire saang.

Monday: saang nam, water saang.

Tuesday: saang daeng, red saang.

Wednesday: saang sako, vigorous saang.

Thursday: saang kho (wua), cow saang.

Friday: saang chaang, elephant saang.

Saturday: saang chon (khoom), robber saang.

BOOK IV

Commences with extracts from the supplementary texts taken from Khamphee apphayasantaa, which provides summaries on birth saang for the benefit of inexperienced doctors who do not have a thorough knowledge of the texts. This section is followed by another group of supplementary texts inserted so that doctors will understand the origin of the fevers and pustules of saang.

BOOK V

States that children develop taan chon (parasites) in a severe form after birth saang and its associated diseases have run their course. To ensure that the doctor will know when this occurs, the duration of each form of birth saang and minor saang (see p. 41) is explained. A list follows, of 80 parasites, then descriptions of some parasitic diseases.

1 Simple translations of the names of the seven kinds of birth saang are added here, but are not used elsewhere in the thesis because some traditional doctors find these translations inappropriate, and unacceptable.

2 คัมภีร์อภิญญาสันต้า

3 สาเนะเรื่อง
BOOK VI

KPC VI; 219-232.

On the combination of the body elements at birth, and their disintegration at death. Description of another seven kinds of taan chon, and an explanation of the body elements and the seasons as the primary causes of disease in children. Abnormalities of the body elements; a further brief explanation of the relationships of birth saang and associated diseases with parasites; signs of death; and disorders of the urine and faeces. More on disorders of the body elements; five kinds of coma preceding death; further summaries on abnormal urine and faeces; and five kinds of taan chon, usually incurable.

KPC concludes with a reference to the origin of man (a slightly different version from that given at the beginning of the text). There follows an explanation that diseases developed when people changed their eating habits from corn and wheat to prawns and fish, and food in its crude, natural state, which can be impure or unclean. Finally, another explanation of the divine origin of the knowledge of medicinal plants.

From this summary of KPC we can see that this text has three main components. Books I and VI, on the whole, appear to be compilations of extracts from other texts; Books II, III, and IV, apart from the first few pages of Book II, describe birth saang and associated diseases; and Book V is chiefly concerned with parasitic diseases.

This text raises many questions which might provoke scholarly research. We will concentrate our attention on the diagnostic and prescribing patterns discernible in the descriptions of diseases of infants and young children, and their treatment, with particular emphasis
on *saang* of the seven days of the week, also called birth *saang*. The next three chapters are translations of relevant sections of *KPC*, set out as explained on p. 7.
CHAPTER 4

THE AETIOLOGY OF BIRTH SAANG

The foetus

KPC III, 1; 138.

Birth saang affects all infants while in the womb,¹ when the mother is three months pregnant and the foetus has become differentiated to have the five parts.² At that time, one pustule of birth saang will develop,³ the type depending on the day of birth. If it is the time of the waxing of the moon, the pustule will be above the navel; if the moon is waning, it will be below the navel. If it is a girl, the pustule will be on the left side; if a boy, on the right side, and it will grow there until delivery.⁴ To diagnose which kind of saang the foetus has, the mother's symptoms should be investigated...

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1 The statement that all children have birth saang is repeated several times in the text. For example, KPC II, 1; 88, and again on p. 138, following the above passage.

2 pancha saakkhaa ปัญนาลักษณ์ Pāli pañca sākkā literally, the five branches, that is, the head, the two hands, and two feet.

3 The word 'yot' ยงต, translated here as 'pustule', might also be translated 'abscess', 'boil', 'pimple' or anything similar. Unless the context suggests otherwise, the word 'pustule' will be used, with the understanding that 'abscess' or 'boil' or another word denoting a 'head' could have been intended. See also pp. 44, note 2; 46, note 1; 48; 49; 59.

4 It seems unlikely that chance observations of aborted foetuses led to these conclusions. The correlations between the phases of the moon and the site of infection, as well as the sex of the child and the site of infection illustrate man's perpetual groping for explanations of the phenomena he observes. This is an attempt to classify disease symptoms within the framework of cosmology, thus implying recognition that diseases follow fixed patterns. The relationships of left and female, and right and male recur often in this text, for example, see pp. 32, 53, 63.
According to the Great Thera, Tamyae, ... when a mother has been pregnant for three months, and she becomes very constipated, has cramps in the hands and feet, is thin and yellow, cannot walk far, has pain in the pubic area and lower abdomen, severe pain in the iliac region, and craves for sweet things; and the sole of her left foot is red, then the baby will be a girl. If the sole of the right foot is red, it will be a boy. In either case, it should be realized that the child was conceived on a Sunday, and will be born on a Sunday, because saang phloeng is the main illness of such a child, and it presents itself in this way in the mother.

When a mother has been pregnant for three months, and she has headaches, painful breasts, a craving for sweet things, muscular fatigue in both arms, blurred vision, difficulty in hearing, fainting to the extent that she can neither see nor hear clearly, and dry retching, the doctor should be aware that the child was conceived on a Monday, and will be born on a Monday, because saang nam is the main illness of such a child, and it presents itself in this way in the mother.

When a mother has been pregnant for three months, and she has gastric pain, dizziness, swelling of the backs of the hands, and of the legs from the feet up to the iliac region, general fatigue and muscular pain, insomnia, and pustules the size of corn kernels on the palate, it should be realized that the child was conceived on a Tuesday, and will be born on a Tuesday, because saang daeng is the main illness of such a child, and it presents itself in this way in the mother.

1 Many sections of the text, including this one, commence with several lines in the Pāli language and Thai script. (See Chapter 2, p. 17.) Each phrase is translated into Thai, and it can be seen that the Pāli does not give the name 'Tamyae' ถ้าถั่ว, it merely says 'mahātherato' (p. 49), and this word is translated into Thai to mean 'from the house of the Great Thera called Tamyae'. A thera is a venerable Buddhist monk. The traditional Thai midwife is called mo tamyae ผู้ดูแล , the word 'mo' meaning 'doctor' or a person especially skilled in a particular art. The use of the word 'tamyae' might have originated with the name of this thera, or his name could have been given to him because of his skill in obstetrics.

2 Many Thais believe that they will die on the same weekday as they were born. (Professor Vichiara Jirawongse [abbreviation VJJ, personal communication, Bangkok, 9.1.81.) Consequently, the day of conception, the day of birth, and the day of death might all be expected to be the same.
When a mother has been pregnant for three months, and she has gastric pain, vomiting, swelling of the legs and feet, pain in the iliac region; she finds the taste of food bitter; and around the anus and urethra small raised spots erupt, then break, becoming inflamed and suppurating sores, it should be realized that the child was conceived on a Wednesday, and will be born on a Wednesday, because saang sako is the main illness of such a child, and it presents itself in this way in the mother.

When a mother has been pregnant for three months, and she has inflamed pustules in the mouth and on the tongue, so that she is unable to take hot-and-spicy food for six months; and the sores spread out to the sides of the tongue and to the palate, then crack like clay in a dry field; and if she swallows her saliva, she passes mucus and blood in the stools and has diarrhoea until the time of delivery, it should be realized that the child was conceived on a Thursday, and will be born on a Thursday, because saang wua is the main illness of such a child, and it presents itself in this way in the mother.

When a mother has been pregnant for three months, and she has an itchy rash like heat rash, an inflamed, eczematous eruption at the anus and urethra, pain in the pubic area, hips, and lumbar region on both sides, with difficulty in micturition;¹ and at six months she has gastric pain; and at eight or nine months, continuing until delivery,² swollen hands and feet, it should be realized that the child was conceived on a Friday, and will be born on a Friday, because saang ohaang is the main illness of such a child, and it presents itself in this way in the mother.

When a mother has been pregnant for three months, and she has constipation, relieved once every two or three days; a craving for raw and undercooked fish and meat; is restless; and spots like a heat rash erupt at the nipples, break, and suppurate; and at six months she has diarrhoea, with mucus and blood-stained faeces; pain at the waist; is always hungry, and craves for sweet and sour flavours, and strong salads,³ up to the time of delivery, it should be realized that the child was conceived on a Saturday, and will be born on a Saturday, because saang khamoo is the main illness of such a child, and it presents itself in this way in the mother.

¹ Khat bao  to suffer from an obstruction to the flow of urine; to be unable to pass urine. Mo, p. 150. This term is translated here as 'difficulty in micturition', since complete obstruction or inability is not always implied within the meaning of this term.

² Months are lunar months, and the duration of pregnancy is estimated to be ten lunar months.

³ Strong salads consist of unheated, freshly marinated fish, sour and hot flavours, sugar, and salt. The fish is 'cooked' by the action of the vinegar and other substances with which it is marinated. (VJ)
The diagnostic features of saang fai: when the mother has been pregnant for three months, she is constipated, has difficulty in micturition, blood in the urine, gastric pain, muscular tremor of the hands, feverishness, is thin and yellow, unable to walk far, has a feeling of obstruction in the pubic area and lower abdomen, pain in the lumbar region, severe pain at the hips, and craves for sweet things...

The diagnostic features of saang nam: when the mother has been pregnant for three months, she has headaches, painful breasts, a craving for sweet things, muscular fatigue in both arms, blurred vision, difficulty in hearing, faints to the extent that she can neither see nor hear clearly, vomits, and is very thirsty, continuing up to the time of delivery...

The diagnostic features of saang daeng: when the mother has been pregnant for three months, she has gastric pain, dizziness, shallow breathing, vomits, has general fatigue and muscular pain, swollen hands and feet, and insomnia...

The diagnostic features of saang sako: when the mother has been pregnant for three months, she has gastric pain; at five months, vomiting; at seven months, swelling of the legs from the feet to the thighs, and great difficulty in moving the hips; she finds the taste of food bitter, has small pustules at the anus and urethra, and general fatigue until delivery...

The diagnostic features of saang wua: when the mother has been pregnant for three months, she has inflammation inside the mouth, and five or six pustules along each side of the tongue, so that she cannot eat hot-and-spicy food. At six months, the sores spread to the middle of the tongue, then break, and they are very painful, and sting. She has diarrhoea, with blood and mucus in the stools, continuing until delivery, when this clears up...

The diagnostic features of saang chaang: when the mother has been pregnant for three months, she has itchy spots like a heat rash at the urethra, and these break, become inflamed, and suppurate, spreading out around the area, causing severe pain in the pubic region, pain at the loins, and difficulty in micturition. She has gastric pain during the fourth, fifth, sixth, and seventh months, and from the eighth or ninth month up to the time of delivery, she has swollen feet...
The diagnostic features of saang khamooi: when the mother has been pregnant for three months, she has a craving for raw and undercooked fish and meat, duck, hen, and turtle eggs, hot-and-spicy food, sweet and sour flavours, and strong salads. She feels restless, her breasts hurt, and sores erupt in her mouth, which spread and become inflamed, and she passes mucus and blood in the stools. She has a sore throat, and severe pain at the waist until the time of delivery...

After the Baby is Born

Whether a baby is fifteen days old, or one, two, three or four months, khamao, taan saang, blood disorders, cachexia, and diseases of the 37 tendons develop from the first month, and the nine kinds of saang arise. One kind occurs internally. It affects the intestines, stomach, liver, lungs, and heart — these are also called the five kandhas. Those who understand can distinguish between the various kinds of saang...

1 khamao เขม is black (the word means 'soot') and occurs on the upper lip under the nose, and in the mouth. (DT) It is possible for khamao to occur anywhere on the upper part of the body and on the head, as well as in the mouth. (Sek Soralamp. Personal communications, Bangkok, February, 1981.)

2 taan saang ตานสัง is the name of two different diseases. The first occurs in children aged two or three years. The child has diarrhoea, becomes very thin, and craves for fresh food, meat, and fish. The other form develops on the tongue in one or two days, then spreads to the head. D.B. Bradley, Dictionary of the Siamese Language, 1873 (Bangkok: B.E. 2514 [A.D. 1971]), p. 251.

3 The word 'krasaai' ถิ่น used here is a misprint for 'krasai' ถิ่น meaning 'wasting disease' or 'cachexia'. (DT, personal communication, February, 1981.)

4 en อน is a word, frequently translated as 'tendons', covers a wide range of meanings, but usually refers to long, hollow, tubular organs of the body, such as tendons, cartilages, ligaments, muscles, and the penis, and it may refer to blood vessels and finer structures. See also p. 36, note 3; p. 56, note 4; p. 57, note 1. According to Khamphee rok nithaan, Phaethayasaat songkhvoh, Vol. II, p. 193, there are ten main sen, and 2,700 lesser ones. Another source gives 72,000 lesser ones. Khun Yotthaaphithak, ed., Tamraa phaet phaen boraan (Traditional texts on massage) (Bangkok: B.E. 2478 [A.D. 1935]), p. 41.

5 bencha khan บัณฑิต is Pali pañca kandha, normally means the five constituent elements of being: ruup รูป bodily form; vedana, sensation (of pleasure, pain, etc.); saññaa, perception (enabling one to distinguish things); sangkhaan จัก обяз predisposition or active tendency to arrangement; vinnama, intelligence, consciousness or thought faculty. The above meanings are given by Me, p. 151. T.W. Rhys Davids, and William Stede, Pali-English Dictionary (London: 1966), p. 233 has material qualities, feeling, perception, coefficients of consciousness, and consciousness.
Before treating saang, the doctor should first consider the symptoms and make a diagnosis. If it affects the intestines and stomach, it causes diarrhoea; if it affects the heart, the child passes blood and fresh mucus; if the liver is attacked, a little blood is passed; and if the larynx is affected the mouth and throat become dry. Saang outside the intestines and in the chest causes thirst...

During the period of baking by the fire,1 when khamao develops in an infant, if it descends to affect the heart and chest, this will make the mouth as purple as the black plum,2 as if it has been smeared with a mixture of vermillion paint and the [black] sap of the Burmese lacquer tree. Then the saang will move down to the abdomen and affect the liver. At some time from a few days up to two months after [the mother and child] have left the fire, the khamao disappears, and when it has gone, saang develops, because all the 307 blood vessels of the mother gather together at the nipples,3 and when the baby sucks at the breast, the saang enters and makes the child ill.

The Normal Bodily Changes of Infancy Cause Saang

After a child is born, normal changes in its early development cause vomiting and other illnesses on seven occasions. These are: (1) When it learns to hold up its head, because the tendons move, and saang then affects the infant.4 (2) When the baby learns how to lie face down [on its stomach], and the muscles move.5 (3) When it learns how to sit up, then the bones of the spine move, so saang occurs. (4) When the baby learns how to crawl, it becomes ill, because the hips and knees change their positions. (5) When the milk teeth erupt. (6) Mild vomiting is brought on when the child takes its first steps, because the 300 bones are disturbed, and all the tendons move.6 (7) When the child can stand up and walk, because the intestines, abdomen, liver, and lungs are shaken up, and the vomiting is severe. [See p. 73.] Be careful. Saang is natural to all mankind without exception. That is why the masters have made known the therapeutic uses of drugs to be given to babies each month, for their stomachs, to counteract the vomiting, and taan saang which normally occur.

1 See p. 25, note 4.
2 waa 绥 Eugenia cumini Druce. According to TS, p. 143, this is the 'black poum'. 'Poum' is possibly a misprint for 'plum'.
3 sen en thang 307 sen pen saai lohit... makes it clear that the 'sen en' include blood vessels. See pp. 35, note 4; 56, note 4; 57, note 1.
4 See pp. 39, 74.
5 This second time seems to have been left out in error in the 1961 and 1914 editions. The information is supplied by DT, as this section is included in the missing book 2 of the 1871 edition, and cannot be checked. See p. 19.
6 See pp. 35, note 4; 56, note 4; 57, note 1.
Saang is caused by the weather. There are eight kinds of saang. Any baby which develops this is called amanutsaruup (not human), and doctors will find it very difficult to cure. The dangers it faces are:

1. When the infant leaves the fire, khamao develops [see p. 35].
2. When it knows how to hold up its head, the body elements cause diarrhoea and vomiting, taan saang, rubella, and rubeola.
3. When the baby can stand, supporting itself, the crown of the head makes a cracking noise, and the tendons move. [See p. 35, note 4.]
4. When the child starts to eat food to which it is unaccustomed [literally, food which is strange to its body elements], taan saang occurs.
5. When it learns to walk, the liver, lungs, intestines, and abdomen move, and the child suffers from mucus and blood [two of the body elements which cause disease], and taan saang. When these changes occur, the child has sunthonwaat saang. This saang has many pustules covered with mucus, making the child ill, and ten kinds of saang occur.

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1. Only five instances of illness follow, so that this might be a misprint. The same figure, 8, is given in the 1871 text. If this number refers to the ten kinds of saang mentioned at the end of this passage, it is still incorrect.

2. See p. 39.

3. hweat hat คือเด็ก nowadays german measles, and measles. These, however, may not have been the specific diseases referred to by these terms at the time the text was written.

4. See Mulholland, JSS, p. 103.

5. sunthonwaat ผูกจาก Pāli sandaravāta, beautiful, harmonious. See also lom sunthonwaat, pp. 69, 82.

6. That is, the child will get one or two of the ten kinds of saang, not all.
These are saang daeng, saang khaao, \(^1\) saang khamao, \(^2\) saang choang, saang sian, \(^3\) saang khwak, \(^4\) saang fai, saang chon, and saang tamoi. \(^5\) If it is saang choang, the neck is bruised; if it is saang sian, the baby has an itchy rash like heat rash; with saang khwak, the neck is itchy; and saang chon produces sores which form a pattern like that of the spiny eel [which has yellow and brown patches and marks]. \(^6\) This induces general pain all over the body. The mother is forbidden to eat ten kinds of flesh, as these diseases are very difficult to cure.\(^7\)

[The type of infant] called athitsaruup\(^8\) has a large or deep crown. When by the fire, khamao comes then goes, but at the fire the dominant elements causing disease are mucus and blood.

[Concerning the effects of] nonthapaksee: \(^9\) if the mother became pregnant in the fifth, sixth or seventh month of the year, gave birth on a Sunday, Tuesday, Wednesday or Saturday, and the baby was born in the afternoon, then it will be difficult to rear, because it will have saang daeng, saang chon, saang fai, saang sako, saang ninlapat, \(^10\) saang nin, \(^11\) and la. \(^12\)

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1. saang khaao ขาว white saang.

2. saang khum ขุม khum means a well, a ditch or an abyss; perhaps this could be called pitted saang. See p. 251.

3. saang sian ซัน could mean treacherous saang.

4. saang khwak ควัก vacillating saang.

5. saang tamoi ตะโมย might be paronychia, one of the meanings for tamoi given by Me, p. 355. Saang tamoi is a painful pustule under the skin of the toes, PPPT, p. 126, which agrees with paronychia in a general sense.

6. plaa krathing ปลาคร장님 Mastacembelus armatus (Lacepede) Mastacembelidae. The spiny eel; a flat, long fish which has yellow and brown patches and marks. (VJ)

7. It is unclear whether this last remark refers to all ten of these diseases, or only the last. It could read 'this disease'.

8. athitsaruup อธิทซารุป meaning unclear, but this refers to the physical appearance of an infant. See p. 39.


10. saang ninlapat นางนำ flattened saang with a black base. PPPT, p. 170. This might refer to pustules with a black base. See p. 54.

11. saang nin นาง The Thai word 'nin', spelt 'nil', is derived from the Sanskrit word 'nila'. 'Nin' can mean 'sapphire', 'dark blue', 'dark green', or 'black'. Unlike the pale blue sapphires of Sri Lanka, Thai sapphires are dark blue, dark green or black, and the pustules are possibly coloured like this. See p. 51.

12. la  a mouth disease. See p. 27, note 2, and Chapter 6, pp. 78-82.
All infants, male and female, born into this world will assume one of the following forms: athitsaruup, haritaruup\(^1\) manutsaruup,\(^2\) and mahatsaruup.\(^3\)

**Mahatsaruup**: The crown is open, the penis is swollen and the testes hang down. While by the fire, this child never has taan saang or khamao because the mother's milk is warm. After leaving the fire it has khamao and saang, and the intestines are enlarged and coiled up. When the baby cries, it sounds like a cat's miaow. It has flatulence, and vomits through the nose; haritathaat trembles,\(^4\) and the first severe illness occurs [see pp. 36, 37].

**Athitsaruup**: While at the fire, this baby has khamao, but not very much. Saang develops on the tongue, and up to the tip of the tongue. After the saang has gone, but while still at the fire, the infant has diarrhoea and vomiting. Mucus is the element which brings on two kinds of saang.

**Haritaruup**: While at the fire, khamao occurs in the chest and up to the tip of the tongue. In five days it descends to the abdomen, causing diarrhoea, vomiting, and cough. Blood is the element which causes two kinds of saang to occur.

**Manutsaruup**: There is neither khamao nor taan saang while the infant is by the fire, but after leaving it, eight kinds of saang develop, and internal heat is the cause.\(^5\) One pustule of saang comes from the abdomen to the chest; one ascends from the chest to the throat; another pustule moves up from the throat and appears on the chin and the palate; and from the palate, three pustules develop in the crown of the head, and three in the middle of the spine...

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1. **haritaruup**: the meaning implies a green appearance.
2. **manutsaruup**: human form.
3. **mahatsaruup**: meaning unclear.
4. **haritathaat**: unknown to DT and Sek Soralamp. It is probably one of the body elements, either a synonym for one of the 42 main elements, or a lesser element.
5. **kamdao**: internal heat, one of the body elements.
Furthermore, when the child of the mahatsaruup type has left the fire for three to six months, if it is the year of the dog, then theppheepaksee and asunonthapaksee arise. The year of the pig is the time for kaalapaksee and asunopaksee; nonthapaksee and saang chon are severe; kaalapaksee, saang daeng, and [saang] ninlapat develop; and theppheepaksee, saang faî pathommakan, and asunonthapaksee are severe and spread. They say that the infant called mahatsaruup, with the large crown, swollen penis, and testes hanging down, has no khamao or taan saang while by the fire. Haritaruup, with the line on the crown of the head, develops slight khamao at the tip of the tongue after leaving the fire. This is called male saang daeng. Athitsaruup has a sunken fontanelle. Saang develops while by the fire, then is hidden. It is very difficult to cure. The manutsaruup baby gets saang chon. While the mother is pregnant, she craves for fishy and meaty food, and this makes the infant thin and dehydrated when it is from three to six months old. This is very hard to cure. The saang of mahatsaruup is saang nin; of athitsaruup, male saang daeng; and of amanutsaruup, it is saang chon. These eight types of saang affect all infants.

1 theppheepaksee ㅐ화槿 a form of children's disease characterized by disordered digestion, cold hands and feet, and feverish head. Ma, p. 422. asunonthapaksee (gs아한羇 amy囔 the meaning is unclear, but this is another disease of children. See paksee, p. 26, note 3.

2 kaalapaksee אחראי another disease of children, meaning black paksee. Kaalarok .bumptech, black disease, is bubonic plague. These names might be synonymous.

3 pathommakan ปี่หมั่น or prathomkhan ปี่หมั่นิ, prathomkhan. See pp. 31; 46, note 1; 48; 49.

4 Meaning that there is a male and a female form of the disease, not one for boys and one for girls. See also pp. 49, 55.

5 That is, all infants are affected by saang in one of these eight forms. The number '8' is a misprint, as the 1871 text gives '9'. Neither is correct. There are five kinds of saang mentioned, perhaps for four paksee are here counted as saang. The number of varieties of saang varies in different parts of the text, and there is not always a clear distinction between saang meaning children's disease, and saang meaning birth saang. See p. 41.
The Forms of *Saang*

*KPC* III, 1; 138.

... Jivaka Komārabhacca came to the place of the ascetic Nālayadābasa, and asked him about diseases. Nālayadābasa replied that various diseases occur in new-born infants. There are three main kinds of *saang*, which are subdivided into fourteen types. The three main kinds are *saang* of birth, *saang chon*, and *saang* of the *mae sue*. The fourteen types are the *saang* of the seven days of the week, which are the birth *saang*, plus seven kinds of minor *saang*, making a total of fourteen types. As for the *mae sue*, there are seven types of *mae sue* of birth, and 24 types of *mae sue chon* [see note 3 above], altogether 31 types. There are twelve kinds of *saphan* of birth, and another seven kinds of *saphan chon Rāhu*, a total of nineteen types. And these are the diseases which occur in all infants.

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1 This seems to be at variance with what follows. If the three main kinds of *saang* are birth *saang*, *saang chon*, and *saang* of the *mae sue*, then there are 45 subdivisions - seven birth *saang*, seven *saang chon*, seven *mae sue* of birth, and 24 *mae sue chon*. This leaves the nineteen types of *saphan* unaccounted for. It is possible that the original statement has become confused. Perhaps the three main kinds of *saang* were *saang* of birth, with its minor varieties (see note 3 below); *saang* of the *mae sue*, with its minor varieties; and *saang* of the *saphan* of birth, with its minor varieties, the *saphan Rāhu*. This gives a total of fourteen plus 31 plus nineteen = 64 forms of *saang*. It would be easy to read the number 14 instead of 64 from Thai handwriting, and this is possibly what has happened.

2 *saang chon* means *saang* of a type said sometimes to occur during or following the course of birth *saang*. Each kind of birth *saang* has its own distinctive form of *saang chon*. To avoid confusion with one of the birth *saang* called *saang chon*, the term 'saang chon' is called 'minor *saang*'. Similarly, *mae sue chon* becomes minor *mae sue* and *saphan chon* is translated as minor *saphan* of Rāhu.

These minor forms could be called complications of the main diseases. See also p. 79, note 2.

3 *mae sue* are usually considered to be guardian spirits of children, and to do some good for them. But, as this text shows, they sometimes harm babies by making them ill. This unwelcome behaviour of *mae sue* is clearly illustrated in 'Inscription No. 1' in the pavilion of the *mae sue*, amongst the medical inscriptions at Wat Pho, in Bangkok. See *Tamra phesat*, pp. 98, 99. In this invocation the *mae sue* are propitiated with offerings of food and drink, and are told 'We have already sought to buy the children for 33 cowries each, to redeem them from the bondage of the spirits after three days, to become human children on the fourth day'. Phya Anuman Rajadhon has
footnote 3 continued

discussed this invocation in his contribution to the cremation volume for Chan Tetchasena (Bangkok: B.E. 2492 [A.D. 1949]), pp. 59-71; since published as 'Customs Connected with Birth and the Rearing of Children,' trans. William J. Gedney, Southeast Asian Birth Customs (New Haven: 1965), pp. 115-204. According to Gedney, Phya Anuman interprets mae sue as 'purchasing mother'. This appears to be a literal interpretation of the term, which consists of 'mae', usually meaning 'mother' (although it has the general meaning of 'chief' or 'head'), and 'sue', 'to buy' or 'to purchase'. If the term is taken literally in this context, it might also be interpreted as 'bought mother', meaning the mother (spirit) which is bribed. I am grateful to Dr A. v. N. Diller for his comment that the evidence is overwhelming for an ancient proto-Thai word meaning 'to exchange' and probably 'to buy' (therefore 'to barter'), from which 'sue' is derived, being related to the Chinese 買 / 買 / 'to deal', 'to trade'; because the tone correspondence is regular. This is exactly the same argument as for 'maa'  (horse); see Prapin Manomaivibool, A Study of Sino-Thai Lexical Correspondences, Ph.D. dissertation (University of Washington, 1975). The Thai letter 'เ' is not normally used with Sanskrit words, and it may originally have represented an's' sound. Perhaps, then, a more appropriate interpretation of 'mae sue' might be 'bartering goddess' or 'bartering spirit'.

4 saphan or taphan  a kind of disease, particularly of infants, caused by the change in temperature experienced by the new-born child on leaving the womb and coming into contact with the open air. PPPT, p. 328. See also p. 56.

5 Rāhū an asura (demon) with half his body missing. The other half is called Phra Ket (Skt Ketu); ibid. p. 277. The name of a mythological demon, said to cause eclipses by swallowing the sun or moon; Me, p. 712. See also pp. 50, 56, 57.

6 Compare pp. 39, 40.
The Quality of the Breast Milk Affects the Severity of Saang

KPC I, 4; 76, 77.

Summary, from Khampee sangyot, of the good and bad characteristics of women, their effects on the quality of their breast milk, and the resulting benefits and harm to the infant. Six kinds of women.

There once was an ascetic called Rddhiyādharadabāsa, who was possessed of great knowledge of worldly matters. He was very perceptive and understanding, and he explained that there are six kinds of women, some having good qualities, some bad. I, Komārabhacca, will record this in detail, according to Khampee sangyot.¹

Once there was an ascetic of great wisdom, called Rddhiyādharadabāsa, who knew about women and their ways, both good and bad. He was a teacher of Jīvaka Komārabhacca, so Jīvaka Komārabhacca saluted him and asked him about diseases of children.

"Sir, children born into this world get various diseases. They are not the same. In Khampee prathom ohindaa, on the origin of saang, they say that infants born on the second, fifth or sixth day of the week should have mild diseases;² so why do they get severe illnesses? It is supposed to be very bad for babies born on the first, third, fourth or seventh day - they should be difficult to rear, and should have severe diseases. So why do they have mild illnesses and recover? Why do those born on good days turn bad, and those born on bad days turn to be good? Those born on bad days are easy to cure, those born on good days, difficult? The bad ones, those born on the first, third, fourth or seventh day of the week, cannot be saved. They say in Khampee prathom ohindaa that for those babies, saang is very severe, and that they are very hard to rear. All the babies born on those days will die, will they? And they say that it does not matter about the babies born on the other days, because they are easy to rear. If that is so, may we conclude that babies born on those days will not die [literally, will be immortal]?"

The ascetic, Rddhiyādharadabāsa, explained. "Every being born on earth in the cycle of existence, if born on a good day and saved from severe saang, can, nevertheless, be difficult to rear because the mother's breast milk is itself harmful to the baby. Also, an infant born on a bad day who should get a bad form of saang, can be easy to rear. It all depends on the mother's milk; if it is good, the baby will thrive.

¹ This passage is given in Pāli, with Thai translation. The next passage, which is almost a repetition, is given in Thai only.

² The first day is Sunday.
CHAPTER 5

BIRTH SAANG

Saang Fai or Saang Phloeng

The Birth Saang of Children Born on Sunday

KPC II, 1; 91.

Saang fai looks like this: [cf. pp. 60, 62].
If it is black in the middle of the tongue, and red at the edges, it is very bad. If it bleeds, the baby will die.

KPC II; 102, 103.

Saang fai looks like this: [cf. p. 51].
Khamao appears while the mother and child are by the fire, but it goes once they have left the fire. Three months after leaving the fire [that is, at about three and a half to four months of age], the saang appears. There are five pustules at the right hip; if the baby is a girl, there are three pustules at the left hip, and two in the middle of the sole of each foot, like this:

Three and a half months later [at seven and a half months of age], the saang in the middle of the soles of the feet subsides, moves up to the shins, and is like this:
There are 50 followers. When they spread to the thighs, the followers disperse, and fifteen of them erupt on the left foot, with others at each joint. These cause generalized muscular pain and fatigue, and a high temperature,

1 The approximate age of the child will be given, in brackets, following such statements. It is not always clear whether the time stated is counted from birth, from the time of leaving the fire, or from the previous time mentioned. Adjustments might, therefore, need to be made, depending on the interpretation of the reader. The time of lying by the fire will be taken to be from a minimum of fifteen days, up to a month, although it could be longer or shorter. It is doubtful whether the precise age of the child is important. The sequence of events, and, in some cases, their duration, probably have more bearing on one's understanding of the illness in question.

2 The Thai word 'boriwaan' in this context, has been translated as 'followers' or 'minor pustules'. It appears to suggest the existence of a rash which tends to break out on various parts of the child's body during the course of many forms of saang. This rash may be a symptom of the disease; or it might be the sort of harmless rash often seen on an infant's tender skin, but included in the description of the disease because it occurs concurrently with it. See also p. 46, note 1.
so that the baby cries from afternoon to late at night, and gets very little sleep. After another three months [at approximately ten months of age], the baby's feet are cold, and an itchy rash develops on the body, giving the appearance of sand having been thrown on the body; then the rash goes away. In three more months [one year old], spots erupt on the arms, legs or shins, making the skin dry and black as if burnt, if this covers the whole area from the feet up to the waist, the baby will die when it reaches the waist, and when it is about to die, the saang will appear on the legs, like this:

\[ \text{[Image of saang]} \]
in the pubic area, like this:

\[ \text{[Image of pubic area]} \]
and in the abdomen, like this:

\[ \text{[Image of abdomen]} \]

The doctor should be very careful if he recognizes these symptoms and treats them, as this is very difficult to cure, and the baby will die if the treatment is unsuccessful.

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1 *nai naaphee* น้ำนม, here translated 'in the abdomen', could alternatively mean 'in the navel'. See p. 47 note 1; p. 53, note 2; p. 56, note 2; p. 57.

2 This statement, which occurs repeatedly throughout the text, is not redundant. It is not uncommon for people to survive diseases, with or without treatment, often despite the treatment. In other words, the treatment might not be successful, but the patient will still live. In this case, the treatment can, apparently, sometimes save the life of a child who would otherwise die. This treatment is worthy of investigation, but, unfortunately, it is not explained in the text here, and rarely explained in other places where similar remarks are made. For other examples, see pp. 48; 53, note 1; 55; 58; 66, note 5. It is considered unethical for traditional Thai doctors to treat dying patients.
... Saang fai has four major pustules.1 Khao develops when the baby is born, and it remains for seven days while the mother and child are by the fire, before it disappears. Then, if the baby is a boy, three major pustules appear on the sole of the right foot, and one on the left foot. If it is a girl, there will be three on the left foot, and one on the right foot. Two of the 40 minor pustules erupt on the legs, and 20 on the arms.2

Three months after leaving the fire [four months old], there is one major pustule in the centre of the sole of the foot. A month later [five months], the feet are bruised, and the child cannot take nourishment, and tends to sleep longer. Six months after leaving the fire [aged seven months], another pustule comes up, forming two heads together, and these grow out of the flesh, looking like slightly under-ripe black plums. After six to ten days they go away. After eight months [nine months of age], another pustule erupts, with three heads, at the ankle. After nine months [aged about ten months], another major pustule of birth saang develops,3 with four heads, and 40 followers which spread over the middle areas of both the upper and lower legs, and on the knees. These minor pustules on the legs have heads which are the red colour of mafai fruit,4 and are red and hard around the edges. They spread out like burns, and later, blisters form, then merge together. When they are ripe, they break, causing pain on the tops of the feet and up the legs as far as the hips or the waist.

1 'mee mae 4 yot' flammans . Pustules are differentiated in several ways: 'mae', which we translate 'major'; 'ek' i.e. 'primary', synonymous with 'pathomman' (see pp. 40, 48, 49, 55), which is the primary pustule occurring in the three months old foetus (see p. 31); and 'boriwaan', 'minor pustules' or 'followers' (see p. 44, note 2). When the primary pustule of saang daeng affects the base of the tongue, it might change to phayuha flammans , an unexplained condition. KPC V; 206, line 16.

2 The number '2' should read '20'.

3 This is ambiguous, but the context suggests a series of carbuncle-like eruptions, each consecutive one with one more head than the last, rather than each new eruption having one head, which, added to the previous major pustule(s), makes a total of two, three or four single-headed boils or abscesses.

4 mafai แมฮัย  Baccaurea sapida Muell.-Arg. Euphorbiaceae. The fruit looks almost the same as the langsat. (VJ) The langsat is creamy yellow, like a pale loquat. Me, p. 637, mentions this tree and other species, but none as having red fruit. Perhaps the word 'red' should have been 'yellow', or else the tree now known as mafai is not the tree known by that name when the text was composed.
The doctor is advised not to treat this condition, as those four major pustules in the abdomen will form a sore or abscess as big as a tuber of elephant yam (slightly round and about five inches in diameter). This will become inflamed and spread to the pubic area, anus, rectum, and around the navel.\(^1\) The baby will then pass blood, mucus, pus, and offensive smelling liquid faeces,\(^2\) because the major saang has passed through the ileum and colon, and affected the liver and lungs, then emerged at the anus. The followers are painful, sting, and make the baby feel hot, as if burnt. When the child is going to die, the palms of the hands and soles of the feet are as red as a baby bird. Whenever the symptoms of saang fai occur together like this, the baby is sure to die within eight to eleven days.

\textit{KPC II; 107.}

A baby born on Sunday has khamao in the mouth because the mucus and internal heat (two of the body elements), being strong, make the child hot internally. This produces internal khamao; and internal saang and khamao develop as a result of the combination of (the elements) blood and mucus. Then the baby is unable to take nourishment, because of the strength of the blood and mucus. Sometimes the mucus is putrid, then the infant passes mucus and blood; sometimes there are parasites.

\textit{KPC III, 1; 139, 140.}

... (Saang phloeng has already been described on p. 177,\(^3\) but some of the details are different. These are given here to enable the individual student to decide for himself which version to accept.)

\textit{Saang phloeng} has four major pustules and 40 followers. Khamao develops when the baby is born, and remains for seven days while the mother and child are by the fire, before it disappears. Then, if the baby is a boy, one major pustule will appear on the sole of the right foot, and one on the left. If it is a girl, there will be three pustules on the sole of the left foot, and one on the right.\(^4\) There are 40 sadue the navel. \textit{KPC III, 1; 139} uses 'naaphee' (see below). In each case, 'abdomen', that is, the abdominal cavity, fits the context better than 'navel', as the disease is described as spreading via the rectum, from the exterior to the interior of the body. cf. pp. 45, note 1; 48; 53, note 2; 56, note 2; 57; etc.

\(^1\) \textit{sadue} the navel. \textit{KPC III, 1; 139} uses 'naaphee' (see below). In each case, 'abdomen', that is, the abdominal cavity, fits the context better than 'navel', as the disease is described as spreading via the rectum, from the exterior to the interior of the body. cf. pp. 45, note 1; 48; 53, note 2; 56, note 2; 57; etc.

\(^2\) Literally, 'like liquor ferment, water used to wash meat, fishy smelling water (or amniotic fluid, depending on one's interpretation), and rotten eggs'.

\(^3\) Misprint, actually pp. 106, 107.

\(^4\) This is the same as \textit{KPC II; 106, 107}, see p. 46, except for the number of pustules on the right foot of a boy, which, logically, should be three, particularly since both versions state that there are four major pustules of saang fai/phloeng.
followers on each of the shins (this should be 20 on each).1 Three months after leaving the fire [four months old], one major pustule moves up from the foot to the abdomen. A month later [five months], the baby has slight bruising on top of the feet, sore ankles, and difficulty in swallowing, and takes a long time to wake up. Six months after leaving the fire [aged seven months], another pustule erupts, with two heads together, forming a small purple spot on the skin, the colour of black plums. After six to ten days it is gone. Eight months after leaving the fire [nine months of age], one major pustule with three heads comes up in the abdomen, and the followers erupt between the ankles and knees. After nine months [aged ten months], one major pustule with four heads develops in the abdomen, then the forty followers spread out, some in the middle areas of the upper and lower legs, and on the knees. The heads of these minor pustules are at first as red as mafai fruit [see p. 46, note 4], then they turn black and rough, with red edges, like burns. The skin blisters, and the blisters merge together, since they all ripen at the same time, making the baby ache from the feet up to the hips or the waist.

Doctors should not treat this condition [see p. 45, note 2], because the four major pustules of saang in the abdomen will become a sore like a tuber of elephant yam, festering and spreading to the pubic area, anus, and rectum, then up to the liver, lungs, large and small intestines, and after that, around the abdomen. [This seems to mean the abdominal cavity, see pp. 45, note 1; 47, note 1.] Then the child will pass mucus and blood and liquid faeces [see p. 47, note 2], because the major saang has passed through the ileum and colon, and affected the liver, lungs, and heart before emerging at the anus. The followers then hurt and sting, and feel as hot as burns. If the palms of the hands and soles of the feet are blood red, this is the sign of death. Whenever the symptoms of saang phloeng occur all together like this, the baby is sure to die within eight to eleven days. But even if the saang phloeng is very bad, since the pustules come up only one at a time, though it is still very painful for the child, it can be cured with the right medicine [see p. 45, note 23. The critical period for saang phloeng is during the first nine months. If the child survives, then saang phloeng will recur at eighteen months of age. And the primary pustule of saang which the baby has had since it was in the womb will come up at the base of the tongue and cause diarrhoea. This is called pathommakan [see pp. 31; 40, note 3; 46, note 1; 49].

1 This remark in parentheses occurs in the text. The compilers have noticed the error, but have left it as they received it. See also p. 62, note 2. But the error does not occur in the 1871 text, which has '20'; an indication that the 1961 edition was not taken from the 1871 text sighted. See p. 20.
It will make the uvula swollen, and later this will make the baby cough, but it will subside if the right medicine is applied. If it affects the eyelids, it will make the liver hang down.\(^1\) If the whole liver is affected, it will swell, and become compressed within the rib-cage. In this case, it is very difficult to cure, and even if the baby survives, one must beware of the complications caused by the minor form of \textit{saang} which will follow [in this instance, \textit{saang kraai}].\(^2\) This is also fatal.

\textit{KPC} IV; 188.

The male variety [see pp. 40, note 4; 55; 57] of \textit{saang phloeng} causes a red mouth, red palms of the hands and soles of the feet, diarrhoea with mucus and blood, a high temperature at regular times, and the baby is listless and steamy-eyed. The doctor should examine the anus. If the area around the anus is as red as \textit{sattabut} flowers,\(^3\) this is \textit{saang phloeng}, male variety. If treatment is continued it will eventually be harmful and the child will die.\(^4\)

\textit{KPC} IV; 192.

If a child born on Sunday becomes ill, it is because of internal heat [one of the body elements]. The birth \textit{saang} is \textit{saang phloeng}, and this first occurs in the navel, then it spreads. Later, it returns to the navel again.

\textit{KPC} IV; 193.

\textit{Saang prathomakan} [see pp. 31; 40, note 3; 46, note 1; 48] is caused by the blood [one of the body elements]. It makes the mouth red. When it enters the abdomen, it causes diarrhoea like spittle from a chewed quid of betel and areca nut.

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1 The liver 'hanging down' refers to the apparent downward displacement of the liver when it is enlarged. This can be felt by palpation. See pp. 66, 76; likewise the spleen, pp. 55, 63.

2 see p. 67.

3 \textit{sattabut} \textit{Netelugu} \textit{Nymphaea Lotus} L. \textit{Nymphaeaceae}. The lotus - large white variety. (VJ) Clearly the name here refers to a red variety. The 1871 text is the same, but for the word 'rop' rather than 'op' following 'sattabut' - a misprint in the 1961 edition.

4 Perhaps the collective effects of the drugs will poison the child.
Saang Nam

The Birth Saang of Children Born on Monday

KPC II; 108.

...Saang nam [patches] are about the size of a leaf of the Chinese date,¹ and the red colour of the almost ripe fruit of Ceylon spinach.² They come up on the back and sides, or on the arms and chest. There are no major pustules, and the baby will not die from this. The doctor should examine it carefully, then treat it with these medicines...

KPC III, 2; 143.

(Saang nam has already been described on p. 180,³ but some of the details are different. These are given here for you to decide which version to accept.)

...Saang nam has nineteen major pustules about the size of Chinese date leaves, and the red colour of the almost ripe fruit of Ceylon spinach. The pustules appear on the legs, in the centre of the back, on the shins, and on both cheeks, erupting one at a time until the child is two and a half years old. Then they break, suppurate, and form sores all over the body, after which they dry, and withdraw inside the body. As a result, the child's head and body become hot, and it has abdominal pain. The doctor should first give medicine to expel the saang completely, then give a dose of the medicine four or five times to help it recover. He should be on the alert for the minor saang [saang faai],⁴ and saang la-ong,⁵ as it is very serious if they both come at the same time, because the saang nam will then be severe too. If saang faai, la saang phrachan,⁶ which is the la of saang nam, and la-ong kaeo witchian,⁷ which is its form of la-ong phrabaat,⁸ all affect the child; then it is as if it were under the influence of Râhü [see p. 57, note 53].

1 phutsaa วิปุล Zizyphus jujuber Lamk. The Chinese date or Indian jujube. The leaf is oval, and about an inch wide. The wild fruit is the size of a cherry, the cultivated fruit is eggsize. (VJ)
2 phak plang ผักบุ้ง Basella rubra L. Ceylon spinach. (VJ)
3 Misprint, actually p. 108.
4 saang faai สาังไฟ cotton saang. Not to be confused with saang fai, fire saang, one of the birth saang.
5 saang la-ong See p. 27, note 2; and Chapter 6, pp. 78-82. The 1871 text has 'la and la-ong'. These are mouth diseases associated with birth saang.
6 la saang phrachan ละสาังพรหม discharging moonlight la.
7 la-ong kaeo witchian ละองเพชรพระยา diamond la-ong. Kaeo witchian, a form of follicular pharyngitis; an infantile disease. Me, p. 130.
8 la-ong phrabaat ละองพระบาท the dust of the royal feet; the dust of the Buddha's footprint. For descriptions of la and la-ong, see Chapter 6, pp. 78-82.
KPC IV; 186.

About three months after leaving the fire [at approximately four months of age], babies born on Monday or Wednesday in the morning or at midday will have saang nam or saang sako respectively. This starts in the throat, and grows up over the palate and mouth, while another patch comes up to the base of the tongue from the outside of the intestines producing a scaly lesion resembling the [large] scales of the carp. Then it becomes inflamed, and sores develop at the rectum, after which the child has diarrhoea with red stained faeces, is thirsty, and listless. If the doctor gives the appropriate medicine, the baby's life will be saved [see p. 45, note 2].

KPC IV; 192.

If a child born on Monday becomes ill, it is because of the element water. The birth saang is saang nam. If it comes up on the tongue, the baby cannot eat or drink, and has diarrhoea and vomiting. The vomit is like rice water and mashed boiled eggs.

Saang Daeng

The Birth Saang of Children Born on Tuesday

KPC II; 99-101.

Saang nin looks like this: [cf. p. 44].

One day after birth, there are three pustules in the crown of the head, and five in the spine. There are three pustules in the crown, and no khamao while the child is by the fire. After leaving the fire, there will be khamao and taan saang. To be certain of his diagnosis, the doctor should examine the pustules on the baby very carefully. The saang in the crown will move to the palate, where it will erupt with one, three, or four heads; and when this happens, there is no khamao while by the fire or afterwards. Two or three months later [when the infant is three or four months old], the saang spreads to the gums and jaws, causing general aches and pains, vomiting, diarrhoea, thirst, flatulence, and inability to eat. In three months [aged six or seven months], it appears on the neck in a red pattern that looks like popped rice, and the anus and urethra are red. After another three months [nine or ten months old], the saang nin subsides, and is replaced by saang daeng, which appears at the throat and the body orifices. If the saang nin was in the cheeks, then saang daeng erupts in the gums, in front of the teeth, and in the upper jaw, at the angles of the jaw. If the doctor notices that the pustules in the gums and angles of the jaw have black heads and yellow bases, then he must not treat this [see p. 45, note 2]. If, despite this warning, he treats the baby, the doctor is forbidden to give drastic purgatives, because, if he does this, the child is sure to die. If the saang in the

1 Misprint of 'paan' ปาน for 'paak' ปาก.

2 Misprint of 'rue' รัว for 'khue' คิว.
throat is red, and goes away by itself, then it will
certainly develop internally. Then, in three months time
[when the child is one year old], the *saang* in the crown
moves to the right side of the spine. If the baby is a girl,
it comes up on the left side, close to the backbone. It has
six heads. Six months later [at one and a half years of age],
they all withdraw together, and recur internally like this:

If the doctor is certain that this is the case,\(^1\) he should
be very careful about the medicine he gives, as the disease will
cause diarrhoea, vomiting, thirst, a high temperature, and cold
hands and feet; and the diarrhoea will last for seven days. Then
the baby will have dysentery for nine days, then pass foul
blood for seven days.\(^2\) *La-ong* follows, appearing in the mouth and
throat, at first causing coughing. Then it breaks, and cracks,
and comes up at both the underarms like the rough tubercles of
red *boraphet*,\(^3\) like this: \[\text{diagram}\] . When it erupts in the
throat it is like this: \[\text{diagram}\] , then, indeed, symptoms of
*saang* will appear in the feet, and this is the sign
of death. The doctor should be able to distinguish between
the symptoms of the various types of *saang* which afflict all
infants. He should examine the baby's legs very carefully,
from the ankles up, to see if the flesh is as rough as the
skin of the feet. Whenever this occurs in a child, it has
diarrhoea at first, then pants and gets breathless. The 70
followers of *saang* daeng then erupt on every bone, in the
flesh, in the intestines, inside the long muscles of the
back [beside the spine], and spread all over the body. And
the major pustules of *saang* develop in the important parts—
one in the pubic area, one in the abdomen, one in the upper
cheast, one in the crown, one in the throat, and one in the eye.
And the sign of death will show in the eyes. The whites will
be blood red. Once all these symptoms of *saang* daeng have
occurred at the same time, the baby will die in nine days.

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1 Dissection of bodies is contrary to Thai custom, but the internal
effects of disease could have been observed in bodies exposed
to the ravages of birds of prey, for example. Also, the doctor's
experience might tell him that this is probably the case, just
as Western doctors can know, without modern technological aids,
with reasonable certainty, that someone has appendicitis. The
illustration is, doubtless, symbolic, but it does indicate that
some sort of pustular lesion has been observed on the internal
organs. In the museum at Wat Bovornivet, in Bangkok, specimens
of all the substantial elements of the body are displayed, which
seems to contradict the notion that dissection is not carried out.

2 It is quite remarkable that young babies should survive such an
ordeal, but evidently they do, because *la-ong* follows.

3 *boraphet* daeng วอطي สะแห่งแดง This could be *Tinospora
crispa*. (WJ) Alternatively, *Stephania* sp. Winit Wanandorn,
*Chue phan mai haeng prathet Thai* (Thai plant names) (Bangkok:

4 This diagram is missing from the 1961 edition, but occurs in
the 1871 text and in other editions.
Students of medicine should make a thorough investigation in order to decide whether the baby will live or die. This condition is very difficult to cure. If the wrong medicine is given, the baby will die in one or two days; if the right medicine is given, it will only prolong life for eleven, thirteen or fifteen days, but children are known to die from \textit{saang daeng} in seven days.

\textit{KPC II; 101, 102.}

\ldots If a boy gets \textit{saang daeng}, it comes up on the right side, like this: \ldots If it is a girl, it will appear on the left side, like this: \ldots [see p. 31, note 41]. Seven days after birth, the umbilical cord drops off, and the next day, \textit{saang} begins in both feet. Then one major pustule of \textit{saang} develops in the pubic area, and \textit{la-ong} comes from the abdominal flesh and from inside the intestines to the throat. It looks like rice bran. Then it moves up from the throat to the tongue and lips, and the pustules in the mouth are called \textit{khamao}. It withdraws from these three places to the pubic area. Three months later [when the infant is about three and a half months old], the \textit{saang} in the feet moves up to the middle of the right shin if the baby is a boy, to the left shin if a girl. It looks like this: \ldots After six months [aged about six \ldots months], it reaches the knee-cap, and the \textit{saang} in the pubic area subsides. The baby has symptoms of vomiting and various aches and pains. Provided that the doctor recognizes this, and gives the right medicine [see p. 45, note 23, the child will survive; otherwise, it will die in seven, nine or eleven days [see note 1 this page]. When \textit{saang daeng} develops in the abdomen, it first appears in the mouth, like this: \ldots . It moves up from the base of the tongue to the mouth, making the gums red, and it spreads from the angles of the jaw, meeting, and forming three pustules like this: \ldots in front the teeth. At nine to eleven months of age, the \textit{saang} from the pubic area comes up in the long muscles beside the spine, like this: \ldots then the followers erupt in the intestines, and in the flesh all over the body. In the intestines and stomach they look like this:

[see p. 52, note 1].

1 See p. 45, note 2. These are inauspicious numbers.

2 See pp. 45, note 1; 47, note 1. In this case, the words 'nuea naaphee' might equally well mean the 'umbilical tissues'. At birth, it is the practice to support the umbilical cord by resting it on a clod of earth, and to sever it with a bamboo implement. Anuman, 'Customs Connected with Birth ', p. 143. This practice undoubtedly leads to infection, particularly tetanus, and it might also be the route of infection with \textit{la-ong} (see p. 78).
If they occur in the long muscles of the back, on the ribs, and at the edge of the liver, they might cause diarrhoea, vomiting or thirst, and the baby might pass blood in the stools. At the age of one year and three months or one year and six months, the *saang* spreads out, and attacks the throat, ears, eyes, and the crown of the head; the child’s condition gradually deteriorates, and it becomes very thin and lethargic. It is unable to take water and milk, cries in a husky voice, has sticky eyes, and thin teeth, and when it sits down, its knees come up to its ears. When this happens, the baby’s vision is blurred, and the corners of its eyes are yellow. At one or two years of age, and when the child is near death, the *saang* appears at the hips, the legs, the centre of the back, the chest, and all over the body. At first, there are vermilion coloured spots, then these break and spread out like burns, with a distinct margin. In that case, *saang kaaw*, which is called *ninlapat*, erupts in the throat with three pustules like this: then *la-ong saang* appears in the mouth and comes up on the tongue like eggs, like this: then spreads out and fills the mouth. When the doctor sees this, he will know that the child will die within two or three days. It is also said that if any baby gets the thirteen major pustules of this *saang*, that is fate [the baby will die].

**KPC II; 109, 110.**

...*Saang daeng* has six major pustules – three in the crown of the head, and three in the middle of the spine. There are 72 followers. There is no *khamao* while the mother and child are by the fire, because from one to five major pustules of *saang* erupt on the palate. *Khamao* and *taan saang* occur after they leave the fire. When three months have passed [since leaving the fire, that is, when the infant is about four months old], one of the major pustules moves from the crown to the spine, where it erupts with two heads. Then red pustules of *saang daeng* appear at the neck, chin, groins, underarms, and anus. *Saang daeng* gives the baby a lot of trouble, causing diarrhoea, vomiting, thirst, listlessness and steamy eyes, and its poison produces coughing, with a dry throat, and the child becomes thin and yellow, passes

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1 Perhaps due to calcium deficiency.

2 A sign of extreme age.

3 *saang kaaw* 黑色 *saang*; *Saang ninlakaaw* 服务注意 mentioned in one of the prescriptions on **KPC II; 104** is, no doubt, another synonym for *saang ninlapat*. See p. 38.

4 This remark seems to imply that *khamao* and *saang* pustules cannot exist together in the same place, and could result from different organisms, or could be separate stages in the development of a single organism. cf. p. 51.
mucus and blood, and cannot take nourishment. The doctor should investigate whether it is the male or the female type of saang daeng [see pp. 40, 57], and satisfy himself quite definitely whether it is a fatal or mild form. He should give considerable care to his choice of treatment, because the baby will be in great difficulty within nine days if the wrong medicine is given [see p. 45, note 2]. Whether they have studied the texts or not, doctors should take great care in their deliberations. After three more months [at seven months of age], another major pustule of saang will appear, another after six months [now aged ten months], and another after nine to eleven lunar months [about one year old], each coming from one of the primary pustules in the crown [see p. 46, note 11, which are the most virulent ones. These have six heads, and are poisonous and extremely painful. The doctor should be very careful with his treatment, because the baby will die unless he knows how to cure it [see p. 45, note 2]. Drastic purgatives and drugs to expel flatus should not be given, otherwise it will be very difficult to cure later. When the baby is a year old, the primary pustule subsides to re-emerge in and on the navel. It is joined by another at one year and three months of age, another at one year and six months, one year and eight months, one year and eleven months, and at two years and two months. There are then six major pustules altogether in the navel. Now the 72 followers break out, with the major saang, in the bladder, ileum, colon, pubic area, spine, or on the chin; on both sides of the body, in the chest, the throat, or on the tongue, hurting all over. If they erupt in the pubic area and bladder, they cause difficulty in micturition, and constipation; in the colon, diarrhoea; in the ileum, heavy urination. When they are on the sides, they produce a high temperature; in the long muscles of the back, insomnia; in the stomach, vomiting; in the bladder, extreme thirst; in the throat, dryness and coughing; in the eyes, soreness; in the mouth, redness; and those pustules in the ears produce a foul discharge from the ears. In order to be able to distinguish between male saang daeng and female saang daeng [see pp. 40, 57], the doctor should know that, if it [unspecified] comes up in the armpits, it withdraws and re-emerges on the right side of a male child, and on the left side of a female child. When the female variety of saang daeng is finished, the male variety of saang daeng develops as one pustule under each arm. Then the baby will die. Saang daeng establishes itself at three to nine months of age, continuing until one year and nine months of age, when it enters the body internally, resulting in the child passing blood, mucus and pus in the stools. The spleen hangs down [becomes enlarged, see p. 49, note 11, the patient has a high temperature, is thin and yellow, passes yellow faeces and urine, has abdominal colic, and excessive mucus arises left, right, or centre, causing

1 This is unclear; also, the 1961 edition contains misprints. Thus we have in the 1871 text: '"semha fuum ok maa thang saai khwaa lae suum klaang ko dee' เลยผุกออกภูมิที่บริเวณชายและหญิง กลับก็มี, while the 1961 edition substitutes '"fuuk' ผุก for 'fuum' ผุก, and omits 'ko' ฤ . However, these same words, 'maa thang saai khwaa lae suum klaang ko dee' มาที่เจาะขาและที่ทับกระทำ are repeated in the following statement about the navel, which might suggest an error in the compilation of the 1871 text. The translation might then be rendered: 'excessive mucus arises, causing muscular spasm of the hands and feet'.
muscular spasm of the hands and feet. When he sees this, the doctor should examine the navel, to see if it has dropped down on either side, or in the centre. If so, he must take the precaution of treating it. If this is not the case, then this lom is called utthangkhamaawaat. 1 It will go away by itself if care is taken of the baby from the time it is by the fire until it is three months old. If the doctor gives medicine and exorcises the spirits, and it does not go, then it will move from the navel and ribs and chest, and become established in the navel.2 It is then called lom kong yai,3 and it moves [literally, blows] from the navel, up along the tendons, and blood and mucus travel up close by the spine to the upper chest and the throat, from there, quickly diffusing to the ears, nose, and the crown of the head.4 Doctors should understand clearly that the baby will die if it is the time of the waxing of the moon; if it is the dark of the moon, it will not die. This disease is called trabong Rähü, maanthalun, atsawamukkhee or taphan fai - it has many names.5 It can happen to both boys and girls, there is no difference.

KFC II; 121.

There is one kind of saang which produces no pustules, but a red eczematous eruption, which spreads. This is called saang daeng.

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1 ถุทังคาวาต ปัจยุทังคาวาต. The 1871 text has utthangkhawaat ถุทังคาวาต. Lom ลม has several meanings, the most common being 'wind' or 'air in motion'. Lom is also the Thai word used for the element wind, see p. 6, when it equates with the Sanskrit 'vāta' or 'vāyu', and it is in this context that it is used here. Lom utthangkhamaawaat or utthangkhamaawaataa is the wind which starts from the feet and rises to the head. Mulholland, JSS, p. 94, quoting MD, p. 11. Another meaning of lom is 'disease', see pp. 69, 70, 82 ff. For a searching discussion of the meaning of 'lom', see Scott Bamber, Lom: An Examination of a Term Used in Association with Illness in Traditional Thai Medicine, B.A. (Asian Studies) Honours sub­thesis, Australian National University, 1982.

2 The first use of the word 'navel' could be replaced by 'abdomen'; see pp. 45, note 1; 47, note 1.

3 ลมกองใหญ่

4 The navel is the centre from which the ten major tendons emerge. The blood and mucus are evidently thought to travel up to the head via the tendons, two of which follow the spine, one on either side, being propelled by the motive force of the lom; see pp. 35, note 4; 36, note 3. Here, the 'sen en' apparently mean the channels or circuits of lom, here meaning the 'element wind', the power transmitting force within the body. The courses followed by these lines of power or movement are described in J. Mulholland, 'Traditional Medicine in Thailand,' Hemisphere, Vol. 23, No. 4 (July/August, 1979), pp. 225-229. Since the Thais had no word for 'nerve', the function of the nervous system seems to be conceived as part of the function of lom. However, the channels of lom, blood, and other body fluids do not appear to be differentiated.

5 trabong Rähü ตะบองแร่หยู Rähü's club, maanthalun มะแนธิลัน atsawamukkhee อตสาวามุกขี taphan fai ตะพันใหญ่ See pp. 42, notes 4 and 5; 50; 57.
(Saang daeng has already been described on p. 109, but it differs from the following) towards the end, and in the prescriptions. These particular sections are therefore presented here.)

Examine the middle ribs of the right side. If the tendons are still all right, there is no paralysis. Otherwise, the baby is affected by *lom utthonwaat*, which has been present since it was in the womb. This makes the infant cry from the time it is still by the fire until it is three months old, when the *lom utthonwaat* goes away of its own accord. Treatment has no effect. When the *lom* moves down from the head to the chest and then to the abdomen (or navel), it is called *lom kong yai*. It moves [literally, blows] up via the navel, along the tendons next to the spine, into the chest and throat, and up to the orifice of the right ear, and to the crown of the head. If this occurs during the waxing of the moon, the baby will die; if during the waning of the moon, it will not die. Some say this disease is caused by *tabong Rāhū*, some say *kumaatthasang* or *akkhamuukkhee*. These seven kinds of demon [only three mentioned here] affect both boys and girls in the same way.

If the male form of saang daeng occurs in the chest [see pp. 40, 55], the baby has difficulty in breathing; if it occurs in the shoulder, there is pain and stiffness in the back; if it is in the throat, the child cannot eat. The sign of death from saang daeng is the development of an abscess in each armpit [see p. 55]. These are the size of lotus seeds, and the skin is the colour of candle smoke. Then a pustule or abscess comes up in the crown of the head, and moves down to the forehead. It is like *champaa* petals

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1 This statement concerning paralysis occurring if the *sén* are not in their normal condition shows a perception of a causal relationship between these channels and the function of the muscles of the body, very much like that which Western medicine postulates between the nervous system and the muscles. See also pp. 35, note 4; 36, note 3; 56, note 4.

2 *lom utthonwaat* ภูททอนวะ  Pali *udaravāta*, the wind of the womb, or of the pubic area of the abdomen. This is the *lom* of saang daeng, in this case, a disease. See pp. 69; 82, note 3. There seems to be some confusion between the names of *lom utthangkhammaawaat* and *lom utthonwaat*, cf. p. 56.

3 *tabong Rāhū* ศรีบองราหู another spelling of *trabong Rāhū*, see p. 56, note 5.

4 กุมาทสัง or ศรีบอง

5 *see khwan thian* ศีกกวันเทียน probably means the colour of the candle flame in this context, even though 'khwan' means 'smoke'. This becomes more apparent in the following reference to the colour of *champaa* petals.
[orange or yellow] then changes to the colour of candle smoke. If it reaches the space between the eyebrows, it makes the baby blind and deaf. Then it spreads to the tip of the nose, the lips curl back, and when the child is about to die, [the saang] appears all over the body. On the forehead there are round, yellow, red, and white spots, like seals [stamps]. If the doctor cannot cure it, the baby will die, without a doubt.

KPC III, 3; 157.

Saang daeng is worse than any other type of saang. The skilled doctor should notice the way the symptoms of this disease change, and adjust the treatment accordingly.

KPC IV; 192.

If a child born on Tuesday gets sick, it is because of [the element] blood, and is very difficult to cure. The birth saang is saang daeng. This first develops around the navel, and causes diarrhoea, cold hands and feet, listlessness, and a stiff back.

Saang Sako

The Birth Saang of Children Born on Wednesday

KPC II; 111, 112.

...There are four major pustules in the abdomen. After three days at the fire, the infant has khamao, accompanied by 42 followers. The four major pustules have ten followers each; four at the anus, five at the spleen, and one at the crown of the head. After leaving the fire, the baby has khamao taan and khamao saang. Three months later [when the infant is about four months old], all the followers spread throughout the body and intestines. The four at the anus cause constipation and difficulty in micturition; the five at the spleen move to the upper chest, then emerge at the throat, tongue, and mouth, remaining for three months. When this happens, the doctor should ascertain whether it is saang sako, and if so, be sure to give the right treatment, otherwise the baby is certain to die within two months [see p. 45, note 23]. The followers in the abdomen spread, then come together in the chest. Two of the major pustules in the abdomen move up to the lower gums, one on each side, with six or seven followers in front of the teeth and in the upper and lower gums. These cause diarrhoea, vomiting, thirst, fever, listlessness, steamy eyes, and restlessness. The major pustule in the crown moves down to the spine [this started out as a follower], causing backache, and flatulence. This happens once at four months, and again at eight months. In time, the saang moves inside, then the baby has diarrhoea; passes blood, mucus, and pus; has yellow eyes, and yellow urine; cannot take nourishment; has distension of the abdomen; and an aversion to food. This recurs at one year,

1 champaa  Michelia champaca Magnoliaceae. The Champak or Orange Chempaka. TS, pp. 226, 227.
2 This makes a total of ten, not 40.
3 What is meant by khamao taan and khamao saang is not explained.
one year and six months, one year and eight months, and at
two years and ten months, causing gastric pain, thinness
and yellowness, stomach ache, and inability to take
nourishment. In such cases, whenever the major pustules of
saang sako come together in the abdomen, one in the navel,
one above it, and one on each side, they cause gastric
pain. Also, the 42 followers appear, some on the sides,
some in the armpits, some in the tendons, some inside the
spine, and on the shoulders, elbows, and knees, causing
various diseases depending on the age of the patient.¹

KPC  IV; 186.

[See saang nam, p. 51.]

KPC  IV; 187.

One kind of saang sako causes a red mouth, severe diarrhoea,
and cold hands and feet.

KPC  IV; 192.

If a child born on Wednesday becomes ill, they say it
is because of eating the wrong food, and the illness is due
to the element water. The birth saang is saang sako.

Saang Kho or Saang Wua

The Birth Saang of Children Born on Thursday

KPC  II; 113, 114.

...There are four major pustules, and 40 followers. Saang
wua starts with khamao taan and khamao saang [see p. 58,
note 3] filling the mouth of the baby at the fire, then
going away. Next, a rash of small spots covers the body,
like a heat rash, and this causes a high temperature, and
writhing of the body. When this subsides, the child has
diarrhoea. The four major pustules erupt when the baby
is three months old; one at the tip of the tongue, one on
each side of the tongue, and one, with three heads, at the
root of the tongue. This last is the primary pustule of
saang [see pp. 31; 46, note 1], and the most virulent.
When the child is six months old, the primary pustule goes
down into the abdomen, then ten followers enter the stomach,
and 40 appear in the tongue and cheeks.² The primary
pustule within produces diarrhoea, vomiting, and thirst.
At nine months of age, the primary pustule at the tip of
the tongue descends within the right side of the abdomen,³

¹ This remark suggests a recognition that there is a limit to
the range of ages when some diseases affect children.

² This makes 50 followers, although 40 is the original number
given above; probably a misprint. It is quite unimportant,
as these large numbers merely illustrate the existence of a
rash rather than an abscess or other large eruption.

³ There is one primary pustule, according to the text, see pp.
31; 46, note 1, and this is stated to be the three-headed one
at the root of the tongue. Perhaps this one at the tip of the
tongue should read 'major' rather than 'primary'.
and ten followers go to the bladder, causing diarrhoea, vomiting, and thirst. At eleven months of age, the major pustules at the sides of the tongue, together with 30 followers, descend; one major pustule with ten followers to each of the colon, ileum, and the pubic area below the abdomen.\(^1\) When the child has reached a year and six months, it passes mucus and blood in the stools. The doctor should make sure that his diagnosis is correct, and treat saang wua within nine or ten days.

KPC IV; 192.

If a child born on Thursday becomes ill, it is because of internal heat [one of the elements]. This causes headache, with a high temperature, and cold hands and feet. The birth saang is saang kho, and if it affects the tongue, both tongue and chin get stiff, and the baby cannot suck at the breast. Be very careful for three days, and then it will be safe.

Saang Chaang

The Birth Saang of Children Born on Friday

KPC II, 1; 91.

\[\text{Saang chaang looks like this: } \ ⬤ \ ⬤ \ ⬤ . \]  \cite{pp. 44, 62.}

If it is pitted, with red \(\text{centres, it will cause diarrhoea.}\)

KPC II; 114, 115.

...At the fire, the infant has khamao, which increases layer upon layer until it becomes very thick. Saang comes up from inside the abdomen to the chest and throat, and from the throat, it travels up to the tongue. After nine to eighteen or nineteen days, it comes out all over the tongue and mouth. Three months after leaving the fire [when the baby is about four months old], three major pustules erupt in the abdomen, two or three in the palate, and three in the chest. Six months after leaving the fire [aged seven months], the two or three pustules in the palate descend to the throat, and 80 followers emerge in lines, here and there, on both legs, on both sides of the pubic area, on the arms, on the sides, and in the middle of the spine. When these all erupt at the same time like this, the major pustules which have moved from the palate to the throat cause a dry, sore throat, coughing, and dry retching, bruises and spots around the throat, and suppurating sores and itching all over the body. Nine months after leaving the fire [at about ten lunar months of age], these sores dry up by themselves. Then, when they have withdrawn internally, the baby has diarrhoea, vomiting, and thirst, and is unable to take nourishment. Small pustules next erupt in the cheeks, and each day, at the same time, five or six major pustules come up somewhere on the body. At one year and three months of age, the major pustules in the throat move down to join those in the chest,\(^1\)

\[\text{Thus it is recognized that two pustules or abscesses might become three when the infection moves to a different site.}\]
making five there. These cause a high temperature from afternoon to midnight, then they subside, but even though the baby is very thirsty, it takes little milk, and is lethargic and steamy-eyed. During the next four months, the five major pustules in the chest go down to the stomach. The child is not hungry. Then these pustules erupt in the intestines, causing constipation; next they move to the pubic area, where they cause difficulty in micturition. As the child develops, when it starts to sit, and to walk [see pp. 36, 37], it passes mucus and blood, because the liver, lungs, intestines, and abdomen are swollen. And when it eats fat and meat which are strange and new to the four elements of the body [that is, to which the body is unaccustomed], this saang has an opportunity to arise, and it causes aches and pains and many problems. The doctor should realize that the baby will die if he does not know how to cure it. He should examine the abdomen, neck, and chest of the child if it dies, and he will notice that the area around the abdomen looks speckled like the egg of a bulbul; the upper chest is as blue as a crow's egg; the neck is blood red; and the body is swollen. An accurate diagnosis should be made before treatment is given.

KPC IV; 192.

If a child born on Friday becomes ill, it is due to [the element] wind, which causes flatulence in the evening. The birth saang is saang chaang, which changes to saang daeng, and is very difficult to cure. If the baby has this for a long time, and does not die, [the disease] will gradually change to taan chon [parasites, see p. 28]. The doctor will think that the child is better, but he should not rely on it.

Saang Chon or Saang Khamooi

The Birth Saang of Children Born on Saturday

KPC II, 1; 91.

Saang chon looks like this: 
It develops in the intestines, the liver, and in the spine. When it is ripe, it comes up like a large flower of elephant yam, thus: , and the saang looks like this: .
If it is red, it is pitted...

1 This paragraph is a very good example of the way the compilers have inserted occasional statements linking the Ayurvedic theories, here including the important concept of the role of diet in health, into a description which is otherwise devoid of recognizable Indian influence.

2 nok krot probably a misprint, or it could be a synonym for nok prot Pycnonotus blanfordi Pycnonotidae, the bulbul. The eggs are a very pale turquoise colour, and speckled. (VJ)

3 This is not clear. It could read 'and if the saang is like this: , and is red, it is pitted...'
If a baby wakes up with a red mouth, and is dribbling, saang has started at the tongue, and has entered the throat. When fed, the infant will cough and vomit, then the saang will go down to affect the abdomen. Later, the child will be thirsty, then the spine will stiffen. This is influenza caused by saang chon, and the baby gets thin and yellow and looks as if it has birth marks on its body.

KPC II; 98, 99.

Saang chon looks like this: [cf. pp. 44, 60]. The saang first appears when the infant is three days old, with four pustules in the spine, and four in the crown of the head. When the baby is three months old, it might occur in the mouth as one pustule at each of the angles of the jaw. The heads of the pustules are black, and their bases are red. As a result, the baby has diarrhoea during the period from the age of three months to ten years (or ten months). The diarrhoea produces faeces like liquor ferment. After three months [aged three or six months is not clear], the body is covered [in yellow and brown patches] like the pattern of the spiny eel, and the major pustules make the whole body sting. After six months [when the child is six or twelve months old, unclear], the saang withdraws into the spine and intestines, and the edge of the liver. If it enters the liver, the faeces are black; if it enters the ileum, the faeces are as green as a leaf; and if it enters the heart, the child vomits fresh blood. The throat gets dry if the saang enters the throat. If the saang enters the stomach, it causes hunger and thirst; if it enters the abdomen, the back becomes humped, the child has difficulty in micturition, urinary calculi, and white urine like lime water. When the saang moves inside the body, one major pustule comes up in the pubic area, and there are 30 followers. There is one major pustule in the liver, with 60 small ones; one in the abdomen, with 40 followers; one in the upper chest, with 50 lesser pustules; one in the heart, with 70; one in the throat, with 80; one in each eye, with 20 followers to each eye; a total of 350 followers of saang chon [actually, 370].

If the doctor wants to be sure, he should inspect the saang in the crown of the head, or that in the eyes. When death is near, the throat is obstructed, so that the baby cannot eat or take milk. The followers from the crown come up in the gums on both sides of the mouth, in the lower jaw, and they are coloured red, black, white or yellow. If ever they break, the

1 Saang gives the symptoms of starvation because the child has diarrhoea, and the food is, consequently, not digested. (DT, personal communication, Bangkok, 1st February, 1981.)

2 This comment in parentheses occurs in the 1961 edition, but not in the 1871 text. Evidently, the compilers of the 1961 edition questioned this apparent error, but were not prepared to alter the text as they had received it. See also pp. 20; 48, note 1.

3 This statement is omitted from the 1961 edition, but appears in the 1871 text and in other editions.
baby will die instantly. When they have erupted in the gums, the throat, and at the roots of the teeth, then the two pustules in the eyes descend to the spine, where they combine, and produce six heads.¹

The saang appears once at three months of age; again at six months [according to the 1871 text and other editions, but not the 1961 edition], and once more at nine to eleven months. When this happens, the child has foul-smelling, liquid diarrhoea. Drastic purgatives and medicine to expel flatus should not be given if the baby passes blood or pus, as it is very difficult to cure this, and strong purgatives will kill the child. When the major pustules of saang chon erupt in the cheeks, if there are any followers, there are five, six or seven in the spleen, causing it to hang down to the lower edge of the ribs [see p. 49, note 1], and the baby has a high temperature, yellow eyes, gastric pain, goose flesh, a hollow chest, and is thin and yellow. If the followers occur at the edge of the liver, they form a pattern like the iris of the eye [see p. 52, note 1], then spread out and merge together; if they develop in the intestines, the intestines swell up, the abdomen turns yellow, and the child has continual diarrhoea; if they erupt between the spinal vertebrae and get into the bones, this is very hard to cure, and the patient usually dies. If saang chon breaks out in the foot at birth, then a day after birth there are five pustules like this: , one on the sole, one in the middle of the foot, and three on top of the foot. In boys, the five pustules are on the right foot [see p. 31, note 43]. If three pustules erupt on the left foot, the baby will die. When the saang originates in the feet, then khamao comes after the time of lying by the fire. After three months, the saang in the feet subsides, then emerges at the knee-caps. The doctor should make a careful examination, because the saang which comes up from the feet to the knees and thighs looks like this: , and it comes out on both shins like the rough skin of a young stingray. This saang then develops close to the spine, and in all the bones and tendons. When it reaches the pubic area, one pustule erupts in the intestines, one in the abdomen, one at the edge of the liver, one at the heart, one in the throat, and one on each side of the palate. In addition, one pustule comes up on the right side of the body, from the abdomen, and one on the left, from the waist and throat; and one comes from the intestines and emerges at the middle of the back, between the shoulders. The following summary is included

1 Perhaps with the four already there.

2 Alternatively, the two combine 'and turn into one six headed [carbuncle-like] swelling'.

3 The 1961 edition has khao meaning 'white', instead of khwaa, 'right', probably due to the similarity between the letters 'η' and 'γ' and consequent misreading.
to make it clear to doctors. The followers of saang chon, which can be fatal, and can occur in all infants, affect the whole body in many ways. Whenever the major pustules of saang arise in all the important organs, then the small pustules which accompany them follow from the pubic area to the navel. First, one pustule comes up, with eight followers, which then erupt as sores with raised heads like tubers of elephant yam, but there is something resembling daphnia to be seen,¹ and they all come together, then spread up to the stomach and the edge of the liver. If the major pustule comes from the intestines, it causes diarrhoea; if it reaches the stomach, it causes great thirst; if it reaches the edge of the liver, it causes the child to pass blood; if it enters the spleen, it causes heat in the body, the abdomen, and the back, and makes the baby agitated and distressed, so that it becomes fatigued and collapses. After one day, this subsides, then one pustule erupts in the right eye first, [and on the seventh day, this pustule crosses over to the left eye].² On the eighth day, it disappears. Then the saang in the liver and spleen affects the heart, after which three pustules obstruct the throat. On the ninth day, the baby will die, and when it is dead, the pustules will appear in the spine - some red, some black, and some blue.

KPC II; 116, 117.

...Saang khamooi has nine major pustules. When the infant is three days old, there are two pustules in the spine. At three months the saang appears in the mouth - one pustule in the upper gums, and one in the lower gums. Sometimes these have yellow heads. Sometimes they come up on or beside the navel, resembling broken rice. The centres are black, with a rim, and next to that, yellow. The bases are red. The baby has a pattern on its body like the spiny eel. The major pustules [have spots] like daphnia, and make the whole body hurt and sting. When the baby is six months old, inflamed sores appear all over the body, causing continual diarrhoea. The major pustule(s) at the crown [not previously mentioned] then descend(s) to the centre of the back, where all five pustules merge, then the sores go away. Another major pustule moves down from the crown of the head to the back at eight or nine months of age, one year, one year and six months,³ increasing the number of pustules in the back, one by one,

¹ rai (nam) ติ่ง Moina macrocopa Strauss. Daphnia. A very small, reddish-brown, transparent aquatic animal about the size of a pin point. (VJ)

² This phrase occurs in the 1871 text, and in other editions such as the 1914 and 1952 editions, but not in the 1961 edition.

³ A misprint in both the 1914 and 1952 editions gives one year and one month.
until there are nine altogether. These cause diarrhoea and vomiting. When all eight [sic] have come together, they erupt in the abdomen, giving the child diarrhoea with offensive smelling, liquid faeces [see p. 47, note 23, with mucus, blood, and pus. When the saang has reached the abdomen, one pustule with ten followers moves to the pubic area; a similar group enters the bladder; one major pustule erupts in each eye, with nine followers; one, with six followers, on the right side of the throat; and one, with four lesser ones, on the left side of the throat. When this happens, with the major saang spread to the important organs, then the baby is poisoned, and this is a sign of death. From the age of nine months, up to one year and six months, the baby has blurred vision for fifteen days to a month, because the major pustules of saang are in the eyes. Then there is mucus in the eyes, and a series of membranes develops at the outer corners of the eyes, encroaching on the eyeballs, making the eyes itchy, because the major pustules and followers spread all over the eyes, and the vitreous humour dries up. The doctor must be sure to give the right medicine, otherwise the baby might lose one or both eyes. The five followers around the throat cause a sore throat, coughing, and vomiting of water only, and enter the stomach, with the result that the baby does not want to eat. When they enter the bladder, the child becomes thirsty, craves fishy and meaty food, and sweet things, which are very harmful, and prefers fish to rice. When they enter the liver, the patient passes blood and mucus, and becomes chicken-chested. When they enter the ileum, the faeces are as green as a leaf, and the body is covered with scales, like a cobra. When they enter the colon, the baby has diarrhoea, with faeces like liquor ferment. When they enter the abdomen, and the external and internal areas of the spine, diarrhoea and severe, stinging, burning gastric pain follow. When they enter the pubic area, the baby has dysentery, with intestinal pain and prolapsed anus, and is averse to water, thin and yellow; and when death approaches, the saang in the eyes and on the eyelids moves down to attack both sides of the throat. The major pustules are as large as Chinese dates [see p. 50, note 1], and the followers from the eyes erupt all over the tongue and the uvula, and around the lips like raw cotton. The baby is certain to die if the doctor cannot cure it within four to six days. Saang khamoon should not be treated if the major pustules ripen and become as yellow as turmeric, flatten, and then move down to the root of the tongue. If you want to know whether or not it is in the throat, as explained, apply some medicine to the

1 In the 1871 text the total number is eight, which, by simple arithmetic, is correct. Confusion started as early as the 1914 edition, which makes one instead of six as the total after an addition was made, at eight or nine months, to the original five. The 1952 edition gives six, the 1961 edition gives seven (we have summarized the statement here to avoid repetition). The problem seems to have arisen because a ring has been superimposed on the figure '6' in the 1871 text, and this has apparently been read as '1'. These numbers are unimportant as far as the disease is understood, but the errors in several editions indicate that care must be taken in the weight given to facts derived from such repeatedly copied texts.
finger, and insert the finger into the throat and feel it. If it is as described, the baby is sure to die.

KPC II; 121.

One very bad kind of saang, called saang khamooi, erupts like pimples...

...some people call saang khamooi, saang khum.

KPC IV; 192.

If a child born on Saturday gets sick, it is due to [the element] wind, which causes vomiting, difficulty in micturition, and constipation. The birth saang is saang chon.

Summary

KPC IV; 185, 186.

We will record the supplementary texts which the masters took from Khamphee apphayasantaan, and included in KPC IV in the hope that it will help inexperienced doctors who have not got a complete grasp of the contents of all the texts.

Whether born at midday, during the early afternoon, or at midnight, babies born on a Sunday, Tuesday, or Saturday will have saang fai, saang daeng, and saang chon respectively, as their birth saang. The doctor who treats these babies should be careful not to let the main saang of birth enter internally. Whenever it affects the liver or heart it is very difficult for the doctor to cure. If it affects the large intestine, it causes diarrhoea; if it affects the head, it causes swellings on the head; if it affects the eyes, the eyes are damaged, but the baby will not die. If it affects the liver or heart, it causes diarrhoea, with fresh blood being passed at first, then foul blood; makes the face and body yellow and sallow, and the mouth red. Whenever the eyes are yellow, it will make the baby pass mucus and blood, and the liver will hang down, and that will cause regular fever. Then it will affect the throat, so that the child cannot take nourishment, and has a dry mouth and throat. If it affects the chest, it causes severe thirst, and having quenched its thirst, the baby's eyes are dry, and it has no tears. If the wrong medicine is given, the infant will die [literally, reach its destiny (karma)].

1 A commonly used method of administering medicine to a child, called 'kwaat yaa'. See p. 107.
2 The name of a text on fevers, the various types of saang (summarized), and diseases of the eye.
3 The reference to the time of day or night when the child is born may be a figure of speech, but its ambiguity may also provide a loophole should the predicted form of saang not eventuate. In the lunar system, the day starts at dark; in the solar system, the day starts at dawn. The birth day might, thus, be different, depending on the system used in the calculation.
4 See p. 49, note 1.
5 See p. 45, note 2.
Table 1 shows the usual time of the onset and duration of birth saang and minor saang, in lunar months and days.\(^1\)

### TABLE 1

<table>
<thead>
<tr>
<th>Name of birth saang and birthday</th>
<th>Age when birth saang starts</th>
<th>Duration of birth saang</th>
<th>Age when birth saang finishes</th>
<th>Name of minor saang</th>
<th>Duration of minor saang</th>
<th>Age when both have subsided</th>
</tr>
</thead>
<tbody>
<tr>
<td>fai (phloeng) Sunday</td>
<td>1.6</td>
<td>24.0</td>
<td>25.6</td>
<td>kraai(^2)</td>
<td>7.0</td>
<td>32.6</td>
</tr>
<tr>
<td>nam Monday</td>
<td>1.15</td>
<td>19.0</td>
<td>20.15</td>
<td>faai</td>
<td>6.0</td>
<td>26.15</td>
</tr>
<tr>
<td>daeng Tuesday</td>
<td>1.8</td>
<td>45.0</td>
<td>46.8</td>
<td>kranae</td>
<td>19.0</td>
<td>65.8</td>
</tr>
<tr>
<td>sako Wednesday</td>
<td>0.17</td>
<td>17.0</td>
<td>17.17</td>
<td>kratang</td>
<td>16.0</td>
<td>33.17</td>
</tr>
<tr>
<td>wua (kho) Thursday</td>
<td>0.19</td>
<td>31.0</td>
<td>31.19</td>
<td>khaao plueak</td>
<td>19.0</td>
<td>50.19</td>
</tr>
<tr>
<td>chaang Friday</td>
<td>1.21</td>
<td>35.0</td>
<td>36.21</td>
<td>kraduuk</td>
<td>7.0</td>
<td>43.21</td>
</tr>
<tr>
<td>khamooi (chon) Saturday</td>
<td>1.10</td>
<td>47.0</td>
<td>48.10</td>
<td>naangrin</td>
<td>20.0</td>
<td>68.10</td>
</tr>
</tbody>
</table>

1 \(\text{KFC V; 194}\).

This table does not occur in the text, but is a summary of the relevant statements which appear in this section. The age when birth saang starts is not given in the text; it is deduced from the rest of the information.

2 \(\text{kraai} \) This name could be taken from that of a fish, *Notopterus ohitala*, a species of feather-backs with seven or nine black spots along the sides of the body. *Mc*, p. 51.

\(\text{faai} \) cotton

\(\text{kranae} \) One meaning of this word, 'to cause to adhere or stick on in small pieces' might be descriptive of the pustules of this disease.

\(\text{kratang} \) The meaning is not clear.

\(\text{khaao plueak} \) rice-husks.

\(\text{kraduuk} \) can mean 'bone', but it is also part of the names of several plants.

\(\text{naangrin} \) could be a woman's name.
Table 2 shows the duration of the acute stage of birth *saang*, and the consequences if it persists beyond these limits.¹

<table>
<thead>
<tr>
<th>Birth saang</th>
<th>Normal duration of acute stage (in days)</th>
<th>Consequences if the acute stage persists beyond this number of days</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>fai</em> (phloeng)</td>
<td>11</td>
<td>The baby will die</td>
</tr>
<tr>
<td><em>nam</em></td>
<td>12</td>
<td>The illness remains severe</td>
</tr>
<tr>
<td><em>daeng</em></td>
<td>13</td>
<td>The baby will die</td>
</tr>
<tr>
<td><em>sako</em></td>
<td>14</td>
<td>The illness gets worse</td>
</tr>
<tr>
<td><em>wua</em> (kho)</td>
<td>15</td>
<td>The baby will die</td>
</tr>
<tr>
<td><em>chaang</em></td>
<td>16</td>
<td>The baby will die</td>
</tr>
<tr>
<td><em>khamooi</em> (chon)</td>
<td>17</td>
<td>The baby will certainly die</td>
</tr>
</tbody>
</table>

¹ *KPC* V; 195.

This table is a summary of the relevant part of the text.
CHAPTER 6

DISEASES ASSOCIATED WITH BIRTH SAANG

Diseases Associated with Each Day

Sunday

KPC III, 1; 138.

Children born on Sunday have the symptoms of saang phloeng as the birth saang, saang kraai as the minor saang; the la is called utthayakaan, and the la-ong is called pleo fai faa.1

Monday

KPC III, 2; 142.

The child born on a Monday has the symptoms of saang nam as the birth saang, and saang faai as the minor saang; with la saeng phrackan, and la-ong kaeo witoktan.2

Tuesday

KPC III, 3; 148.

The birth saang of children born on Tuesday is saang daeng. Saang kranae is the minor saang; la utthayakaan is the la; la-ong kaeo morakot, the la-ong; and lom utthomwaat [see p. 57] is the associated lom.3

Wednesday

KPC III, 4; 157.

Saang sako is the birth saang of children born on Wednesday. Associated with this are the minor saang, saang kratang; la niarakanthee called niaraphloeng; la-ong saeng phloeng; and lom sunthomwaat [see p. 37].4

1 utthayakaan ดื้อยาดุ sunrise.
pleo fai faa เบี้ยไฟฟ้า blazing.
According to Mo Thai yaa Thai (Thai doctors and Thai medicines) (Bangkok: B.E. 2522 [A.D. 1979]), p. 39, lom prawatakhun ลมพระวัฒนศิลป์ is the lom of children born on Sunday.

2 Lom kotthaasayaawaataa ลมกอตท้าแอยالطي is the lom of children born on Monday, ibid., p. 39. This is one of the six wind elements of the body, see p. 56. It is possible that a disease might be named after one of the elements; it is also possible that this is another instance of confusion of disease names and element names, cf. p. 57, note 2.

3 kaeo morakot แก้วมรกตก emerald.

4 niarakanthee เนียราการณ์ niaraphloeng เนียราไฟฟ้า saeng phloeng แสงไฟฟ้า a precious stone.

synonymous with the above.

firelight.
Thursday

KPC III, V; 162.

Saang kho is the birth saang of children born on Thursday; saang khoao plueak is the minor saang; the la is la ninlakaan; the la-ong is la-ong mahaamek; and the lom is lom hatsakhinee. 1

Friday

KPC III, 6; 168.

Saang chaang is the birth saang of children born on Friday; la saang phrachan is the la; and the lom is lom arit. 2

Saturday

KPC III, 7; 172.

The child born on Saturday has saang chon as the birth saang. The minor saang is saang naangrin; the la is la mahaaninlakaan; the la-ong is la-ong pleo fai faa thap thim; 3 and the lom, lom kumphan, lom baathayak, and lom champraap.

Minor Saang

Saang Kraai

The Minor Saang of Children Born on Sunday

KPC III, 1; 141, 142.

When the mother has been pregnant for eight, nine or ten lunar months, the infant is born. This child, born on a Sunday, is easy to rear ccf. p. 431. While the mother and child are by the fire, only khamao develops. The khamao disappears nine or ten days after they leave the fire, then, after fourteen or fifteen days, saang phloeng first begins. When the saang phloeng has finished, saang kraai erupts. This comes from the spine.

1 ninlakaan นินลากาน black or black sapphire, see p. 38, note 11.
mahaamek มหาม้าเมฆ great cloud.
hatsakhinee หัดสักนี meaning unclear.

2 arit อริต could mean conquering.
The text states (see p. 83) that lom arit results from la-ong phrabaat kaanlasingkhlee กะฉันลังเขี (see p. 83, note 1), but it is not suggested that this la-ong is the la-ong of saang chaang, nor is it mentioned anywhere else in the text. KPC IV; 187 gives saang khoao plueak as the minor saang of both saang kho and saang chaang (see p. 74, note 1). KPC IV; 193 says saang kraauk is the minor saang of saang chaang (see p. 76).

3 mahaaninlakaan มหามินลากาน great black sapphire.
pleo fai fai thap thim ปะลังฟ้าฟ้าทับทิม blazing ruby.
lom kumphan ลอมกุมพัน see p. 83, note 3.
lom baathayak ลอมบาทายัก see p. 83, note 2.
lom champraap ลอมชมพาด meaning unclear.
Saang kraai has four major pustules - two in the pubic area and two in the abdomen - and 40 followers. When the baby is a year and six months old, the followers spread over the skin like a heat rash. For about three days, the child writhes and starts in its sleep, then the rash disappears, and the followers enter the colon. At three months of age, one of the major pustules moves up from the pubic area to the abdomen, joining the two there to make a total of three. When the child is eight months old, the remaining major pustule in the pubic area joins those in the abdomen, making a total of four altogether. This results in the child's having a high temperature, with diarrhoea, vomiting, and thirst, and it cannot take nourishment. At nineteen to twenty months of age, ten of the followers spread to the pubic area, ten to the abdomen, ten to the stomach, and ten to the tongue. If the doctor treats this disease with medicine which does not successfully counteract it, then the disease will become stronger. Consequently, when the child is two years and three months old, it will pass mucus and blood, and the symptoms will keep changing. Doctors are strongly warned that it is very difficult to cure this disease if they do not understand fully that minor saang follows or occurs with birth saang, that saang kraai is the minor saang of saang phloeng, and that saang kraai is in the spine from the time when the baby was in the womb.

Saang Faai

The Minor Saang of Children Born on Monday

KPC II, 1; 91, 92.

Saang faai is like this:
It does not matter whether it comes up in the tongue, or in the mouth...

Saang faai is white, and when it affects the lips it causes dribbling. If it turns yellow, the doctor should treat it with medicine called la-ong phrabaat [not to be confused with the disease of the same name].

1 Three months of age, or three months later, is debatable. The age of the child could not be known, as the minor saang sometimes starts during the course of birth saang, sometimes when it has finished. In this section, it is stated that the saang kraai follows saang phloeng, but, even so, the age of the child when the saang phloeng has finished cannot be known. What is important, then, is the approximate length of time between the development of subsequent symptoms.

2 My italics. This is an important observation concerning the effects of medicine which manages to overcome the weaker elements of an invading organism, but enables the strong forms not only to survive, but to increase, thus placing the patient in a worse position than he was in before receiving treatment.

3 cf. p. 31. This is the only time that the spine is mentioned as the site of the initial infection. The statement is ambiguous, and could read 'saang kraai is the minor saang of saang phloeng which is in the spine from the time when the baby was in the womb.'
Saang *faai* has no pustules. It appears thick and white, like cotton fibres, on the palate, inside the cheeks, at the roots of the teeth, and on the tongue. This makes the baby ill, so that the whole body is hot, the mouth is hot and dry, and there is no saliva. The child cannot close its mouth - it just opens its mouth and cries - it cannot eat, vomits copiously, and has diarrhoea with foul smelling faeces like rotten eggs.

Saang *faai* comes up on the tongue, and spreads out like a covering of cotton. It is as white as cotton, and causes diarrhoea, foul smelling, like rotten eggs.

### Saang Kranae

The Minor Saang of Children Born on Tuesday

Saang *kranae* has three major pustules and 30 followers. It comes up as one or two pustules together, with yellow, indented centres. One pustule comes up on the tip of the tongue, with ten followers; one on the tip of the chin, with ten followers; and there is one major pustule with ten followers at either the root of the tongue or in the upper chest. When the followers spread out around the major pustules they form the shape of a flame, and make the baby ill, so that it cannot suck at the breast, the tongue and chin are stiff, and the hands and feet are clenched. When the child is five months old, the three major pustules at the tip of the tongue, on the chin, and at the root of the tongue or in the chest all move down together to the abdomen. Then the baby has diarrhoea, with mucus and blood, and the faeces look like water used to wash meat [or amniotic fluid], or spittle from a quid of betel and areca; and the baby passes purulent mucus and blood, is emaciated, cannot eat, and is in severe pain. Doctors should be quite sure that their diagnosis is accurate.

The pustules of *saang kranae* are small, black in the centres, and red round the edges. When they subside, they enter the abdomen, causing the baby to pass mucus and blood. *Saang kranae* is a very bad type of *saang*.
Saang Kratang

The Minor Saang of Children Born on Wednesday

KPC III, 4; 157, 158.

When saang sako has finished, be careful of the la-ong phrabaat and the minor saang...

Saang kratang has three major pustules and 30 followers. The baby has no khamao while by the fire; this comes at one month of age, after leaving the fire. When the khamao has gone, the major pustules of saang erupt, one at a time - one in the abdomen, with ten followers; one in the throat, with ten followers; and one in the chest, with ten followers. When the baby is a month and a half old, the ten followers in the abdomen spread out, and emerge in the ileum, the colon, and up as far as the chest. The ten in the chest move down to the bladder and stomach, and the ten followers in the throat spread, some to the palate, some to the lips, and some inside the cheeks, three layers thick, like filaments of soot clinging like cobwebs over a fireplace. If they appear in these three places at the same time, then the saang in the intestines causes dysentery, the saang in the bladder causes difficulty in micturition, the saang in the stomach causes gastric pain, and the baby does not feel like eating, and cannot sleep. The saang in the throat causes a dry throat, and the child makes no sound when it cries. The saang in the palate causes headache and breathing difficulties, and the baby cannot suck at the breast. Doctors should not give laxatives to babies with saang kratang. This saang can continue until the child is thirteen years old. They say that saang kratang is resistant to medicine. Sometimes, if medicine is smeared on the throat [see pp. 66, note 1; 107] in the morning the symptoms abate until the following morning, when the saang reappears, causing flatulence, a high temperature, and goose-flesh. When the baby is three months old, all the major pustules and the followers which have spread all over the body move to the abdomen, and two or three pustules enter the intestines, making the baby cry, and twist and turn. When the child is six or seven months old, the doctor should apply a poultice, and then the saang will go. The child will have diarrhoea, flatulence, thirst, and other disorders at eleven months of age; and when it can walk, the abdomen is shaken up [see pp. 36, 37], causing mucus and blood in the stools once more. Medicine should be applied to the body to reduce the temperature. This saang is not incurable. If the doctor gives the wrong medicine, he might lose the battle, so he should be quite certain of his diagnosis of the disease before treating it.

1 The context suggests that this statement has been omitted. See below. The 1871 text omits it also.

2 An indication of scientific research over a long period of time. Also, an apparent exception to the usual expectations that the treatment will be effective. In other words, proof that good results have been obtained in other cases, and are expected from the medicines recommended.
Saang Khao Plueak

The Minor Saang of Children Born on Thursday and on Friday

KPC II, 1; 91.

Saang khao plueak occurs on the tongue and mouth, and looks like a cow's tongue. In two days it will descend to the abdomen. Saang khao [plueak] looks like this: ๐ ๐ ๐. ๐ ๐ ๐.

KPC II; 121.

One type of saang which is white and flat, without pustules, is called saang khao plueak.

KPC III, 5; 163, 164.

Saang khao plueak has five major pustules and 50 followers. There is one major pustule at the crown of the head, one in the middle of the back, one in the abdomen, one under each arm, and ten followers with each. This saang results from internal heat [one of the body elements]. Before the saang appears, the baby's mouth feels hot, and it has diarrhoea. Then the saang develops, the child has cold hands and feet, and is ill for the first time [see pp. 36, 37; cf. p. 39]. The major pustule in the crown of the head then moves down to the abdomen, making two pustules together, and this makes the baby ill again. This is repeated when the pustule in the middle of the back moves to the abdomen, then those from the underarms, by which time five pustules have erupted in a row from beneath the navel to the pubic area, and the 50 followers have spread all over the body. Sometimes, slightly itchy spots resembling rice-husks appear, which could be mistaken for measles [see p. 37, note 3]. Sometimes they look like red and black birth-marks. Sometimes there are weals, as if the baby has been beaten with a rattan; sometimes there are red, black or blue marks, as if the child has been slapped with the fingers. The baby vomits, has diarrhoea, flatulence, clenched hands and feet, a stiff tongue and chin, and cannot suck at the breast. This continues for three to seven days, then the symptoms go.

1 KPC III, 5; 163, and V; 194 state that saang khao plueak is the minor saang of saang kho; KPC IV; 187 says it is the minor saang of both saang kho and saang chaang; but this passage does not specify any relationships, it simply lists nine kinds of saang: faai, khum, khao plueak or khoao (see note 3 below), khwaat, buu buu buffalo, maa maa horse, chaang, chom, and faai (which makes eight only).

2 Misprint of 'hong' หมู for 'thong' หมู.

3 As each kind of saang mentioned in this section is illustrated, and no other drawing is made to depict saang khao plueak, presumably saangkhao plueak and saang khoao หมู are the same. However, the 1871 text has saang nam for saang khoao.
Saang kho and saang chaang are the birth saang, respectively, of infants born on a Thursday or Friday. Saang khoao plueak is the minor saang. Whether the child is born at dawn or late in the evening [see p. 66, note 3], one month and fifteen days after the mother has left the fire, the major saang erupts at the throat and tongue, as white as tin. In two or three days time, it is as yellow as corn. If medicine is smeared on the throat with the finger, this will subside for a day or two, then it will start again around the eyes and on the backs of the thighs. It is flat, and red or blue, and causes severe diarrhoea. When the diarrhoea has ceased, spots erupt all over the body, making the body as red as a ripe tamlueng fruit, like measles. Sometimes there are marks the size of sabaa seed or Chinese date leaves [see p. 50, note 1], which spread out level with the flesh, and are blue, black or red, as if the child has been beaten with a rattan, or slapped with the hand. This is very bad. It is as poisonous as typhoid fever. If an inexperienced doctor treats this condition, it is just the same as killing the baby.

The female variety of saang khoao plueak starts with spots that look like sorghum or millet all over the body. The pustules are red. When they are ripe, they break, like rok klaak, and phanranai, causing a sore throat, and the baby cannot eat or sleep, and has flatulence. This saang starts in the large intestine, then appears at the root of the tongue, and later erupts all over the body.

Saang Kraduuk

The Minor Saang of Children Born on Friday

When it starts, pustules of saang kraduuk last for two days, then withdraw into the abdomen, causing diarrhoea, and cold hands and feet. The major pustule then reappears at the root of the tongue. It is very hard, like a corn on the foot, for example. If the doctor recognizes this, he should break it first, before applying medicine, and then it will go.

1 tamlueng Coccinia indica W. et A. Cucurbitaceae. (VJ)
2 sabaa Entada phaseoloides (scandens) Merr. Mimosaceae. (VJ) Elephant creeper; St. Thomas's bean. The seeds are very large, hard, brown, and flat. Me, pp. 837, 838.
3 rok klaak a kind of eczema.
4 phanranai a skin condition which results in the outer skin flaking off.
5 See also saang khoao plueak, p. 74, note 1. Here, it is not stated which kind of birth saang saang kraduuk is paired with, but it is clearly stated on KPC V; 194.
Saang krāduuk is the minor saang of saang chāang.\textsuperscript{1}

**Saang Naangrin**

The Minor Saang of Children Born on Saturday

KPC III, 7; 176, 177.

Saang naangrin has four major pustules and 56 followers. It starts after the baby leaves the fire, either with saang chōn or after it has finished. There is one pustule with eight followers at the navel; one, with twelve followers at the chest [this should read 'throat', see below]; one pustule with sixteen followers on the tongue, which spread out down the throat as far as the chest; and one at the chest, with 20 followers, and these spread out over the pubic area, the ileum, and the colon. When the baby is three months old, the major pustule in the throat makes the throat dry, the tongue white, and the infant cannot suck at the breast. At six months of age, three followers at the uvula give the baby a severe cough. Then all the small pustules spread out and combine with the major pustule in the chest, with the result that the baby is thirsty, has a dry throat, is listless, and keeps closing its eyes. The followers in the chest spread to the sides of the body and the edge of the liver, and combine with the major pustule of saang at the navel, causing the child to pass mucus and fresh blood; sometimes mucus and purulent blood; and the liver hangs down to the edge of the rib-cage (see p. 49, note 1). There is fever at regular intervals, and the eyes are reddened with blood vessels. The baby will die if given the wrong medicine, but will recover with the right treatment. When the child is a year and six months old, the saang in the bladder [not previously mentioned] causes difficulty in micturition, sometimes the urine is like rice water or like chalky water or pus. This is painful, and the baby is restless and tosses about, and has incontinence of the bladder. Sometimes there is bruising at the tip of the penis, sometimes bruising and pus in the pubic area, and the pus becomes as hard as a cyst. This results from saang naangrin, and the child will die in three years time. If the baby has reached a year and seven months of age, it will survive, because saang naangrin will have started after the saang chōn has finished, and three years later the child will be four years and seven months old, by which time the recognized period for this combination of birth saang and minor saang will have elapsed.\textsuperscript{2}

\footnotesize{1 For the complete list of related birth and minor forms of saang given on KPC V; 194, see p. 67.}

\footnotesize{2 This hardly ties in with the 68 months and ten days given in Table I, p. 67, nor with the 48 months and ten days normal duration of saang chōn, if the authors are speaking of saang naangrin coming after saang chōn is finished.}
time for both saang chon and saang naangrin has passed, saang chon might affect a child until it is seven years old, after which time it will be saved from death. Saang chon does not only affect children born on Saturday; it might occur with or follow any other saang. Saang naangrin likewise; and its treatment is in accordance with the previously existing birth saang.

KPC IV; 193.

The pustules of saang naangrin are white, like crystal clear water. When it enters the abdomen, it causes diarrhoea like rice water.

Saang Haeng,¹ a Combination of Saang Chon and Saang Phloeng

KPC IV; 189.

Saang chon and saang phloeng are similar. They affect babies born on Saturday and Sunday. Sometimes an infant born on Sunday has saang phloeng as its birth saang, and saang chon as its minor saang; sometimes a child born on Saturday has saang chon as birth saang, and saang phloeng as minor saang. So both of these kinds of saang can be either birth saang or minor saang. When they occur together, the disease is called saang chon saang phloeng [on KPC IV; 190 this is called saang haeng]. It differs from saang phloeng in the following respects: the major pustules of saang chon erupt in the middle of the uvula, resembling rice flakes. It produces a dry throat, then the baby cannot eat, has blurred vision, and the eyes become as yellow as candle smoke [flame]. Subsequently, the child is listless and steamy-eyed, and the body is hot. If effective medicine is given, the symptoms will subside for four or five months, then they will recur, and the child will have a craving for chillies, and fishy and meaty food. When this exacerbation occurs, diarrhoea develops, with blood and mucus, and the symptoms keep changing. The baby becomes so emaciated that the shinbones protrude, and feel as rough and sharp as the skin of a stingray. The eyes develop malet kadue,² then these become red, and change to to kon hoi,³ which break in four or five days. Then the baby dies.

¹ saang haeng มะแง่ is coeliac disease, and is treated with bile salts. (DT)

² malet kadue มะเร็งตาผิว, a misprint. The 1871 text has klet kradee กระดี, the scales of a fish, Trichopodus trichopterus or T. maculatus. Mo, p. 28. Alternatively, Trichogaster trichopterus (Pallas). (VJ) This suggests a scaly lesion of the eye.

³ to kon hoi โรคยุบตา is a type of glaucoma. (PT) There are many kinds of to, including cataract, corneal opacities, and corneal ulcers, pterygium, and other eye diseases. See p. 245.
La and La-ong

General

KPC II; 103, 104.

There are nine kinds of la which occur in association with birth saang. If a doctor is to treat birth saang, he should examine the mouth and tongue in order to diagnose which kind of la the baby has. The pustules of la may be yellow, red, as black as ink, leaf-green with visible blood vessels, as dark as sapphires, the reddish-purple colour of the almost ripe black plum, indigo coloured or white. In treating la, the type of saang affecting the child should be taken into consideration. La is very bad if it makes the inside of the mouth red, and medicine should be administered with care. If the la gives a yellow coating to the tongue, it is called la-ong phrabaat. If the la is corn coloured, it is called saeng phraohan, and with this, the baby has diarrhoea and cannot sleep...

If the pustules are red, this saang is called utthayakaan [cf. p. 80]. At first, the eyes are yellow, the baby clenches its hands and feet, kicks in its sleep, and neither the bowels nor bladder function...

If the pustules come first, it is called foi fai. After three days, the back hurts, and the rest of the body hurts, and breathing becomes difficult...

The leaf-green pustules with tiny blood vessels in them, by the fifth day cause flatulence, diarrhoea, and dry lips, and make the baby cry in a dry husky voice...

If the pustules are as dark as sapphires, it is called ninlakaan. After a day, this changes to ninlafai, then, after two days, to ninlaphet. It is the same on both sides of the mouth. If ninlakaan lasts three days, half the body is paralysed, and the baby cannot cry.

La and la-ong are evidently symptoms of saang, usually occurring in the mouth and throat, but sometimes in other parts of the gastro-intestinal tract. The differences between the two are not made clear in the text; it is almost as if the details of these symptoms were common knowledge. MD, p. 447, explains that la refers to pustules, or small, inflamed elevations in the mouth, either convex or flat, of which there are various kinds, of different colours. It frequently occurs in children suffering from saang. La-ong refers to vapours emanating from the abdomen causing a film or membrane to adhere to the areas of the mouth. The text seems to imply that it is the film or membrane rather than the vapour that is la-ong. This is borne out by Mo's interpretation of la-ong to mean 'dust', 'powder' or 'small particles' (p. 736). Another meaning of la-ong is 'fur on the tongue'. So Sethaputra, p. 815.

1 Only eight kinds are given in the following list. The 1871 text is the same.
2 See p. 38, note 11.
3 foi fai น้ําเหว่  shower of fire.
4 ninlafai นิวลาไฟ fire sapphire.
5 ninlaphet นิวลาเพท diamond sapphire.
The La and La-ong of Children Born on Sunday

KPC III, 1; 141.

Description of saang kraai, which is the minor saang of saang phloeng, together with a description of the la called la utthayakaan of the days [of the week], and the la-ong phrabaat called la-ong pleo fai faa. La utthayakaan is explained with saang daeng in Part 3. La-ong pleo fai faa is described with saang chon in Part 7. Here, in Part 1, on saang phloeng, we will discuss only saang kraai [see p. 70]. These three—the minor saang, la, and la-ong—whenever they occur together with or following saang phloeng, might continue until the child is twelve years of age.

KPC VI; 223, 224.

In the main body of KPC it says, concerning the child born on Sunday, that saang phloeng is the birth saang, saang kraai is the minor saang, and la utthayakaan is the la. Here, we say, concerning taan chon,1 that, with saang phloeng, sometimes saang kranae chon occurs,2 sometimes saang kratang chon; that not only la utthayakaan occurs with saang phloeng, but that la ninlakaan, la saeng phloeng, and la ninlaphloeng chon sometimes accompany it. Similarly, not only is the la-ong phrabaat associated with saang phloeng la-ong pleo fai faa, but also la-ong kaeo morakot, la-ong phloeng, and la-ong thap thim sometimes occur with it. This is the way these diseases are manifested. If the doctor is not fully aware of what is stated in KPC, these diseases will kill many people. That is why the masters call this disease taan chon, because this saang is changeable. It is so strange that it is beyond description. Here, we have explained only one kind of saang, but doctors should realize that all seven kinds of [birth] saang behave similarly.3

The La and La-ong of Children Born on Monday

KPC III, 2; 145, 146.

Here the masters discuss la saeng phrachan, which is associated with saang nam.

La saeng phrachan may occur with other kinds of birth saang as well as with saang nam. It is explained in Part 6 [see p. 82]. Here, in Part 2, only prescriptions for the treatment of this form of la are given.

1 This passage is taken from a section of Book VI where taan chon is discussed. Taan chon is the name given to a group of parasitic diseases said to follow birth saang and its associated diseases (see p. 28).

2 These same words are used in the 1871 text. The word chon ကြောင် used here might be a misprint for chon ကြောင် meaning 'moveable', which we have previously taken to imply a possible complication of a disease, and, in the case of the saang which might accompany or follow birth saang, we have called 'minor'. The statement would then read 'sometimes saang kranae is the minor saang, sometimes saang kratang ... la ninlaphloeng sometimes accompany it'. See p. 41, note 2.

3 That is, each kind of birth saang may be complicated by more than one kind of minor saang, la, and la-ong.
Here we speak of the *la-ong phrabaat* called *la-ong kaeo witchian*, [see p. 50, note 7] which comes from *saang nam*; for the information of doctors.

Examine the palate, tongue, and inside the mouth on both sides. If it looks like the shiny white surface of coconut meat before it is touched [see p. 251, the pearly appearance of *la*], it is called *la-ong phrabaat*. It results from *la saeng phrachan*, and causes continuous diarrhoea which prevents the baby from sleeping. At the same time, there is flatulence, as if [the abdominal contents] are both rising and falling. Doctors will find this condition difficult to cure. If it resembles coconut cream, it is called *la-ong kaeo witchian* and comes from *saang nam*. This affects the whole mouth, making it impossible for the child to eat or drink. If the doctor gives the right treatment, this condition will go, and never return, but it will continue if the medicine is not appropriate. If medicine is applied to the throat in the evening, the *la-ong* might go, only to reappear in the morning; or if treated in the morning, it might go, then reappear in the evening. The baby will then feel hot, and be unable to sleep. It will start in its sleep, and sometimes have diarrhoea; or it will have flatulence and constipation, and the eyes will roll back; then the child will have a constant cough. This *la-ong kaeo witchian* is a very serious condition in children. It will be impossible to cure if the doctor gives medicine which is not effective within three days. Doctors should be aware that the throat paint should be applied at sunset, and then the *la-ong* will go. It should never be done in the morning for any kind of *saang*, *la* or *la-ong*.

The *La* and *La-ong* of Children Born on Tuesday

[This *la-ong* has already been described with *saang daeng* in three separate accounts on pp. 52, 53 and 54.]

*La utthayakaan* results from *saang daeng*.

The symptoms are convulsions, with the hands and feet clenched; kicking and crying; and neither the bowels nor the bladder function...

1 The cream squeezed from shredded coconut meat, which is oilier than ordinary coconut meat.

2 An indication that a cure for this condition may be known. However, the statement below, that it will be impossible to cure if the doctor gives medicine which is not effective in three days, complicates the problem. Whether a cure is effected, or a mild form of the disease clears up naturally in three days cannot be known without pathological tests. This is one of the main reasons why empirical treatment, as described in this text, cannot be evaluated accurately until extensive field work has been done by suitably qualified people.
La-ong kaoe morakot is very serious. The face is blue and black; the baby has convulsions, with the hands and feet clenched; the mouth is open, but there is no sound; the tongue and chin are stiff. The child will certainly die if the treatment is unsuccessful.¹

The La and La-ong of Children Born on Wednesday

KPC III, 4; 160, 161.

The la of saang sako is called nerakanthee or ninlaphloeng.² At first, it looks as green as a leaf, then blood vessels can be seen. This passes, and in five days the baby will have diarrhoea, and very dry lips as well as a dry throat...

La-ong saeng phloeng results from saang sako. At first, the inside of the cheeks is white for a day and a night, then it turns as green as a leaf. The baby next becomes listless and steamy-eyed, and has diarrhoea with leaf-green faeces, because the la-ong has moved down to the ileum and the neck of the gall bladder...

If the medicine [recommended] is not effective, the doctor will be sorely pressed to cure this, because the whiteness of the tongue will extend to the base of uvula, causing emaciation, and the child's body will become as yellow as if painted with turmeric. When the baby is going to die, its body changes from yellow to white.

The La and La-ong of Children Born on Thursday

KPC III, 5; 165.

La ninlakaan paralyses half the body. The baby cannot cry. If this condition lasts more than a day or two, it changes to mahaaninlakaan, which is very serious. The whole body becomes blue.

KPC III, 5; 166.

The la-ong phrabaat called (la-ong) mahaamek results from saang kho. It starts as a bruise, the [purple] colour of bruised tabaek flowers.³ This causes severe poisoning, a blue face, convulsions, with the hands and feet clenched and the eyes rolling back, and neither the bowels nor the bladder function.

¹ The specific treatment in this case is clear. See prescription example 4, p. 234.
² nerakanthee เนรามัน cf. p. 69.
³ tabaek ลด peuvent Lagerstroemia floribunda Jack. Lythraceae. (VJ)
The La and La-ong of Children Born on Friday

**KPC III, 6; 170.**

*La saeng phrachan* comes from *saang chaang* (and *saang nam*). It starts with yellow pustules the size of kernels of corn on either side of the jaw, giving the baby diarrhoea, insomnia, a stiff tongue and chin, and the child produces no tears when it cries, its forehead is pinched, and its body is cold.

The La and La-ong of Children Born on Saturday

**KPC III, 7; 177.**

*La mahaaninlakaan* starts with black pustules like sapphires. After a day, they change to *saeng phloeng*, and after two days, change to *salakphet*, on both sides. If a child has *la mahaaninlakaan*, it develops hemiplegia, and cannot cry.

**KPC III, 7; 179.**

*La-ong phrabaat pleo faai faa* starts with vermilion pustules, not unlike the colour of the leaf tips of young shoots of the pomegranate tree. This makes the child ill; its tongue and chin are stiff, it cannot sleep, has convulsions, with clenched hands and feet, and the body feels very hot. If it cannot be treated in time, that is, between morning and midday, the child will die. Do not treat it with medicine that is hot, or medicine containing alcoholic liquor, oil or vinegar. Use cool and fragrant, astringent, and bitter tasting medicine, then the child will survive. The same applies to all seven kinds of *la-ong phrabaat*.

**Lom**

**Lom Sunthonwaat**

The Lom of Children Born on Wednesday

**KPC III, 4; 161.**

*Lom sunthonwaat* develops from *saang sako*. It starts in the vicinity of the navel and lower abdomen, causing stomach ache and flatulence. Then the child has severe diarrhoea, sleeps continually, has convulsions, with the hands and feet clenched, has abdominal distension, and its face is blue.

1 *salakphet*  ลักษันภท  diamond.

2 See the medicinal tastes, pp.8, 9. It is not clear whether 'hot' here refers to one of the three principal tastes, hot, cool, and mild, or the temperature, since the word 'rot' (taste) is not used in this sentence. It is more likely to refer to the hot taste, especially in this context, and also because Thais are not in the habit of eating hot food, they usually let it cool a little.

3 In this context, meaning disease. See p. 56, note 1. **KPC** does not mention the *lom* of Sunday or Monday (see p. 69, notes 1, 2), and some of the description of *lom utthonwaat*, the *lom* of *saang daeng* is omitted from Book III because it has already been mentioned in Book II, p. 109, see pp. 56, 57.

4 See p. 37.
Lom Hatsakhinee

The Lom of Children Born on Thursday

KPC  III, 5; 167.

*Lom hatsakhinee,* which results from *saang kho,* starts with convulsions, the hands and feet clenched, the back stiff; coldness in the extremities; starting during sleep; the hair standing on end from fright; and with sweating; and flatulence. If it happens in the morning, beware, the baby might die at midday. If it happens between noon and night, the child will not die. Do not bathe the baby in the morning or evening. Do not give medicine containing alcoholic liquor. This *lom* of *saang kho* begins from the third month of the mother's pregnancy, thus it affects the infant. It responds to medicine which is cool and mild [see p. 82, note 2].

Lom Arit

The Lom of Children Born on Friday

KPC  III, 6; 171.

*Lom arit* originates from *saang chaang.* At first, it makes the neck blue, and causes convulsions, with the hands and feet clenched. Sometimes the convulsions affect only part of the left side, sometimes part of the right side; sometimes [the whole of] one side; so that the chin stiffens, and the baby cannot cry, and dribbles; the eyes roll, the eyebrows twitch, and mucus in the throat makes the child make a sound like *krok-krok.* When the baby dies, its body is as yellow as if it had been sprayed with fresh turmeric water, because this *lom* comes from *la-ong phrabaat kaanlasingkhlee.*

Lom Kumphan, Lom Baatthayak, and Lom Champraap

The Lom of Children Born on Saturday

KPC  III, 7; 180.

*Lom kumphan* and *lom baatthayak* are described here together. When these two [diseases] start, the eyes roll back, the face is blue, the child has convulsions, the hands and feet are clenched, the back is arched, and the baby grinds its teeth. This happens when the child is poisoned in some way, and these *lom* seize the opportunity to attack. It results from an injury due to an abrasion or cut, or from

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1 *kaanlasingkhlee* the name of a disease characterised by blackness; plague. *Mc,* p. 99.
3 These two conditions are not distinguished in this text. *Mc,* p. 113 says *kumphan* is a class of demons, giants or goblins, and *kumphanthayak* is an ancient name for a condition characterized by convulsions. There are three misprints in this passage in the 1961 edition: *'sae' แส' for 'lae' แล' ; *'duu' ดู' for 'khuu' ขู' ; and *'khom' ฆม' for 'lom' ลอม' .
a thorn or splinter anywhere in the body. This causes khai phikhaat, and then lom kumphan, lom baatthayak, and lom champraap quickly follow.

KPC III, 7; 182.

Lom champraap is extremely bad. It is as poisonous as snake venom. At first the baby is restless, and tosses and turns, then it has convulsions, arching the back from the hips, and the body is cold and covered with goose-flesh. If the doctor does not know how to cure this, the child is sure to die, and blood will exude from every pore...

Lom champraap is very difficult to cure. The doctor should make sure of his diagnosis by observing the symptoms, then give medicine. The symptoms are the same as puang ngu hao, but the latter causes diarrhoea and vomiting first. Then the body becomes red, and is covered in goose-flesh, and the child gets restless and tosses and turns. Lom champraap is just the same as this, but the body then turns black. The sign of death is the same. The doctor should be sure about it. It is the same in both children and adults.

KPC V; 193, 194.

When a child no longer has birth saang or minor saang, it will have taan chon [parasites, see pp. 28, 611. To understand when birth saang and minor saang are finished, the inexperienced doctor should bear in mind what the masters have explained.

1 Clear recognition of the immediate cause of tetanus.
2 khai phikhaat literally, a fever or disease which kills.
3 puang ngu hao means 'cobra disease'. The symptoms are like cholera, but milder. (PT) puang refers to a disease with symptoms of diarrhoea and vomiting. PPPT, p. 194. puang diseases incident to indigestion; cholera. Me, p. 513.
Summary

Table 3 shows the kinds of la, la-ong, and lom which tend to develop with each form of birth saang.

TABLE 3

<table>
<thead>
<tr>
<th>Birth saang</th>
<th>la</th>
<th>la-ong</th>
<th>lom&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>fai (phloeng)</td>
<td>utthayakaan</td>
<td>pleo fai faa</td>
<td>---</td>
</tr>
<tr>
<td>nam</td>
<td>saeng phrachan</td>
<td>kaeo witchian</td>
<td>---</td>
</tr>
<tr>
<td>daeng</td>
<td>utthayakaan</td>
<td>kaeo morakot</td>
<td>utthonwaat</td>
</tr>
<tr>
<td>sako (niaraphloeng)</td>
<td>niarakanthee</td>
<td>saeng phloeng</td>
<td>sunthonwaat</td>
</tr>
<tr>
<td>wua (kho)</td>
<td>ninlakaan</td>
<td>maha mek</td>
<td>hatsakhinee</td>
</tr>
<tr>
<td>chaang</td>
<td>saeng phrachan</td>
<td>---</td>
<td>arit</td>
</tr>
<tr>
<td>khamooi (ohon)</td>
<td>maha ninlakaan</td>
<td>pleo fai faa thap thim</td>
<td>kumphan baatthayak champraap</td>
</tr>
</tbody>
</table>

1 KFC III, 1;138; III, 2;142; III, 3;148; III, 4;157; III, 5;162; III, 6;168; III, 7;172.

2 Also called nerakanthee or ninlaploeng. KFC III, 4;160.
CHAPTER 7

CONTRASTING DIAGNOSTIC PATTERNS

In the previous three chapters, we have selected from KPC only those passages specifically referring to birth saang or its complications - minor saang, la, la-ong, and the lom of birth saang - and rearranged the order of their presentation so as to group together sections of similar subject matter. We have placed the material, as far as possible in chronological order of the development of symptoms in the patient, and thus we have tried to give a clearer picture of these diseases than the text itself reveals in its present form of compilation. As we have already mentioned in Chapter 3, KPC is a compilation of several texts of that name, derived from the same source, with the addition of extracts, from other texts, of pertinent material. It is anything but straightforward. But, even after the descriptions of birth saang and its associated diseases have been separated from the rest of the text and rearranged, we do not obtain a clear picture. There are several reasons for this.

First, there is the lack of consistency in the differentiation of diseases, one from another. This is found in the contrasting descriptions of the names and symptoms, as well as the numbers of varieties of birth saang (see pp. 27, 28, 37, 38, and 74, note 1). It is also found in the briefness of some sections, for example, KPC II; 1; 85, 86; 91, 92 (see pp. 38; 71; 74, note 1); compared to the wordiness of others, for example, KPC II; 99 ff. (see pp. 44-66). It is again evident in the differences in the symptoms given in detail in some of the longer passages concerning the same disease, for instance, saang daeng, KPC II; 99-101, and II; 109, 110 (see pp. 51-56); and in the similarities of symptoms
in different diseases. For example, without going into any details about symptoms common to many of these diseases, when we compare the combined effects of the birth saang and the minor saang of any one birth day with those of another, it is difficult to distinguish them, except for the degree of severity of some forms. Finally, we are told of the interchangeability of saang chon and saang phloeng as birth and minor saang, KPC IV; 189 (see p. 77). Moreover we learn that saang chon or saang naangrin might occur with or follow any other saang, KPC III, 7; 177 (see p. 77), and that any number of variations of minor saang, la, and la-ong can be associated with any kind of birth saang, KPC VI; 223, 224 (see p. 79).

The second reason why we cannot get a clear picture of these diseases relates to the inadequacies of the system of classification of diseases adopted by the authors. And this is the cause of a great deal of the inconsistency shown above. It is painfully clear that an attempt has been made to classify children's diseases in a scientific manner, and to formulate laws from the conclusions thus drawn, but that the system devised conflicted with the practical experience of the physicians.

All classificatory systems are arbitrary, depending for their structure and content on what is required of the known facts. Observations of certain phenomena need to have been made, and a body of knowledge collected before classification can be attempted. Once the criteria for each class have been decided upon, information obtained later is then fitted into appropriate categories, and if this proves impossible, the whole system requires re-assessment. The results may be affected by the method used - whether classification is started from an assumption of everything under consideration belonging to one class, which is then subdivided, pyramid fashion,
from the top down to the bottom into ever-increasing numbers
of lesser, more discrete sub-categories; or the reverse, building
up from the individual item to larger and fewer groups. In
actual practice, during the early stages, it is often fruitful
to manipulate both methods, working from both the top and the
bottom of the pyramid, in order to arrive at a satisfactory model.

In the case of the classification of children's diseases
described in KPC, detailed observations have been made, probably
from experience over a very long period of time, so that most of
the individual symptoms found repeatedly in the children observed,
and, in some cases, their duration, and occurrences of exacerbations,
have been recorded. No doubt, treatment was experimented with
even before diagnostic procedures were conceived.

The resulting system of classification of all diseases of
children mentioned in KPC might be demonstrated in the following
table.

Leaving aside parasitic diseases and the other, usually
uncomplicated illnesses not within the scope of this study, it can
be seen that la, la-ong, and lom symptoms associated with birth saang
have been grouped into manageable categories from the point of view
of the diagnostician. La and la-ong are confined to mouth lesions,
and the particular lom diseases under discussion, which all produce
convulsions, probably involve the central nervous system: one is
identified as tetanus, and the rest are similar. In those cases where
the tongue and chin are stiff, tetanus, is suspected. In any case,

1 Chapters 4, 5, and 6 were shown to a number of Western
trained medical practitioners, both European and Thai,
including a Thai doctor who is familiar with Thai traditional
medicine, with a request for their comments. The unanimous
response was that these diseases, as described in KPC, cannot
be explained in Western medical terms.
### TABLE 4
**Saang (Children's diseases)**

<table>
<thead>
<tr>
<th>Birth saang</th>
<th>Parasitic diseases</th>
<th>Other illnesses (usually minor)</th>
<th>Diseases of the elements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80 kinds of parasites</td>
<td>taan chon of each of the seven kinds of birth saang</td>
<td>For example: diarrhoea taan saang vomiting flatulence hiccoughs illness caused by the mother's breast milk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minor saang</th>
<th>Abnormalities of fire wind water earth</th>
</tr>
</thead>
<tbody>
<tr>
<td>la</td>
<td></td>
</tr>
<tr>
<td>la-ong</td>
<td></td>
</tr>
<tr>
<td>lom</td>
<td></td>
</tr>
</tbody>
</table>

- **Sunday** phloeng (fai)
- **Monday** nam
- **Tuesday** daeng
- **Wednesday** sako
- **Thursday** kho (wua)
- **Friday** chaang
- **Saturday** chon (khamooi)

- **kraai**
- **faai**
- **kranae**
- **kratang**
- **khao** plueak
- **kraduuk**
- **naangrin**

- **utthaya-kaan**
- **saeng** phrachan
- **utthaya-kaan**
- **niara-kanthee** (niara-phloeng)
- **ninla-kaan**
- **saeng** phrachan
- **maha nin-lakaan**

- **pleo fai**
- **faa**
- **kaeo**
- **witchian**
- **kao**
- **morakot**
- **phloeng**
- **maha**
- **mek**
- **pleo fai** faa
- **thap thim**

- **pleo fai waat**
- **sunthon-waat**
- **hatea-khinee**
- **arit**
- **kumphai**
- **baatthayak**
- **champaap**
these diseases or syndromes can be identified as being different from, for example, measles and smallpox.

As far as birth saang and minor saang are concerned, there does not seem to have been any attempt made to isolate small groups of symptoms which occur frequently together, such as diarrhoea, vomiting, and thirst, symptoms confined to a particular anatomical site, or those which tend to develop only at certain times, such as khamao, which comes only during early infancy, and is possibly associated with the birth process or the conditions imposed during the period by the fire. Rather, we find the assumption that all children are born with a congenital disease, that it starts with an abscess in the foetal abdomen at three months, and that it can be diagnosed according to the mother's symptoms at that time, which indicate the weekday of conception. From this, the weekday of birth is presumed to be the same. Most subsequent illnesses which affect the child are then seen to be symptoms or exacerbations of symptoms of this same birth saang.

The classification of children's diseases, on the whole, excluding parasites, la, la-ong, and lom symptoms - which are, nevertheless, tied in with birth saang and its complicating minor saang - and abnormalities of the elements, does not go far enough to be of significant use to the diagnostician. The concept of birth saang might easily have preceded the concept of classifying diseases beyond a simple calendrical relationship to the days of the week. Even so, the arbitrariness of the seven day week invalidates such a system of classification, hence the need for the alternative diagnoses satisfied by the remarks above on the interchangeability of various diseases (see p. 87). If the classification started with diseases of children
conceived and therefore born on particular days of the week, it
takes only three steps, through birth \textit{saang} in general, then
children's diseases in general, to the entire class of human
diseases. Similarly, if these physicians thought in terms of
classifying human diseases, they did not see fit to pursue the
subject of children's diseases beyond separating them from adults'
diseases, distinguishing parasitic diseases, then grouping sets of
symptoms, with a few variations, mostly of degree of severity of
particular conditions, in categories related to the days of the week.

It may be asked how a distinction could be made between
children's and adult's diseases. To which, it would not be
unreasonable to suggest that most of the adults must have passed
through a period of exposure to the diseases endemic to the area,
and the survivors would be immune. Thus what are seen to be children's
diseases in Thailand, might easily be considered general diseases to
people not made immune by early contact. Typhoid and smallpox are
eamples.

The pattern of diagnosis of children's diseases discerned in
the bulk of the relevant material in \textit{KPC} is thus found to be of a
very elementary nature. Diagnosis is made on the basis of the symptoms
of the mother when she is three months pregnant, which point to a
particular form of birth \textit{saang}; and this, in turn, indicates the day
of conception, and predicts the same week-day as the day of birth, by
which the disease is named.

Two versions of the mothers' symptoms are given. While there
are some differences in these, they do have a great deal in common,
and can be seen to have been derived from the same source. When these
are examined closely, it is found that most of the mothers' symptoms
are typical of the common disorders of pregnancy known to Western
medicine - morning sickness, fluid retention, and so on. Some suggest infections, but these are not identifiable without further investigation.

Apart from offering the possibility of alternative diagnosis (see p. 87), the authors show a certain ambivalence in their approach to the diagnosis of birth saaŋ. In opposition to the theory of the type of birth saaŋ affecting a baby being related to the day of conception, the day of birth, and the mother's symptoms when she is three months pregnant, they repeatedly warn the doctor to be quite certain of his diagnosis of one or another kind of birth saaŋ or minor saaŋ, in the context of symptoms observed long after the child is born (see for example pp. 60-62; 72; 73).

These remarks could be interpreted to refer only to a particular group of symptoms within the general description of one of the large collections of symptoms and syndromes defined as a type of birth saaŋ or minor saaŋ. And this is very pertinent, as will be appreciated when we examine the prescriptions for medicine in the next chapters, because treatment tends to be symptomatic.

In contrast to the above, the symbolic representation of birth saaŋ by means of geometrically symmetrical drawings of the appearance of some of the lesions, and mathematically precise numbers of pustules or abscesses is significantly important to the authors, and cannot be overlooked. Once again, there is a lack of consistency from one version to the next, and sometimes the same illustration is used to depict different diseases. The overall impression is that the degree of severity of the symptoms is matched by the degree of elaboration of the accompanying diagram. Conversely, the number of major pustules seems to be inversely proportional to the severity of the disease. The large number of 'followers' in most cases suggests a
rash or general skin disorder which produces a relatively small number of bigger pustules or abscesses. This pattern has evidently been observed on internal organs also, but the illustrations of these lesions can only be a symbolic demonstration of what might be the case, rather than a diagnostic aid. Nevertheless, the total impression of the symbolic representation of birth saang in all its forms very effectively conveys the message that these diseases are not trivial, and should not be ignored.

Yet a third reason for the lack of clarity in KPC is that there are other ways of diagnosing birth saang, based on distinctly different medical theory. We refer particularly to the theory of the elements expounded in the basic principles of Thai traditional medicine summarized in the Introduction (see pp. 6, ff.). The absence of this theory, except for occasional mention of the elements (see pp. 39, note 5; 47; 61; 74) is glaring. And when we find that - apart from a few short passages inserted, almost out of context, or attached to the end of descriptions of birth saang - most references to this Ayurvedic based theory of the elements are found in Book VI; we conclude that Thai traditional medicine embraces not one, but at least two completely different systems of medical theory.

How does this second, Indian influenced, school of thought interpret children's diseases?

As far as birth saang is concerned, little is said. KPC II; 107 (see p. 47) gives mucus and internal heat as the cause of khamao, and blood and mucus as the cause of internal khamao and saang in a child born on Sunday. KPC IV; 192 includes brief descriptions, from the supplementary texts, of the birth saang of the seven days of the week, in each case, giving the element considered to be the cause: Sunday, internal heat; Monday, water; Tuesday, blood; Wednesday, eating the wrong food, and the element water; Thursday, internal heat;
Friday, wind; and Saturday, wind. Then, on the following page, *saang prathommaakan* is caused by blood. (See pp. 49, 51, 58, 59–61, and 66.) *KPC* II: 114, 115 (see p. 61) mentions the effects of eating food 'which is strange and new to the four elements' contributing to the symptoms of [birth] *saang*. The elements are not discussed in any of the passages on minor *saang*, *la*, *la-ong*, and *lom*, apart from *KPC* III, 5; 163, 164 (see p. 74) which gives internal heat as the cause of *saang khao plueak*; and the use of the name of one of the wind elements, *lom utthangkhamaawat* for the name of a disease otherwise called *lom utthomswaat* (see pp. 56, note 1; 57, note 2).

There are a few other short passages introducing the elements as the cause of *saang*, *taan saang*, *khmao*, or particular kinds of *saang* included in *KPC* II, 1; 85–88 (see pp. 37–39).

In the above examples, we find a pattern of diagnosis which attempts to integrate *Ayurvedic* with indigenous theory.

Otherwise, as might be expected, considering the nature of the theory of the elements, and the causes of disease, birth *saang* has no equivalent in this Indian influenced system of medicine. Some of the miscellaneous passages from other texts, which constitute Book VI, refer to the body elements, but this system does not permit the identification of large numbers of individual diseases. It does the reverse: all diseases are reduced to the effects of an increase or decrease in the quality or an abnormality in one of the *tridosa*, wind, bile, and mucus, and sometimes blood. These represent three of the four main groups of body elements, wind, fire and water. When the element earth becomes involved, the patient's condition is grave.¹

*KPC* VI discusses the breakdown of the *tridosa* and the earth element,

¹ Mulholland, *SEAR*, pp. 30–33.
leading to death.

Whereas the theory of diagnosis discussed on pp. 86-92 relates all diseases of children to the day of birth, the theory, based on Ayurveda, in its strictest form, relates all diseases of children to the birth element. The following quotations explain this method of diagnosis of children's diseases.

KFC VI; 219-222.

... When a life has been conceived in the mother's womb, the element appropriate to the season of conception is the birth element [literally, the element of that child],

If a woman becomes pregnant in the 5th, 6th or 7th month, the baby has the characteristics of the element fire. When the foetus has the five branches (see p. 31, note 21 and the 32 parts complete, the element fire is the birth element which combines with the mother's elements.

If a woman becomes pregnant in the 8th, 9th or 10th month... the element wind is the birth element...

If a woman becomes pregnant in the 11th, 12th or 1st month... the element water is the birth element...

If a woman becomes pregnant in the 2nd, 3rd or 4th month... the element earth is the birth element, which combines with the mother's elements. Finally, whichever season it is, and whichever is the birth element, this season and this element will be the primary causes of disease of that child up to the time of birth, and from birth up to five or six years of age. Then, at five or six years, when taan saang is finished, taan chion occurs...

Symptoms of the abnormal fire element: the baby has flatulence, distension of the abdomen, nausea, difficulty in breathing, constriction in the chest, swollen hands and feet, and constant cough. If it cannot be cured, the child will die in eight days...

Symptoms of the abnormal wind element: deafness, offensive discharge from the ears, blurred vision. When pressure is applied to the inner corner of the eye, the patient cannot see any light. Muscular pains in the hands, feet, and legs, like an adult, causing cramps and backache; and bruises all over the body, giving the appearance of abscesses in the tendons. Vomiting, sometimes dry retching,

1 The first month, according to the Thai calendar, begins about December. New Year starts in mid-April.

2 The substantial parts - 20 elements of earth, and twelve of water.
but the baby still has gastric pain, flatulence, vomiting, and so on, even though it does not eat. This is because of the disorders of the element wind...

Symptoms of the abnormal water element: diarrhoea, epigastric pain, cold hands and feet; the intestines coil up tightly into a lump in the abdomen; sometimes constipation; difficulty in micturition; discomfort in the pubic area; sometimes the child passes mucus and blood in the stools; colic or a stabbing pain around the sides. This occurs on the left side in a female, and the right side in a male. It is very difficult to cure...

Symptoms of the abnormal earth element: abdominal pain, flatulence, the child cannot eat, distension of the abdomen, like an adult with ritseeduang, thin and yellow, backache. This may change to ongkhasut, causing rectal and urethral bleeding with pus. If it does not respond to treatment within five days, the baby will die.

There is no place here for birth saang, minor saang, la, la-ong, and the lom associated with birth saang. Here we have a pattern of diagnosis of children's diseases rigidly following the Ayurvedic derived system of the elements on which the principles of Thai traditional medicine are based. This is quite unadulterated by any effort to accommodate to the birth saang theory, which must be a very ancient, local system still found to be of value diagnostically after the adoption of Ayurveda. Thus the traditional Thai doctor may follow either system or a combination of the two, in his diagnosis of children's diseases.

But there are still other patterns of thought woven into the text, suggesting different causes of saang.

There are the spirits, whether mae sue, saphan or various kinds of paksee (see pp. 38, 40, and 41); the physical form of the infant, sometimes in association with paksee or the elements (see pp. 39, 40); there are the normal changes which take place in a child's development,

1 ritseeduang ริ่งซีดวัง usually refers to a condition in which lumps occur; for example, haemorrhoids. There are many kinds. Achaw Chalerm Phongsanit, personal communication, Bangkok, 25th September, 1978.

2 ongkhasut องค์กระวูต gonorrhoea.
given as a perfectly straightforward explanation of fact (see p. 36); and a second version of these changes brought about by the weather, in one case, assisted by unfamiliar diet, in another, by two of the *tridosa* (see p. 37); and there is the quality of the mother's breast milk (see pp. 36 and 43).

Concerning the last point, the text has quite a lot to say about the characteristics and character of the nursing mother or wet nurse and their effects on the quality of her milk and consequently, whether the baby will be easy or difficult to rear, that is, whether it will be a healthy or sickly child. (*KPC* I, 3; 71; I, 4; 76-83; II, 1; 86; I, 4; 97). The way the baby is delivered – face up, face down, or on its side – and the amount of the mother's blood swallowed in the process, are also deemed to have a direct effect on how it thrives (*KPC* I, 2; 63, 64).

Traditional Thai paediatrics offers the doctor many diagnostic alternatives. Just as the Thai patient has a wide choice in his selection of a doctor, so has the traditional doctor a wide choice in his method of diagnosis. In *KPC* we find yet another indication of the versatile Thai mind, which shows great tolerance and adaptability to contrasting points of view.

We have now surveyed the patterns of diagnosis of children's diseases. In the next four chapters we will look at the treatment of these diseases.
CHAPTER 8

THE TREATMENT OF CHILDREN'S DISEASES: THE PRESCRIPTIONS FOR MEDICINE

All the treatment of children's diseases recommended in KPC is with medicine, occasionally (in about 25 cases) in conjunction with magical procedures, usually involving the incantation of powerful words which are believed to have a supernormal effect on the patient, and which may have a real psychological effect in promoting the healing process; and massage is mentioned once (KPC III, 7; 182, line 17).

We learn of the use of medicine in the treatment of diseases from the prescriptions in the text. There is no list of drugs, or comment of any kind included elsewhere in KPC to assist the doctor, pharmacist, or student in his understanding of the therapeutic uses of individual medicinal substances, although two other texts Khamphee sappakhun yaa and Khamphee samutthaan winitchai are of help in this regard. Nor are these recipes organized systematically according to their form, content, or purpose, but they are inserted in small or large groups within the body of the text, usually, but not always, following descriptions of the symptoms and diseases to which they apply. Occasionally there is no indication of the condition that a particular preparation is meant to treat. This happens most often with named formulae.

There are about 660 prescriptions taking up half of KPC, not set out in the manner used in Western medicine, but in linear form, without distinction between uses, ingredients, or method of dispensing. There is, however, a general pattern followed in the writing of prescriptions, which usually commence with a title or purpose, or both, followed by a list of ingredients, then the method of dispensing,
and rarely, the dose.

Most of the recipes are of the natural domestic kind, that is to say, collections of plant materials, with animal and mineral substances included from time to time, combined in certain quantities and forms for use in one or more ways to treat one or more, often many, symptoms or diseases, the criteria for each of these factors being experience gained from experimental human use over a long period of time. In other words, the use of medicine is empirical.

There is a small number of prescriptions, no more than 30, inserted throughout the text, and a group of eighteen together in the last Book, Book VI (where there are none of the type mentioned above), which are derived from Ayurvedic medicine. The most obvious point of distinction is the names of the diseases and conditions to be treated, such as abnormalities of the body elements, or fevers resulting from the three seasons. ¹

As well as medicine for infants and young children, there are also nearly 100 preparations for the mother; half of these are for disorders of pregnancy, there are a few to overcome birth difficulties, and some are for the lactating mother. This last group are mainly intended to improve the quality and flow of the breast milk. Some are nipple applications. In each case, the object is to prevent illness in the infant, but the cause of sickness in the baby is not seen as malnutrition because of insufficient milk, or as a transfer of infection from mother to child, but as under-ripe or bad milk.

Apart from the use of magic to ward off the evils of disease, and the efforts made to improve both the quantity and quality of

¹ See Mulholland, SEAR, pp. 29-37.
the mother's milk, in order to avoid sickness in her offspring, preventive medicine is given to infants during their first year of life. A different mixture is advised to be given for each of the first twelve months to prevent the vomiting, and *taan saang* (see pp. 35, note 2; 36) which always occur.

Of the remainder of the prescriptions in *KPC*, almost all are for the treatment of birth *saang* and its associated symptoms and complications such as minor *saang*, *la*, *la-ong*, and *lom*, and parasitic infestations, both internal and external. Repetition of small groups of three or four formulae is occasionally found, as might be expected when several different versions of the same text are brought together in one document.¹

Only about one tenth of the recipes have titles. In some cases, such as *Yaa daeng* (Red medicine),² the names describe the preparation, as in domestic or folk medicine, and in extemporaneously prepared modern Western pharmacy; but more often a grand title in Pāli or Sanskrit is used, such as *Mahaa Khongkhaa* (Great Ganges),³ or *Saeng aathit* (Rays of the sun).⁴ This form is not quite parallel to the Latin names of European medicine which tend to describe the contents in terms designed to preserve professional secrecy, but they create a similar psychological effect of mystery and superior knowledge and power.

Titles are duplicated, such as *Yaa daeng*, above, *KPC* II; 118, and V; 200, used for two distinct prescriptions, and *Benchataan* (Five

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¹ For example, four preparations for *saang fai*, *KPC* II, 107, 108, are repeated, on III, 1; 140; and a group of three for the treatment of *saang daeng*, *KPC* I, 2; 70, 71, is duplicated, on III, 3; 154.

² ยาแดง

³ มหาคงคา

⁴ แสงอาทิตย์
taan), KPC I, 2; 68, and II; 119, used for two medicines which, although not identical, nevertheless could be variations of the same formula.

The title is frequently, but not always accompanied by a statement on the uses of the preparation, and recipes without names usually commence with the words 'yaa kae' (medicine to treat), followed by the names of the diseases and symptoms they are intended for. Seldom do we find a straightforward purpose, such as 'to treat diarrhoea'; it is far more common to find that a formula can be used for a variety of unrecognizable diseases such as one of the seven kinds of birth saang, three or four different kinds of poisoning, such as small-pox and snake-bite, and numerous individual symptoms, both internal and external.

Even so, the prescriptions do tend to be recommended for one or two major general purposes, like poisoning and parasites. Another obvious class includes the seven lom diseases associated with birth saang, responsible for symptoms characteristic of central nervous system involvement, such as convulsions, muscle spasm, and tetanus. Frequently, a particular group of symptoms involving a specific anatomical site, and resulting from the effects of one or more general conditions, such as saang, gives a clear indication of what the medicine is for. The treatment is symptomatic, and whether we know what saang is, or what kind of parasites the child has, or not, the therapeutic use of a preparation is understood when, for example, it is said to be a decoction to treat mucus and blood and prolapse of the rectum, to be taken for the pot belly of taan saang, and taan khamooi (both parasitic diseases), and for purulent serum and

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1 เบญจล้าน taan is a plant name; five kinds of taan are used as ingredients in this recipe. See example 3, pp. 232-234.

2 ยานเหล็ก
mucus and blood in the stools (*KPC* II; 128, line 11).

Standard Western pharmacy textbooks, such as the *British Pharmaceutical Codex*, do not usually suggest the purpose for which a prescription may be intended, but state the therapeutic uses of individual ingredients under separate entries.

Standard Western pharmaceutical formularies classify their prescriptions in alphabetical order, under headings dependent upon their form, such as mixtures, ointments, powders, and eye drops. In *KPC*, such a system does not apply, all forms of preparation are included together, the only divisions being the sections of text to which they are attached and (with exceptions) are related.

Apart from the first three remedies mentioned in *KPC*, which are merely names without ingredients, the form of administration is specified in every case.

The most common preparations are mixtures to be taken; external applications, such as lotions and oils; and paints, both external, and for the mouth and throat. There are also pills and powders, ear and eye drops, eye lotions, poultices, fumigants, snuffs, lozenges, and one example of a medicinal bath, as well as medicine which is sprayed from the mouth on to the patient's body. There are no ointments, and very few oily preparations.

By contrast, extemporaneously prepared infant formulae used in Western medicine also include many creams and ointments, as well as nasal drops, while categories such as poultices, fumigants, snuffs, lozenges (distinct from manufactured cough lozenges), and medicinal baths, sometimes found in old formularies, are now excluded.

A noticeable characteristic of Thai medicinal treatment is the excessively large number of ingredients in the majority of

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1. The term 'mixture' in this context is generally understood to mean a liquid preparation to be taken by mouth.
recipes. In KPC the number of items ranges from one to 68, with an average of around 20. We cannot hope to analyse such a collection in more than a very general way, particularly when the uses of many preparations are far from clear, and cover a wide range of conditions. The term 'universal remedy' is most appropriate for such medicine, and will be used here to indicate a prescription either containing too many ingredients (in particular, over 20), or intended to treat too many unrelated conditions to permit profitable analysis.

Dispensing

The dispensing instructions following the list of ingredients in the majority of prescriptions are almost identical: take equal parts of these \( n \) (number) items, reduce to a powder, prepare a mass using \( x \) (a specified liquid) as excipient, mix with \( y \) (specified diluent). The method of administration is then stated - to be taken, applied, or whatever the case may be - and a repetition of the purpose, or some additional uses, and sometimes a comment on the efficacy of the treatment, completes the details. There are slight variations, for example, the fineness of the powder, and the need for an excipient or a diluent, depend largely on the ingredients, which are usually dried, but might include juices and saps or fresh fruit.

This method of preparing mixtures, applications, eye lotions, and many other forms of medicine is most unusual. Up to the point where a mass is prepared, it is similar to the extemporaneous compounding of pills in Western pharmacy. And, in fact, in most cases this is the procedure adopted in the prescriptions in KPC. The mass is rolled out into a pencil shape, cut into small pieces of equal

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1 Tablets are made in Western medicine, to be dissolved prior to use, but this practice is the exception rather than the rule.
size, and these are rounded to make pills. When the medicine is to be used, a
certain number of the pills are triturated with the specified liquid
vehicle (diluent), thus producing sufficient of the mixture,
application, or other form of medication for a single dose or use.
In this way, medicine can be kept without the deterioration which
occurs with liquid preparations, particularly aqueous compounds.

Pills are not always made from the pencil shaped stick of
medicaments. Sometimes the stick is kept in one piece, and when
required, some powder is obtained by rubbing the tip of the stick
on a rough stone surface. This powder is then used either alone, or
triturated with the liquid vehicle to make a mixture to be taken,
a paste to be used as a throat swab, or whatever is needed. We
cannot tell from the dispensing instructions given in these
prescriptions whether pills are to be made, or the stick is to be
kept whole. The traditional doctor or pharmacist knows from his
training what is appropriate.

Another commonly used method of dispensing is to prepare a
decoction (yaa tom). The instructions given are simply to reduce
the volume to one third of the original. Details of the ways Thai
people make some kinds of medicine have been explained by Dhavadee
Ponglux and Payom Tantivatana in a paper 'Traditional and Folk
Medicine in Thailand', presented at ICTAM, September, 1979. Among
the methods of dispensing and administration of some popular forms
of medication described are included decoctions, as well as some
other types of preparation mentioned in KPC, quoted below.

Decoctions

A decoction, or what is commonly called medicine
boiled in a pot, is made from a combination of plants
or parts of plants of many kinds. The approved method
is to use both fresh and dry ingredients. If leaves
are included, the whole leaf is used. Stems, branches, sapwood, and roots are chopped into pieces of size suitable to be put in a pot. An earthen-ware pot is used for boiling, not a metal pot, as it is feared that a reaction might occur between the metal and the constituents of the plants. Also, earthen-ware pots diffuse heat better than metal vessels. Sometimes salt or Magnesium Sulphate is added as a chelating agent, and also as a preservative. Generally, a piece of fresh banana leaf or cloth is tied across the mouth of the pot so as to half-close it, for convenience in decanting the liquid. To ward off evil, a chaZeo made of intertwined, thin strips of bamboo might be used. The medicine must be heated each time before it is taken, and one batch is used continuously for seven days or more, until it becomes tasteless. Consequently, the strength of the medicine is not the same each time it is taken. In the medical texts, it is repeatedly stressed that the patient, when cured, should make merit on behalf of the owner of the prescription. In times gone by, when silver coins still had value, it was the practice to tie a salu'ng, wrapped in cloth, to the mouth of the pot. When the patient was cured, he used the coin to buy things to offer aims to the monks as a demonstration of his gratitude to the owner of the prescription, and for his own religious growth.

**Powders**

Powders are made from various parts of dried plants of many kinds, mixed together in proportions stated in the prescriptions. There are many prescriptions for powders, such as 'Green Medicine', made from various kinds of leaves, which contain up to 108 ingredients. The correct quantities of drugs, as specified in the prescriptions, are finely powdered, and mixed together well, then fresh water, jasmine flower water, or whatever special aqueous vehicle is required to treat the particular symptoms is added. For example, water used to wash rice is used to treat food poisoning, or a solution made from roasted hog plum is used for thirst. Sometimes the drugs are powdered in a mortar, or on a grinding stone; then Borneol or guava flower water is added to give a pleasant odour and taste to the medicine, to make it palatable and pleasing.

Throat powders are made from a mixture of many kinds of drugs which must be powdered extremely finely, then put in a tube and blown down the throat. Nasal insufflations usually include irritant drugs and red lime mixed with other ingredients, and these are blown into the nostrils.

**Medicines prepared by the process of Maceration**

Solutions prepared by extracting the active constituents from drugs by the process of maceration are:

1. Alcoholic solutions, or what are known as Tinctures.

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1 แชะ
2 ลิ้นชัก  
3 ยาเขียว
Drugs which are to be extracted with alcohol should be ground to a powder or cut into pieces to enable them to be thoroughly permeated in order to achieve good results. Sometimes the drugs are wrapped in fine white cloth and steeped in alcohol. A porcelain jar with a lid, or a glass jar with a closely fitting stopper should be used to make this type of preparation. It takes about one week to prepare a tincture before it can be taken. Tinctures are taken in small doses of about 15 ml. They should not be taken in large quantities like infusions, the dose of which is about 100 ml. The reason for this is probably because tinctures contain alcohol, which is capable of extracting most of the active principle from the plants, and it might be dangerous for the patient if taken in larger doses, as well as being intoxicating.

2. Vinegars Generally, the juice of the Kaffir lime or vinegar is used as the solvent. It is a common practice to include shells with the drugs to be extracted in vinegar. (The resultant medicine is sometimes called a sour and salty solution, probably due to its sour and salty taste.) The organic acid in the lime juice or vinegar reacts with the Calcium Carbonate of the shells, to form a soluble salt of Calcium, which can be absorbed by the body. These preparations are used particularly for women for menstrual disorders, such as dysmenorrhoea, and irregular menstruation. Both the lime juice and the salts which are added act as preservatives. It does not matter whether the vessel used is porcelain or glass, but metal should not be used, because the acids attack the metal. After the medicine is prepared, it has to be dried in the sun. The acidity prevents mould from developing, because bacteria cannot thrive in an acid medium.

3. Urine solutions Cow's urine is used. Drugs such as roots, bark, and leaves are macerated in cow's urine for three days, then spread out in the sun to dry, after which they are ground to powder.

Fumigants The drugs used as fumigants are placed in a charcoal fire. To treat haemorrhoids, the patient sits on a high bench with holes in it, so that when the smoke rises, it envelopes the anus.

Poultices Poultices are made from certain kinds of fresh leaves, such as Lawsonia inermis (henna), and turmeric, which are mixed with freshly scorched rice to make the poultice cohesive. Sometimes seeds of Ruellia tuberosa are used. These are soaked in water until they expand. Poultices are used to draw pus from abscesses by the process known to science as osmosis. The abscess then subsides.
Wound dressings

Drugs used to make wound dressings include turmeric, gambier or catechu - boiled in coconut milk or coconut oil, to ensure that the medicaments will remain in contact for a long time with the area to which they have been applied. These days, in medical circles, it is accepted that turmeric has anti-bacterial properties. Sometimes the juices expressed from roots and fresh leaves, such as leaves of Jasminum sambac or Vernonia elaeagnifolia, are mixed with a compound of turmeric, coconut, and Costus speciosus, and applied to the pustules of varicella (chicken pox). It is possible that the Chlorophyll from the leaves is necessary to potentiate the action of the turmeric in order to obtain the greatest efficacy. The coconut and Costus speciosus are probably required to supply fats to enable the medicaments to remain in contact.

Yaa kwant¹ (throat paints or throat swabs) are used with great effect and a minimum of distress for the young patient as one of the chief methods of administering internal medicines to Thai children. These are well represented in KPC.

The ingredients are made into a stick, as described (pp. 103, 104), the stick is rubbed on a groove in a stone slab with a little of the liquid considered suitable, until a thin paste is obtained. The doctor, whispering a brief prayer, and blowing on the medicine in order to transfer to it some of his special power, quickly dips his index finger into the paste and then down the child's throat, wipes off the medicine on the back of the throat, and, with a deft twist, removes his finger before the child is aware of what has happened. When this is done skilfully, the patient feels very little discomfort, and tastes nothing, because none of the medicine touches the tongue.

More often than not, the quantities of the individual ingredients are not stated. In a large number of cases, the figure 6 (1) appears after each item, signifying not a quantity, but the demarcation of a single ingredient.

One part of each drug is understood unless otherwise indicated as two or more parts, or as a measure of weight, such as one or more

¹ See p. 66, note 1.
A very convenient method of writing quantities is used. Two intersecting lines are drawn, and a figure is placed in one of six positions on the diagram. The position of the figure indicates whether it represents chang, tamlueng, baht, fueang, salueng, or phai in descending order on the diagram, and the figure gives the quantity of that weight.

Positions used | Weights represented by | Example: 2 baht each position
--- | --- | ---
1 | chang |
2 | tamlueng | baht |
1 | fueang | salueng |
1 | phai |

N.B.: The Thai system of weights and measures used in dispensing is as follows:

- 2 lot = 1 at
- 2 at = 1 phai
- 4 phai = 1 fueang
- 2 fueang = 1 salueng
- 4 salueng = 1 baht
- 4 baht = 1 tamlueng
- 20 tamlueng = 1 chang Thai
- 50 chang = 1 haap

Frequently, the directions specify the use of equal parts of each item (see p. 103), without mentioning what constitutes one part. The doctor or pharmacist knows from his training and experience what quantities to use.\(^2\)

The diagrammatic method of writing quantities as described above is used in the 1871 text, but the 1961 edition uses a number, followed by the name of the weight, for example, 2 salueng.

Some other weights and measures found in KPC are klam, a synonym for at; yom mue kam mue, a handful, as obtained when the fist is clenched, not open; and thanaan, a coconut shell capacity now superseded by thanaan luang, one litre.\(^3\) These are derived as follows:

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1 Mulholland *JSS* pp. 109, 110. The transcription of Thai words has been changed to agree with the system used throughout this thesis.
2 DT, personal communication, Bangkok, February, 1981.
3 thanaan luang ทะนานละแง  Ma, p. 406.
2 malet ngaa  = 1 malet khao plueak
(sesame seeds)  (grain of paddy [unhusked rice])
4 grains of paddy
2 klom
2 klam
150 grains of paddy
4 yip mue
4 kam mue
2 faa mue
4 kop mue

Chok  มำเอก, is a volume of 100 ml. for most liquids which are aqueous, but a cupful of an alcoholic tincture or solution measures 15 ml. น้ำ.

To avoid errors of overdose due to the possibility of double the quantity being supplied if bought in a Chinese shop, weights are never expressed in ชาง หรือ ตัมลิ่ว, but reduced to บาท in Thai traditional medicine to-day. This is because there is a Thai ชาง (see p. 108), and a Chinese ชาง, and the Chinese ชาง used to be used in the markets.

1 ชาง Chinese  = 16 ตัมลิ่ว Chinese  = 40  บาท Thai
1 ตัมลิ่ว Chinese  = 10 สัลวิ่ง Thai.

Pharmacies these days give 15 grams for 1 บาท, as, by law, the official system of weights and measures is the metric system.

1 The number '150' could be an error, since 15 grains of paddy would be more likely. The number '150 is also given in PP, p. 258.
2 Tamraa pramuan lak phesat (The principles of pharmacy) (Bangkok: B.E. 2521 [A.D. 1978]), pp. 97, 98. The word 'klom' comes from the seed of maklam taa nuu กล้วย, ibid., p. 98. This is Abrus precatorius L. Papilionaceae. Crab’s Eye Vine (PT); Pharmaceutical Botany (Bangkok: n.d.) [abbreviation PB], p. 50. The word 'klam' comes from the seed of maklam taa kao มะกล้วย, Adenanthera pavonina the Bead Tree. The bright red, hard seeds are used for apothecaries weights. MC, p. 361.
3 Dhavadee and Payom, p. 4.
4 Tamraa pramuan lak phesat, pp. 95, 96.
CHAPTER 9
THE PRESCRIPTION INGREDIENTS

Excluding different parts of the same plants and animals, over 850 drug names are found in KPC. Of these, perhaps 100 or so are synonyms for other names used in the text. Since modern handbooks on ancient Thai materia medica describe nearly 1500 drugs, the opportunity exists to study the uses of half of these in this one text, as far as paediatric and general application overlap. But we cannot do justice to so many items at once. In this chapter, we describe the use of drugs in general; in the next chapter, we will investigate the uses of some selected medicinal substances in detail.

Most of the medicaments are of plant origin, and it is these which hold the greatest interest for the scientist. Minerals and animal parts are also included in the prescriptions, but to a lesser extent.

The identification of Thai drugs, particularly of plant origin, presents difficulties which cannot always be overcome without the help and co-operation of Thai experts, both Western trained and traditional. We need to be certain, not only of their scientific names, and of their Thai names, but also that they are, in fact, the substances meant in the texts. For example, chan thet, nowadays refers to Myristica fragrans, nutmeg, but the chan thet of the ancient recipes meant...
Santalum album, white sandalwood. (VJ) If these drugs are to be investigated further for their chemical constituents and pharmacological action, their source and quality must be taken into consideration to ensure that the materials tested are, within reasonable limits, the same as those empirically tested by the ancients. Environmental and geographical factors such as location, temperature variation, rainfall, and soil, as well as the time of collection and the methods of transport and storage, and the age of the sample, all influence the quality and quantity of drug constituents.

There is no quality control in Thai traditional pharmacy. There is no book of standards. The descriptions given in Thai materia medica are inadequate to isolate one plant from all others. The knowledge is stored in the memories of living practitioners.

One may search in vain through the few available text-books written by Western trained scientists on botany, pharmaceutical botany, pharmacognosy, and allied subjects for the names of some drugs found in old Thai medical texts. Each drug has synonyms. There might be a different name used for the same plant in each of half a dozen geographical areas within Thailand, as well as other names in neighbouring countries. The same name might be used for different plants in different provinces. We cannot know, as outsiders, which to choose. As a rule, without prior knowledge of the scientific name as well as the true Thai name, in terms of the medical texts, one cannot find the drug in the books, because entries are made under scientific names. There is seldom an index of Thai names. An exception is Thai materia medica, which is lacking in other respects which concern us regarding the scientific descriptions of plants.¹

¹ Laddawan Boonyarattanakornkit, and Thanomjit Supavita, Chie phuet samun phrai lae prayot (Names and uses of medicinal plants) (Bangkok: n.d. [abbreviation LB]), and Chote Suvatti, Flora of Thailand (Bangkok: B.E. 2521 [A.D. 1978]) [abbreviation FT] are well indexed, but TS is quite inadequately indexed for our purposes.
Merely to determine which medicament is plant and which is animal requires the expertise and experience of the specialist. A name like *lep mue naang*,¹ which means 'lady's finger nail', does not pose a great problem; we have our 'lady's fingers' too, and nobody would really imagine that either finger nails or fingers would be used in medicine. But some names cannot be interpreted without prior information. When we see the various parts of animals used in the Thai prescriptions, and in those of other countries too, we find that teeth, horns, milk, blood, bile, skin, meat, bones and other parts are included. The outsider cannot know that bear's teeth are bear's teeth, and bear's bile is not bear's bile, but a plant. The immediate question is what plant? And the careful researcher will quickly find three names, all quoted from the same earlier reliable text,² but only one of which is designated to apply generally in Thailand. This is *Cleidon javanicum* Blume. It is still necessary to obtain reliable confirmation from someone who has been working in the field of Thai medicinal plants for many years, before a name can be accepted as reliable.³

In many cases where there is doubt whether the drug is a plant or animal part, the point is clarified by the author, who might add, for example, 'ton',⁴ meaning 'plant' or 'tree'. This occurs with

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1 เลขที่ 1


3 It is indeed fortunate that Thai scholars, of both modern and traditional pharmacy co-operate in these matters. My informants (see Acknowledgements) have identified the drugs in both modern and traditional terms. We have, therefore been given the best advice available on all matters of identification of drugs from Thai leaders in the fields of pharmacognosy, pharmaceutical botany, and traditional pharmacy.

4 เลขที่ 4
'dee ngu', snake's bile, which is used as a medicament, but which
is also the name of a medicinal plant. When the plant, *Picrosma
ejavanica* Blume, is prescribed, the name is usually given as 'ton
dee ngu' or 'dee ngu (ton)', but such clarity is not always found,
and it is then that it is necessary to be cautious.

Before we examine the plant materials used as medicine in *KPC*,
let us look briefly at the animal and mineral substances included in
the prescriptions.

Teeth of two kinds — molars and eye teeth being distinguished
separately (incisors are not mentioned); tusks; horns — new grown
and otherwise; and bones are the animal parts used most frequently.
In many cases, the teeth, bones, or horns of three or four different
animals are included in one recipe — either a mixture of these parts
or the same part of each animal. Scales of snakes, their cast off
skins, birds' feathers, civet, musk, blood, milk, urine (including
human urine), bile, faecal matter, monkey glands, and the carcasses
of dead spiders are some of the other animal products.

Calcined shells of several types provide lime, and fresh
shellfish, including the shell, are also used. Other aquatic animal
ingredients are fish scales, ambergris, shrimp paste, and the carapaces
of tortoises and crabs.

Some examples of animals and their medicinal products are:

**Elephant**: molar tooth (made into a triturate by rubbing the tooth in
water on a rough surface); the undamaged tusk; the damaged tusk (the
broken end which sometimes becomes embedded in a tree attacked by an
elephant).

**Rhinoceros**: molar tooth, eye tooth, horn, and blood, which might not

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1 นิมิ or นิมิ

2 These are often burnt, thus providing calcium salts, and
probably other less obviously useful constituents in a more
manageable form.
be blood, but a plant.¹

**Water buffalo:** horn, burnt horn from an albino buffalo, and water squeezed from the dung.

**Black vulture:** skull, and bones.

**Reticulated python:** bile, and bones.

**Cow:** roast beef, fresh milk, urine, fresh dung, dung found near a granary, and the early evacuated faecal matter of the foetus calf.

**Crocodile:** bile, and eye tooth, but not the tail.²

**Cowrie shells:** calcined.

**Cockroach:** faecal matter.

**Cobra:** bile, head, bones, scales, and cast off skin.

**Serpent headed fish:** scales.

**Wild rat:** droppings.

**Peacock:** bile, tail feathers, and the 'eyes' of the tail feathers, scorched brittle.³

Mineral substances include charcoal, sulphur, arsenic disulphide, common salt, rock salt, a concrete deposit from collected and kept human urine, silica (obtained from burning rice husks), rock sugar (from sugar cane),⁴ gold, copper sulphate, the scum precipitated in the bottom of an iron boiler (usually resulting from hard water), mercuric sulphide in all its grades, iron pyrites, saltpetre, mud and clay of several forms

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¹ *PP*, p. 177 lists among oily tasting drugs both *luet raet*, rhinoceros' blood, and *ton lueat raet*, a plant called rhinoceros' blood. The same situation might exist as far as the molar teeth are concerned, because *WW*, p. 7 says that in Chumphon, *kraam raet*, rhinoceros' molar tooth, is a plant, *Aralia armata*.

² *haang chorakhe*, crocodile's tail, is a plant, *Aloes* species.

³ See Appendix IV for further details of animal products used as medicine.

⁴ These last two items, being plant products, will be found listed under Plants in Appendix IV.
including hornets' nests, sodium sulphate, magnesium sulphate, gold leaf, borax, ashes from a cremation, alum, pearls, and the cobweb-like filaments of carbon found above a wood burning stove. There are also some liquids, such as alcohol in varying strengths, lime water, several kinds of water - including river, rain, and salt water, and dew. Some minerals are used as anhydrous salts as well as hydrous. 1

Angiosperms, Gymnosperms, and Ferns are all represented in the plants used as medicine in KPC. Within the flower-bearing Angiosperms, which provide most of the drugs, dicotyledons predominate over monocotyledons. There are only a few cone-bearing Gymnosperms and five Ferns.

The following orders and families are included: 2

FERNS
Marattiales: Marattiaceae (Angiopteridaceae).
Eufilicales: Cyatheaceae, Polypodiaceae [Dennstaedtiaceae, Dryopteridaceae].
Hydropteridales: Marsileaceae.

GYMNOSPERMS
Coniferae: Cupressaceae, Pinaceae.

ANGIOSPERMS
Monocotyledons
Helobiae: Hydrocharitaceae.
Glumiflorae (Graminales): Gramineae.
(Cyperales): Cyperaceae.
Principes: Palmae.
Spathiflorae: Araceae.

1 See Appendix IV for further details of mineral medicaments.

2 The system of botanical classification used follows that of FT. Synonyms and sub-orders are in parentheses; sub-families, in brackets.
Farinosae: Commelinaceae.

(Bromeliales): Bromeliaceae.

Liliiflorae: Liliaceae [Agavaceae, Smilaceae, Alliaceae], Amaryllidaceae, Dioscoreaceae, Iridaceae, Taccaceae.

Scitamineae: Cannaceae, Marantaceae, Musaceae, Zingiberaceae.

Microspermae: Orchidaceae.

Pandanales: Pandanaceae.

**Dicotyledons**

Piperales: Piperaceae, Saururaceae.

Salicales: Salicaceae.

Fagales: Fagaceae.

Urticales: Moraceae [Cannabinaceae], Ulmaceae, Urticaceae.

Santalales: Santalaceae.

Polygonales: Polygonaceae.

Centrospermae: Amaranthaceae, Basellaceae, Nyctaginaceae, Aizoaceae (Ficoideae).

Ranales (Ranunculales): Nymphaeaceae, Menispermaceae, Ranunculaceae.

(Magnoliales): Magnoliaceae, Annonaceae, Lauraceae, Myristicaceae.

Rhoeadales (Papaverales): Papaveraceae, Cruciferae, Capparidaceae [Cleomaceae].

Rosales: Crassulaceae, Rosaceae, Leguminosae [Caesalpiniaceae, Mimosaceae, Papilionaceae].

Geraniales: Euphorbiaceae, Zygophyllaceae.

(Rutales): Rutaceae, Simaroubaceae, Burseraceae, Meliaceae, Oxalidaceae (Averrhoaceae).

Sapindales: Anacardiaceae, Salvadoraceae, Sapindaceae.

Rhamnales: Rhamnaceae, Vitaceae (Ampelidaceae).

Malvales: Malvaceae, Bombacaceae, Sterculiaceae.
Parietales (Guttiferales): Dilleniaceae, Guttiferae, Dipterocarpaceae, Passifloraceae, Begoniaceae, Flacourtiaceae.

(Violales): Bixaceae.

Myrtiflorae: Thymelaeeaece, Elaeagnaceae, Lythraceae, Punicaceae, Rhizophoraceae, Combretaceae, Lecythidaceae

(Barringtoniaceae), Myrtaceae, Hydrocaryaceae, Onagraceae.

Umbelliflorae: Umbelliferae.

Plumbaginales: Plumbaginaceae.

Ebenales: Sapotaceae, Ebenaceae, Styracaceae.

Contortae (Oleales): Oleaceae

(Gentianales): Loganiaceae (Strychnaeaceae) Apocynaceae, Asclepiadaceae, Gentianaceae (Menyanthiaceae).

Tubiflorae: Convolvulaceae, Boraginaceae, Verbenaceae, Labiatae, Solanaceae, Scrophulariaceae, Bignoniaceae, Pedaliaceae, Acanthaceae [Thunbergiaceae].

Rubiales: Rubiaceae, Valerianaceae.

Cucurbitales: Cucurbitaceae.

Campanulatae (Campanulales): Compositae.

The plant parts distinguished are raak _resource, roots; hua _resource, or ngao _resource, which apply to root-stock, rhizome, bulb, tuber, and
corm; waan _resource, often synonymous with hua; 1 ton _resource, stem or trunk, but also the classifier for whole plants and trees, and
as such, meaning the whole plant, both roots and aerial parts; bai _resource, leaves; dok _resource, flowers; keson _resource, pollen from the flowers;
phon _resource, sometimes interchanged with luuk _resource, fruit; luuk is also
used to mean seeds, as well as met _resource and malet _resource which indicate seeds or
fruit kernels; nuea mai _resource, wood; kaen _resource, heartwood,
and plueak _resource, bark, rind, husk or shell; for the main part.

1 'waan' is a term which denotes any kind of plant used for making
amulets, but the majority of those seen by the writer have been
underground parts otherwise designated 'hua' and 'raak'.

1
Less frequently we find *yot*, the leafy tips of new shoots, or *khon*, stump or root-stock; *phak*, leafy parts, and frequently part of the name of a vegetable; *naam*, thorns; *khrua* and *thao*, vine, also included in names; *mue*, tendrils; *nguang*, flowering stalk (inflorescence); *fak*, pod; *yaang*, latex, resin or gum; *nam man*, oil; *kaam*, leaf stalks; and so on. *Nam*, juices and saps, from various parts such as fruit, leaves, bark, and oil from seeds are common ingredients.

A distinctive feature of the use of drugs in the medicinal formulae is the prescribing of what might be termed compounds, of several kinds. The first is composed of groups of substances, each item being the same part of different plants or animals, such as leaves, roots, flowers, pollen, bark or fruit of several plants, or the teeth, bones, horn or bile of several animals.

The second type of compound consists of two, three or more items which occur together in a number of recipes. Of the toxic and bitter drugs discussed in the next chapter, there are several compounds which are frequently found. The most obvious are various combinations of *kralam phak*, *khrai khrua*, *chan thet* (as part of *chan thang* 2 - *chan thet* and *chan daang* - or alone), and *kot so* with each other, and often with *krisanan* wood, which is not classed as toxic or bitter, but as cool and fragrant.  

Kralam phak is seldom prescribed without *krisanan*. Other groups are *khee kaa*, *lep mue naang*, *yaa dam*, and *boraphet*, of which two, three or four items might be used together; *rayom* and *khrai khrua*; and *rong thong* and *yaa dam*.

Often we find a compound of two or five items, occasionally

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1 The seed oil of *krisanan* is classed as toxic, but this does not occur in the *KPC* prescriptions.

2 See example 4, p. 235.
nine, and in other texts, sometimes seven ingredients of the same name. For example, khop chanaang thang 2, the two khop chanaang; chan thang 2, the two chan (mentioned above); bencha thap thim or thap thim thang 5, the five thap thim; or kot thang 5, kot thang 7, or kot thang 9, the five, seven or nine kot. In the first case, the two khop chanaang are both the white and the red varieties of the same botanical species; the two chan are two distinct, genera and species; the five thap thim are the five parts of thap thim, that is, root, stem, leaves, flowers, and fruit; but the five kot are five distinct plants, and the seven and nine kot are these five plants to which are added two or four others respectively.

The classification of drugs in Thai traditional medicine and pharmacy follows more than one system. The simplest is to be found in the modern handbooks on pharmacy which list the substances according to the parts used. Thus we find all the plants whose leaves have a medicinal use listed together; similarly roots, bark, flowers, fruit, and so on. When more than one part of the same plant is used, the name of that plant is found in more than one list. Two classificatory systems related to Ayurvedic theory have been discussed elsewhere by the writer.\(^1\) One is based on the therapeutic properties of drugs according to "taste", but having a wider meaning pertaining to quality, since the 'taste' implies pharmacological action of specific definition: the other system,\(^2\) which groups drugs in three classes or phikat - the Small, Large, and Great Classes - does not seem to apply to the majority of the prescriptions under investigation here.

Drugs are classified in two ways according to the therapeutic properties, usually, but not invariably believed to be inherent in the

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taste of the substance.

Each has one of three qualities or principal tastes – hot, cold or mild – plus one of nine medicinal tastes, or the 'bland' taste. Some drugs have a combination of two or more medicinal tastes. The nine medicinal tastes are astringent, sweet, bitter, hot-and-spicy, oily, cool-and-fragrant, salty, sour, and mao buea (see p. 9, note 1). This last cannot be translated in one or two words, having the meanings 'narcotic, addictive, intoxicating, poisonous or toxic', or potentially so, but for our purposes the term 'toxic' will be used to imply this taste. Clearly, all the above 'toxic' qualities do not apply to every substance of this class. Nor do they necessarily have a distinctive taste in the usual meaning of the word in English; for example, arsenic, a poisonous, but not intoxicating member of this group, is tasteless, while opium, which can have all these qualities in certain circumstances, has a pleasant taste which can hardly be described by any one of the other eight medicinal taste names. The therapeutic effect of a 'rot' can, therefore, be seen to be more important in this context than the perceptible taste, which, in the case of the toxic taste, is non-existent.

In Western medicine, drugs are also classified in several ways for the purposes of study and description. Apart from simple alphabetical order, used by the Thais too, but not as often or as successfully because of the script, items are sometimes listed morphologically, in much the same way as the modern Thai handbooks

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1 Because the initial consonant in Thai script determines the tone of the syllable it prefixes, a silent h or glottal stop precedes some consonants in order to indicate a different tone, and meaning. In arranging words in alphabetical order, some people ignore the silent prefix, and place the word with words beginning with the first consonant pronounced, not written. Some variation also occurs in the arrangement of words with the same initial consonant and different vowels. An excellent illustration is provided in D.B. Bradley, *Dictionary of the Siamese Language*, 1873.
group leaves, flowers, and fruits, and other parts of medicinal substances. Also, in Western medicine, plant materials in particular are commonly dealt with in their botanical taxonomic relationships; and pharmacological or therapeutic classification groups drugs according to the pharmacological action of their most important constituent or their therapeutic use. The advances in chemistry\(^1\) and the consequent interest in biosynthetic pathways\(^2\) have produced newer classificatory systems based on the chemistry of important constituents.\(^3\)

In Chapter 10 we analyse the use of some of the medicinal substances prescribed in \textit{KPC}.

\begin{enumerate}
\item It is not our intention to venture into the chemistry of plant constituents, but, since a few terms might slip in which require clarification for some readers, explanations are given in footnotes. See also, Appendix III, for the meanings of some scientific terms.
\item Plants are the source of many so called synthetic drugs. In some cases, the important or 'active' constituent on which the pharmacological use of the plant depends is extracted and used as the main ingredient in tablets or other modern medicine. In other cases, it is the practice to use plants to provide organic chemical compounds which can be used as building blocks with which to synthesise other chemicals. In simple terms, biosynthetic pathways are the series of chemical changes effected in order to produce a chemical from another, the starting point often being a plant product.
\item George Edward Trease, and William Charles Evans, \textit{Pharmacognosy}, 11th ed. (London: 1978), [abbreviation \textit{TE}] p. 5. The pharmacological or therapeutic action of a drug is related to its effect; this is usually the result of its chemical constituents, the most important being alkaloids, glycosides and isoprenoids. M.S.F. Ross, and K.R. Brain, \textit{An Introduction to Phytopharmacy} (London: 1977) [abbreviation \textit{RB}], p. 22.
\end{enumerate}
CHAPTER 10

THERAPEUTIC USES OF SOME TOXIC AND BITTER DRUGS PRESCRIBED IN
KPC

We have seen that the way in which symptoms and diseases are
described in KPC falls short of a system of classification which can be
correlated profitably with Western disease concepts. (See Chapter 7.)
We have also seen that the medicines prescribed in the text for the
treatment of the symptoms and diseases described are frequently of a
universal kind, being intended for the relief of a wide range of
symptoms, and, to add to our difficulties in interpreting them, being
comprised of so many ingredients that the active drugs are not easily
recognized.

Knowing that toxic and bitter drugs are more likely than the
rest, whether in the Thai system of classification or Western science,
to contain alkaloids and other constituents which, although poisonous,
in regulated doses are often found to be beneficial in the treatment
of disease; knowing that poisons and alkaloids tend to have a bitter
taste (though not always – arsenic is tasteless); and observing that
the Thai classification of drugs according to taste does agree with
Western descriptions of the same drugs, we have chosen to examine in
detail the therapeutic uses of toxic and bitter drugs only. In this
way, we should, more often than not, arrive at the active ingredients
in the prescriptions in which these occur.

We have selected only plants of these two groups for our main
analysis of the use of drugs. The few animal and mineral substances
belonging to the toxic and bitter categories are included as a matter
of interest, but will not be considered in detail.

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1 This method of classification is no more exact than Western
botanical classification. Authorities do not always agree. We
have, therefore, limited our selection to toxic, and bitter drugs
listed by PP, pp. 162-170.
The question then is, what are the therapeutic uses of these
drugs? What do the traditional doctors expect them to do? What
have Thai scientists found?¹ And what is known about these particular
toxic and bitter substances in Western medicine? If they are known
to Western medicine, are they used for the same purposes; and if not
known or not used for the same purposes, does modern scientific
knowledge suggest that Thai traditional medicine might have something
to add to pharmacological knowledge?

Let us examine each of the drugs classed as toxic or bitter which
occur in the KPC prescriptions,² in the context of their use there in
the treatment of infants and young children, to find out what the
traditional doctors expect them to do. We will then compare our
findings with those of the present day teachers of traditional medicine
in Thailand, modern Thai scientists' interpretations of the traditional
uses, and Western uses.³

1 Reports do not always make it clear whether they are merely
stating the traditional uses, or proven, effective uses assessed
by scientific methods.

2 Certain parts of the following plants are classed as toxic or
bitter, but these particular parts do not occur in KPC
prescriptions, although other parts of the same plants do.
For these reasons, these plants, apart from fin ton, which is
particularly interesting, are not included in our detailed
investigation, but general information concerning their
identification is given in Appendix IV.
These are: krabian, krisanaa, yaang, bua khom (chong konlanee),
nam tao, fin ton (see pp. 147, 191), and raatchadat.
The root of khrop chakrawaan, classed as a bitter drug, occurs
only once, and then in an Ayurvedic prescription for disorders
of the water element. Since this kind of disease cannot be
readily interpreted, the therapeutic use of the drug cannot
be described for our purposes.

3 By Western uses we mean official uses as found in Western
pharmacopoeias and related reference books such as Martindale:
The Extra Pharmacopoeia, and the United States Dispensatory.
When no official use is reported, other sources, both
scientific and domestic, have been consulted. There is material
available to enable a comparison with Indian, Chinese, and
other therapeutic uses of these drugs, but such a comparison
is beyond the scope of this thesis.
In Thai traditional medicine, the general therapeutic uses of drugs of the toxic class are to counteract poisoning of the bile, blood or mucus;\(^1\) poisoning from animal bites and stings; the ill effects of fevers; heart disease; and disorders of the bile.

Bitter medicaments are used as blood and bile tonics; to treat fevers caused by the bile [element]; for blood disorders; to improve the appetite; and for heart disease.\(^2\)

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\(^1\) Meaning the body elements, bile, blood, and mucus. See Mulholland, *SEAR*, pp. 30-33.

\(^2\) *MD*, p. 313. This is an improved translation on that included in Mulholland, *JSS*, p. 107.
DESCRIPTION OF MEDICINAL SUBSTANCES AND THEIR THERAPEUTIC USES

The code set out below is used for the description of the medicinal substances which follow.

<table>
<thead>
<tr>
<th>Thai name transcribed</th>
<th>Thai name script</th>
<th>Thai classification according to taste</th>
<th>Parts thus classified by PP</th>
</tr>
</thead>
</table>

Thai synonyms

Scientific name
Genus species author(s)

Scientific synonyms
Family

English name(s)

Other names
Source(s)

Parts used in *KPC* prescriptions (not always the same as the parts to which the taste is attributed).

Related drugs and compounds.

**Therapeutic uses** of the parts of the plant classed bitter or toxic.
(In some cases no part is stated, and this is indicated by a dash in line 1.)

(1.) Thai
(a.) *KPC*, summarises its use in the prescriptions in *KPC*.
(b.), (c.), etc. are other Thai sources. The full titles of all other sources are given on pp.iv-vi Abbreviations.

(2.) Western

'Not found' indicates that, as far as can be ascertained, this drug, that is, the part of the plant specified as toxic or bitter, does not occur in official Western pharmacopoeias and reference books normally consulted by pharmacists.
(a.), (b.), etc. are official Western sources which do mention the drug, and a summary of what is reported there.

(3.) Known constituents and therapeutic uses of related plants, which, in some cases, indicate the possible constituents and uses of the plant in question.

**Conclusions** Drawn from use in *KPC* prescriptions only. These conclusions are purely tentative. The information included from other sources has not been taken into account in arriving at these conclusions.
Yaa teen nok นุ้ยเต็นนอก
Yaa teen kaa นุ้ยเต็นก้า
Yaa paak khwaat นุ้ยปากขาว

Eleusine indica Gaertn.

Goose grass; Yard grass; Wire grass.

Gramineae

Therapeutic uses of Eleusine indica

(1.) Thai

(a.) KPC

This plant is used in a decoction taken as an expectorant and to reduce the body heat caused by the elements mucus and internal heat, and to counteract the poison of taan saang.

(b.) PP, p. 169

Bitter: -

Used to treat fevers caused by disordered bile, other bile diseases, malaria, and so on.

(c.) LB, p. 1

Rhizome: diuretic and febrifuge.

(2.) Western

Not found.

(3.) TE, p. 154

In addition to starches, sugars, and volatile oils, the Gramineae contains a very wide range of constituents including
eleven different classes of alkaloid, saponins, cyanogenetic substances, phenolic acids, flavonoids, and terpenoids.

Conclusions We cannot come to any significant conclusions on the evidence of just one prescription, but there does seem to be evidence for the use of this drug in the treatment of fever.
YAA DAM  บากา  exotic

Aloe perryi Baker
A. barbadensis Miller
A. ferox Miller
A. vera
and hybrids

Aloes
resin

Haang chorakhe  หวังกระเซ

Aloe vera
Aloe spp. (PT)
leaves

Therapeutic uses of Aloe spp.

(1.) Thai
(a.) KPC

Aloes is used in almost 50 recipes in KPC, for several different groups of symptoms; mainly mixtures or decoctions to be taken for intestinal parasites, diarrhoea and vomiting, dysentery, constipation, and flatulence; some preparations to be taken or applied externally for symptoms associated with the lom of saang, such as convulsions, tetanus, back rigidity, and insensitivity of the eyes; and a few mouth paints, and other formulae for different purposes such as to contract the liver, or external applications to paint on khamao and saang. It is also used as an expectorant, and in mixtures taken by the mother to get rid of blood in breast
milk. Aloes leaves, as *haang chorakhe*, are used in a poultice to treat the tendons; and in a mixture for poisoning, as well as an unspecified form of this drug, perhaps the leaves, in one or two other prescriptions.

Aloes, as *yaa dam* is sometimes prescribed in combination with *rong thong*, and sometimes with one or more of the following: *khee kaa, lep mue naang*, and *boraphet* (see p. 118).

(b.) *PP*, p. 164

Toxic: *yaa dam*

Laxative, anthelmintic, used for fever, boils and abscesses, swelling, flatulence, and to cleanse the mucus and blood, and expel bile.

(2.) Western

(a.) *M27*, p. 1334

Aloes is an anthraquinone purgative, with a tendency to cause griping, which has been superseded by less toxic purgatives. The irritant action on the large intestine may cause pelvic congestion and in large doses nephritis. Aloes should not be given in pregnancy; in nursing mothers it may be excreted in the milk.

(b.) *M27*, p. 251

Aloes is an ingredient in Compound Benzoin Tincture (Friars' Balsam), which has many uses including internal use as an expectorant, and as an inhalation for bronchitis and laryngitis. It is applied as an antiseptic and styptic to small cuts and to protect the skin.

(c.) Other sources suggest that the wide range of medicinal uses attributed to aloes is known to scientists, but its chemistry
is not yet fully understood. Research has shown that aloes has bacteriostatic properties as well as healing properties in the treatment of wounds and burns.¹

Conclusions Apart from its known purgative action, its bacteriostatic and healing properties, aloes appears to have other uses in Thai medicine which might be worth investigation. For instance, its inclusion in recipes to treat symptoms indicative of CNS disturbances requires elucidation.

CHAN DAENG  ชันดาเฮง
Chan phaa  ชันฟ้า
Dracaena loureiri Gagnep.  Agavaceae

wood

Chan thang 2  ชันท่าง
1. chan thet (see p. 138)
2. chan daeng

Therapeutic uses of Dracaena loureiri

(1.) Thai

(a.) KPC

Dracaena wood occurs in over 30 prescriptions, and in combination with sandalwood, in another 50 or so (see p. 138). Dracaena is used mainly in mixtures and mouth paints to treat internal poisoning and diarrhoea, and accompanying symptoms.

It is also an ingredient in an anthelmintic mixture and in an application for skin parasites.

(b.) PP, p. 169

Bitter: wood

To treat fevers, disorders of the bile, wounds, profuse sweating, and to create a feeling of well-being.

(c.) HE, p. 8

The infested wood is used as an aromatic powder and as a colouring agent.

(2.) Western

Not found.

(3.) TE, pp. 149, 150

Alkaloids and cardenolides appear to be absent from the family, but the constituents otherwise closely resemble those of the Liliaceae. i.e. Steroidal constituents include sterols, bufadienolides, and steroidal saponins. The amino-acid azetidine-2-carboxylic acid occurs in many genera. Other constituents include quinones, flavonoids, the γ-pyrone chelidonic acid, cyanogenetic substances, and fructosan-type carbohydrates. Some volatile oils of the family have antimicrobial properties.

Conclusions Used to treat poisoning and parasites.
DICOTYLEDONS

PIPERALES

**PHLUU KAE** ผถาน

*Houttuynia cordata* Thunb.

leaves

Toxic: whole plant

*Saururaceae*

(PT); วทน, p. 537

HE, p. 11 gives *phluu khaao* ผถาน as the Thai name for *H. cordata*

**Therapeutic uses of Houttuynia cordata**

(1.) Thai

(a.) *KPC*

In most cases the leaves are used; in only one recipe is the part not stated, but the leaves are no doubt intended to be used, since this is one of two similar poultices to be applied to the lower abdomen to relieve retention of urine or bladder obstruction. Other preparations are to be taken or applied for such diseases and symptoms as *saang*, *la*, and *la-ong*, poisoning and headache; and there is an oily mouth paint to treat the effects of *saang* in the mouth.

(b.) *PP*, p. 162

Toxic: whole plant

To treat leprosy, cancer, yaws, venereal diseases.

(c.) *HE*, p. 11

The leaves are used for skin diseases and as an antimicrobial.

(2.) Western

Not found.
Does not consider the Saururaceae to be of pharmacological importance, only the Piperaceae of the four families of the Piperales.

**Conclusions** Could contain substances capable of exerting anti-inflammatory or antibacterial action.
URTICALES

KANCHAA  Khörön
Cannabis sativa L.
Indian hemp; Marihuana.

Toxic: -
Cannabinaceae

HE, p. 4; WW, p. 35

Therapeutic uses of Cannabis sativa

(1.) Thai

(a.) KFC

Indian hemp is used in two diarrhoea mixtures, and in a recipe with 32 ingredients for the seven kinds of saang, twelve kinds of taan chon, and over 20 other symptoms and diseases, including dysentery.

(b.) PP, p. 162

Toxic. Used to improve the appetite, strength, and concentration; sedative and tranquillizer.

(c.) HE, p. 4

The flowering tops of the female plant: bitter tonic; halucinogenic.

(2.) Western¹

(a.) M27, p. 298

Cannabis was formerly employed as a sedative or narcotic, but is now rarely used as a therapeutic agent.

(b.) M17, p. 785

Children are said to greatly improve under treatment with a decoction of the dried seed freed from oil.

¹ For a very recent survey of the literature on Cannabis, see Frank Crowley and Lorna Cartwright, A Citizen's Guide to Marihuana in Australia, revised ed. (Sydney: 1981).
Conclusions All three prescriptions containing kanahaa have about 30 ingredients; we will, therefore, not comment on its use in this text. There is no evidence elsewhere for its effectiveness in the treatment of diarrhoea, and perhaps that was not what was expected of it in these formulae.

**Khop Chanaang** ขอนป่าแป้ะ
toxic: -

*Thunbergia laurifolia* Lindl. Thunbergiaceae (VJ); WW, p. 101
*(T. laurifolia* Lindl. is placed by Burk., p. 2197, in the Acanthaceae)

*Poulsolsia pentandra* Benn. Urticaceae LB, p. 14; HE, p. 15

*P. indica* (L.) Gaud. Urticaceae LB, p. 14

Yaa non taai, according to LB, p. 14 is a synonym for
Khop chanaang; *P. pentandra* or *P. indica.*

Yaa non taai, according to WW, p. 397, is *P. pentandra.*

But according to PB, p. 117; LB, p. 85; and HE, p. 18

*Thunbergia laurifolia* Lindl. is raang chuet กระเจีด or ton yaa khieo ต้อนยาเขียว

**Khop chanaang thang 2** ขอนป่าแป้ะพื้น
1. khop chanaang khao ขอนป่าแป้ะขาว
2. khop chanaang daeng ขอนป่าแป้ะแดง

The white variety and the red variety of *khop chanaang* leaves

**Therapeutic uses of khop chanaang**

(1.) Thai
(a.) KPC

The leaves of both red and white varieties are used in mixtures to prevent the vomiting, and *taan saang* of infants. They are also used in anthelmintic preparations, and in recipes for other
gastrointestinal symptoms such as diarrhoea, flatulence, mucus and blood in the faeces, and mouth and tongue infections.

(b.) *PP*, p. 165
Both varieties are toxic.
Used as emmenagogues and diuretics, and to treat leucorrhoea and gonorrhoea.

(c.) *HE*, p. 15
*Pouzolzia pentandra*
The aerial parts are used as an anthelmintic, insecticide, and emmenagogue, and for leucorrhoea.

*HE*, p. 18
*Thunbergia laurifolia*
The stem and root are used as a poison antidote and as a refrigerant; the leaves, as an ingredient in 'Green Medicine' as an antipyretic.

(d.) *LB*, p. 85
*Thunbergia laurifolia*
The leaves are used as above (*HE*, p. 18), and as a poultice applied to wounds and burns caused by scalding.

(2.) Western
Not found.

**Conclusions** Anthelmintic. Perhaps antiseptic.

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1 Leucorrhoea is considered to require treatment. In Western medicine this is not viewed as a disease. The term 'raduu khaao' translated 'leucorrhoea' might have a wider meaning to include other vaginal discharges.

2 Green medicine *yaa khieo* is very commonly used in Thailand. There are many formulae. The exact expectations of this medicine are not clear. See p. 105.
SANTALALES

CHAN THET  ชันเทท  Bitter: heartwood
Santalum album L.  Santalaceae
Sandalwood; White sandalwood.

Chan thet in the old medical texts is S. album; it now means
Myristica fragrans. (VJ)

Other sources give M. fragrans for chan thet, and S. album for
chan khaao  ชันคาว

The part used is always called 'wood'; this is actually the heartwood. (VJ)
In one prescription, KPC II, 116, line 5, there is the fruit of chan thet,
which can only mean nutmeg, M. fragrans in this context.

Chan thang 2
1. chan thet
2. chan daeng (see p. 131)

Nam chan thang 2  น้ำชันท่าง 2
A watery paste made from the powdered wood. To make this, the upturned lid
of a rough surfaced earthenware pot is used. Water is poured in, and the
wood is rubbed against the rough surface inside the lid, in the water. (VJ)

Therapeutic uses of Santalum album

(1.) Thai
(a.) KPC

The uses in each of the half dozen or so recipes in which it is
an ingredient are quite varied. With nutmeg and mace, amongst
other items, it is given for diarrhoea; in two other formulae
it is part of the treatment for a child fed poor quality breast
milk, for the poison of saang in the throat and chest, as well
as for coughs and hiccoughs. There is a prescription for
breathlessness, and two others, one, with 37 ingredients, for
convulsions, tetanus, and related symptoms; the other, for
tetanus, chest pain, insomnia, restlessness, and hot fluid in
the chest (unclear).

(b.) PP, p. 170
Heartwood: bitter
To treat fevers caused by bile; and as a tonic for the liver,
lungs, heart and so on.
PP, p. 181
Heartwood: cool and fragrant
To treat fevers causing delirium; heat and restlessness; for
headache; and as a tonic for the bile, liver, lungs, heart, and so on.

(2.) Western
(a.) M27, p. 1026
The oil distilled from the heartwood was formerly used, often
in conjunction with cubeb, as a urinary antiseptic.

(b.) M22, p. 458
The oil was used in urinary infections and in compounds to treat
gonorrhoea, cystitis; and taken for chronic bronchitis.

(c.) M17, pp. 600, 601
Sandalwood oil on sugar relieves cough without expectoration in
chronic bronchitis. Used in the treatment of gonorrhoea and gleet,
and also chronic cystitis. Its action on putrefactive organisms or
* Bacillus Coli* is feeble, but it is powerfully antiseptic against
* Staphylococci*.

(d.) NSD, p. 1163
Moderate doses stimulate the respiratory and genito-urinary mucous
membranes, but overdose is extremely irritating to the genito-
urinary tract. It is often used in gonorrhoea treatment after the
acute inflammatory condition has subsided. It is also effective
in subacute bronchitis and certain forms of asthma.
Therapeutic uses of *Santalum album* and *Dracaena loureiri* compound

(1.) Thai

(a.) *KFC*

This compound is an ingredient in over 50 prescriptions. Symptoms include poisoning or infections of a general nature, smallpox, boils, abscesses, and snakebite; body heat, thirst, restlessness, agitation, convulsions; chest infections and breathlessness; intestinal parasites, diarrhoea and dysentery; and mouth diseases represented as *la* and *la-ong*.

*Chan thet* with or without *chan daeng* is frequently prescribed with one or more of the following drugs: *kralam phak*, *khrai khruea*, *kot so*, and *krisanaa*. (See p. 118).

**Conclusions** Anti-asthmatic, perhaps antibacterial. In combination with *chan daeng*, also anthelmintic.

**MUEAT KHON**

*Bitter: root*

*Scleropyrum wallichianum* Arn.

Santalaceae

*root* (PT); *TS*, p. 302; *WW*, p. 617

Therapeutic uses of *Scleropyrum wallichianum*

(1.) Thai

(a.) *KFC*

The root of this plant is used in only one recipe in the text. In combination with 27 other ingredients, several of these being toxic or bitter, it is included in a mixture for heat and thirst (caused by *saang*).

1 In treating thirst, it appears that the purpose is not to quench the thirst, as with water, but to treat the cause of thirst, for example, fever of malaria.
(b.) PP, p. 169

Bitter: root

To counteract the poison of various types of fever, such as relapsing fever, toxic fever, and colds; and for painful swelling.

(2.) Western

Not found.

(3.) TE, p. 88

Monoterpenes and sesquiterpenes occur in several genera of the Santalaceae.

Conclusions Antipyretic perhaps.
Therapeutic uses of *Glinus oppositifolius*

(1.) Thai

(a.) *KPC*

The root is used in an *Ayurvedic* type recipe, but in most other cases it is the leaves which occur in mixtures and decoctions to be taken, or external applications, to treat *saang* and the poison resulting from it. There is one decoction to be taken for the treatment of mucus and blood in the stools resulting from intestinal parasites, and another mixture for diarrhoea.

(b.) *PP*, p. 169

Bitter: —

To improve the bile, and to treat malaria and other fevers such as fever resulting from disorders of the bile.

(2.) Western

Not found.

(3.) *TE*, p. 89

Most families of the order, except the Caryophyllaceae, produce characteristic betacyanin and betaxanthin pigments, which indicate affinity with the Cactales.

Conclusions The leaves appear to be used to treat infections.
RANALES (RANUNCULALES)

**KHAMIN KHRUEA**

Kamphaeng chet chan

*Fibraurea tinctoria* Lour.

also *Combretum* spp.

Toxic: —

Menispermaceae

**Therapeutic uses of khamin khruea**

(1.) Thai

(a.) *KPC*

The part used is not stated, except in one of the four recipes, in which the juice is given, but whether this is from the root, fruit or leaves is unclear. One of the prescriptions is for the pregnant mother, one to improve the quality of the mother's breast milk, and the other two mixtures are to treat tetanus and unconsciousness caused by *saang*, and to treat the seven kinds of *lom*.

(b.) *PP*, p. 165

Emmenagogue, blood tonic, heart tonic; used to expel flatus, to treat blood poisoning making the patient hot; fevers, painful joints and rheumatism, and a form of eczema.

(c.) *HE*, p. 10

The stem is used for jaundice, and as a carminative. The root is a carminative, and used as an antiseptic for eye diseases. The leaves are used as an emmenagogue.

(2.) Western

Not found.
Families of the Ranunculales have a considerable variety of plant constituents. Alkaloids are very common. The Menispermaceae contain isoquinoline-derived alkaloids, diterpine-derived alkaloids, triterpenoid alkaloids, benzylisoquinoline, bisbenzylisoquinoline and aporphine type alkaloids. Saponins are present in many species.

The Combretaceae are usually rich in tannins.

Conclusions Used to counteract infection, possibly has an effect on the CNS. There is insufficient evidence in the KPC prescriptions for the use of this drug to be clear.

**BORAPHET** บอร่าฟีท

*Tinospora tuberculata* Baume

Menispermaceae

(stem, leaves, leaf sap.

**Therapeutic uses of Tinospora tuberculata**

(1.) Thai

(a.) KPC

*Boraphet* has many uses in paediatrics, usually as the stem, occasionally as the leaves or leaf sap. The symptoms and diseases treated range from *taen saang* and intestinal parasites to diseases of the eyes and ears. It is an ingredient in recipes to make the liver contract, mouth and throat paints, expectorants, and in almost every one of a series of stomach mixtures given to babies, a different one each month for the first year, to prevent
vomiting, and taan saang. An interesting use of the stem of this plant is to wrap it around the patient's head, sometimes with ching chaa chaalee (see below), in association with medicine to be taken for such symptoms as painful diarrhoea, mucus and blood in the stools, intestinal parasites, and prolapse of the rectum. It is also used in mixtures for the mother, for disorders of pregnancy, and to purify the blood and breast milk. Boraphet is frequently prescribed together with one or more of the following: khee kaa, lep mue naang, and yaa dam (see p. 118).

(b.) PP, p. 167
Bitter: stem
For malaria, smallpox, bubonic plague, and all kinds of fever, and for internal heat and thirst, as well as being a tonic to give strength, to improve the bile and the fire element, and to treat hiccoughs.

(c.) LB, p. 23
The stem is used to treat fevers, and as an expectorant.

(2.) Western
Not found.

(3.) TE, pp. 94, 95
see khamin khruea, p. 143.

Conclusions The uses are too varied for any conclusions to be reached about the purpose of this drug in the prescriptions in KPC.

CHING CHAA CHAALEE ชิงช้าเหลา
Tinospora cordifolia
stem, leaves, fruit

Bitter: stem
Menispermaceae
(VJ); HE, p. 18; WW, p. 256
Therapeutic uses of *Tinospora cordifolia*

(1.) Thai

(a.) KPC

As explained under 'Boraphet', these two species of *Tinospora* are sometimes used together, in conjunction with preparations to be taken, as the stem, wrapped around the head. They also occur together in an application for itching; in this case it is the leaves which are used. The fruit of *Tinospora cordifolia* are part of a recipe to be taken or used as a paint for *taan saang*, boils and abscesses. The leaves are used in a paint for *khamao*, and in a diarrhoea mixture (see p. 240), and the stem is one of 68 items in a decoction to expel intestinal parasites.

(b.) PP, p. 167

For fevers caused by [the element] blood, malaria, infections, smallpox, internal heat and thirst; to improve the appetite, [the element] fire, and the strength.

(c.) HE, p. 18

The whole plant is a bitter tonic, febrifuge and stomachic.

(2.) Western

Not found.

(3.) TE, pp. 94,95

See *khamin khruea*, p. 143.

Conclusions There is insufficient use of the stem in *KPC* recipes for any conclusions to be reached.
RHODEALES (PAPAVERALES)

FIN θυ exotic
Yaa fin ยานิสα

Papaver somniferum L. Papaveraceae

Opium dried or partly dried latex.

Fin thang 2 ฟินท่าง 2 (The two fin)

1. fin
2. fin ton (see pp. 123, note 2; 191)

Nam yaa fin นำยาฟิน

a. The residual deposit from opium after smoking, scraped from the pipe, placed in water to wash it and make it liquid. This is used to stop the diarrhoea of cholera, and is very potent. (VJ)

b. Boiled raw opium. This is done to improve the odour, since crude opium has a foetid smell. (VJ)

Therapeutic uses of Papaver somniferum

(1.) Thai

(a.) KPC

Opium occurs as an ingredient in 37 prescriptions, in four of which it is prescribed as fin thang 2, that is, in combination with fin ton, when the bark is used in preparations to treat diarrhoea or dysentery.

Opium is an ingredient in mixtures for pain, for diarrhoea and dysentery, and as a sedative; and in mouth paints, ear and eye drops, and external applications to relieve pain, or for its astringent action.
Toxic. Used to treat dysentery, cough, muscular pain, and rectal bleeding. It causes intoxication and vomiting.

(2.) Western

M27, p. 975

Analgesic, narcotic, diaphoretic. It is used for coughs, and to relax the intestinal muscles; and has been used for haemorrhoids. Opium has been employed externally in liniments or lotions, but there is no evidence of local analgesic action.

Conclusions The use of opium is conventional, as might be expected from an exotic drug of such value to medicine, known and used in many parts of Asia and Europe for centuries.

**CHING CHEE**

*Capparis micracantha* DC.

Bitter: root

Capparidaceae (Capparaceae)

(root) ; *LB*, p. 23; *WW*, p. 256

**Therapeutic uses of Capparis micracantha**

(1.) Thai

(a.) *KFC*

There is only one prescription, in which the root is used, with 12 other ingredients, for a mouth paint and mixture to be taken for the following: *saang* affecting the throat and base of the tongue; *la* causing a stiff tongue and lockjaw and inability to suck; smallpox; poisons; delirium; and to prevent bubonic plague developing internally.
(b.) PP, p. 168

Bitter: root

For fevers caused by [the elements] bile and blood, for eye diseases, and to expel flatus.

(c.) LB, p. 23

The whole plant is used to treat fever, to expel purulent serum, and to treat skin diseases.

(2.) Western

Not found.

(3.) TE, p. 100

The family has myrosin-cells and mustard-oil glycosides such as gluco-capparin. Pyrrolidine is the only alkaloid reported: this has been found in two genera.

Conclusions Used in one recipe only to counteract infections.
ROSALES

THOP THAEP  ถิ่นทน

Derris trifoliata Lour.  Toxic: stem
whole plant  Leguminosae (Papilionaceae) (PT)

Therapeutic uses of Derris trifoliata

(1.) Thai
(a.) KPC

This plant is one of seventeen ingredients in an anthelmintic
decoction to be taken when internal parasites affect the eyes
causing to (see p. 244) resulting in blurred vision.

(b.) PP, p. 166

Used as an anthelmintic, to treat taan saang and foamy faeces,
and to expel mucus.

(2.) Western

M27, p. 787

Derris (Tuba root, or Aker-tuba) consists of the dried rhizome
and roots of Derris elliptica, D. malaccensis, and other species
of Derris, containing not less than 3% of rotenone. This is
widely used as an agricultural and horticultural insecticide and
larvicide. Derris is generally harmless to mammals, but
extremely toxic to fish, and the powder is irritant to the eyes
and mucosa, and may cause convulsions and stupor if inhaled.

(3.) TE, pp. 102, 104

The Leguminosae includes more important drugs than any other
family. They contain cyanogenetic glycosides, saponins, tannins,
mucilage and anthocyanins, as well as alkaloids, which are common.
Therapeutic uses of *Erythrina fusca*

(1.) Thai

(a.) *KPC*

The leaves and root are used in prescriptions for diseases of pregnancy; the bark, in a mixture for the seven kinds of *lom*. The root is the part specified in the remaining half dozen recipes, one a mouth and throat paint for *la-ong*; two preparations to be taken or applied to relieve thirst and body heat, one for *saang*, and one for convulsions, listlessness, breathlessness, lockjaw, and so on; and another, an application for skin parasites.

(b.) *PP*, p. 164

Toxic: root

To treat *lom*, mucus, and parasites.

(2.) Western

Not found.

(3.)

(a.) *TE*, pp. 102, 104

see *thop thaep*, p. 150.
Curare-like activity has been demonstrated in alkaloids from tropical species of *Erythrina*, but these are no longer clinically used. See *Erythrina* symposium, *Lloydia*, 37 (3): 321-487, 37(4): 543-588.

**Conclusions**

Used to counteract infections, and for external parasites. Possible neuromuscular blocking effect by curare-like alkaloids might have been used for the treatment of lockjaw and convulsions.

**SABAA**

Sabaa yai สารบ้าใหญ่  Toxic: fruit (perhaps, seeds are meant)

Sabaa mon สารบ้าน้อย  Leguminosae

*Entada phaseoloides* Merr.

St Thomas' bean; Sea bean. seeds

Sabaa Thai สารบ้าไทย might be *Entada* (PT)

Sabaa ling สารบ้าลิง  Leguminosae

*Entada glandulosa* Pierre ex Gagnep. seeds  (Mimosaceae)

**Therapeutic uses of Entada**

(1.) Thai

(a.) *KPC*

The fruit of *sabaa Thai* are used in an application for the abdomen, to treat flatulence. The toasted seeds of *sabaa* occur in a mixture for tetanus; the seeds of *sabaa ling* (1871 text has *sabaa*) occur in an eye lotion to remove to (see p. 244); and under the name, *sabaa mon*, the seeds are used in an application to treat flatulence, abdominal distension, inability to
evacuate bladder and bowels, convulsions, tetanus, and other lorn diseases; also in an Ayurvedic type preparation.

(b.) PP, p. 162

Toxic: fruit (perhaps, seeds)

Used for skin diseases, ringworm, scabies, fever, and so on.

(c.) LE, p. 30

The seeds are used to treat fever, the stem and bark contain saponins, and are used as shampoo, to cleanse wounds, and as fish poison.

(2.) Western

USD, pp. 1430, 850

The seed of E. phaseoloides, called Mackay bean or Garbee bean, is reputed to be 'strongly poisonous'. These seeds are sometimes substituted for Calabar beans.

(3.) TE, pp. 102, 104

See thop thaep, p. 150.

Conclusions Possible CNS effects

CHUM HET THET  ชุมแพศิษฐ
Het thet  เศิดเทศ
Cassia alata L.  (Caesalpiniaceae)  (VJ); HE, p. 5; WW, p. 260
Candelabra bush  (VJ)
leaves, flowers, root, water (probably flower water), seeds.
Therapeutic uses of *Cassia alata*

(1.) Thai

(a.) KPC

The flowers are powdered together with *khamin oi* (edoary) and dusted on the body of a child who is difficult to rear, in order to prevent illness. The root is used in a mixture for *saang*, and another for severe diarrhoea (see p. 240).

The seeds occur in an application to treat parasitic skin infestation. The remainder of the prescriptions containing this drug use the leaves in mixtures, mouth paints, and pills for such diseases and symptoms as *taan saang*, intestinal parasites, mucus and blood in the stools, flatulence, and constipation.

(b.) PP, p. 164

For skin diseases, ringworm, and so on.

(c.) HE, p. 5

The leaves are used as a purgative, and for ringworm. The whole plant is a taeniiafuge.

(2.) Western

USD, p. 1307

'The leaves of *Cassia alta* [sic] L., Ringworm bush, have been recommended as a local application for ringworm; they were moistened and the parts affected rubbed with them.'

(3.) TE, pp. 102, 104

See *thop thaep*, p. 150.

Conclusions Antiparasitic and laxative.
KHEE LEK  ไต้เล็ก  (ton ต้ม)  
Khee lek baan  ไต้เล็กบ้าน

Cassia siamea Lank.  
(C. florida Vahl.)  
Siamese cassia

heartwood, young leafy shoots, leaves

Therapeutic uses of Cassia siamea

(1.) Thai
(a.) KPC

This drug is one of 40 ingredients in a mixture to treat the seven kinds of lom associated with birth saang. It also occurs in an anthelmintic decoction.

(b.) PP, p. 169

Bitter: heartwood

To treat krasai (cachexia), klon, and constipation.

(c.) HE, p. 5

The wood is used as a laxative, and for skin diseases. The flowers and young leaves, which are edible, are used as a mild laxative.

(2.) Western

Not found.

(3.) TE, pp. 102, 104

See thop thaep, p. 150.

Conclusions  Laxative perhaps.

klon  น้ำอะ condition characterized by infiltration of serum into tissues of the scrotum.  Mv, p. 59.
KRALAM PHAK

1. ton taa tum ต้นตาข่าย
   toa tum thale ดอต้ม Thể

2. salat dai ลั่นต้าไชย
   salat dai paa ลั่นต้าไชยป้า

1. Excoecaria agallocha L.
2. Euphorbia antiquorum L.

1. Blind your eyes
2. Triangular spurge
heartwood

Kralam phak is the heartwood of either 1 or 2.

Therapeutic uses of kralam phak
(1.) Thai
(a.) KPC

It is an ingredient in almost 30 prescriptions, mostly mixtures or decoctions to be taken, to treat such diseases and symptoms as taan saang, the seven lom diseases associated with saang, intestinal parasites and the symptoms these cause, various kinds of poison, including smallpox and snakebite, fevers and delirium, tetanus, malaria, diarrhoea and dysentery. It also occurs in a snuff for faintness, headache, red eyes and blurred vision.

Kralam phak is usually prescribed with krisanaa in these prescriptions. Often these two drugs occur in combination with chan thet or chan thang 2, and kot so, or one of these (see p. 118).
(b.) *PP*, p. 170

Bitter: *kralam phak*

Tonic for the liver, lungs, and heart, to treat faintness and in pre-natal care.

*PP*, p. 173

Hot-and-spicy; latex of *taa tum*

Strong purgative, expels mucus, bad blood, and purulent serum.

(This drug is dangerous)

(c.) *HE*, p. 9

*Salat dai*

Old wood and latex are purgatives, and the latex is also used to remove warts.

(2.) *Western*

Not found.

(3.) *TE*, p. 108

Many species of the Euphorbiaceae contain irritant or piscicidal substances. Some contain anthraquinones, triterpenoids, fatty acid epoxides, unsaturated fatty acids and antitumour agents. The alkaloids found are usually of the aporphine, pyridine, indole, quinoline or tropane types.

Conclusions There are too many variables in the *KPC* prescriptions containing this drug for us to suggest any particular therapeutic uses.

*DEE MEE*  脱颖 (ton หยิบ )  Bitter: wood

*Cleidon javanicum* Blume  Euphorbiaceae

(*C. spiciflorum* Merr.)  *PB*, p. 68; *LB*, p. 45
Therapeutic uses of *Cleidan javanicum*

(1.) **Thai**

(a.) *KPC*

*Dee mee* is an ingredient in oily drops for instillation into an infected ear.

(b.) *PP*, p. 167

Bitter: wood

Counteracts the heat and poison of fever, and the pain of headache; diaphoretic.

(c.) *LB*, p. 45

A poisonous tree. The leaves are boiled with water and taken as an abortifacient.

(2.) **Western**

Not found.

(3.) *TE*, p. 108

See *kralam phak*, p. 157.

**Conclusions** From only one recipe, we cannot reach any conclusions.

**PRAKHAI'J KAI** ประเสริฐ

Bitter: leaves

**Makham kai** มัฆหัม

**Putranjiva roxburghii** Wall. Euphorbiaceae

leaves, bark (PT); *WW*, p. 171

Therapeutic uses of *Putranjiva roxburghii*

(1.) **Thai**

(a.) *KFC*

The bark is used in an emulsion to be taken to treat *saang*, otherwise the leaves are specified in the other six recipes.
These include mixtures to be taken for the stomach, to prevent vomiting, for severe diarrhoea, the poison and diarrhoea of saang, a preparation to be taken or applied to counteract fever, intestinal parasites, poison, mucus and blood in the stools, and so on, or to contract the liver. There is also an application to protect the child from all harm.

(b.) PP, p. 168
Bitter: leaves
Used for poisonous boils and abscesses, cachexia, and as a purgative.

(c.) LB, p. 48
For fever and colds, to expel the lochia, or lochial discharge, and to cause the uterus to retract.

(2.) Western
Not found.

(3.) TE, p. 108
See kralam phak, p. 157.

Conclusions There are too many variables for any conclusions to be reached.

Bitter: leaves
Bridelia burmanica Hook. f.
leaves
Euphorbiaceae
HE, p. 4

Therapeutic uses of Bridelia burmanica
(1.) Thai
(a.) KPC
The leaves are used in a decoction to be taken by the mother
during a difficult labour, in order to make the delivery easier. For children, the leaves occur in a mixture to expel *saang*.

(b.) *PP*, p. 167

Bitter: leaves

Purgative, anthelmintic, used to treat cachexia, the poison of *taan saang*, and to improve the bile.

(c.) *HE*, p. 4

The leaves are used as a purgative, emmenagogue, and for dysentery.

(2.) Western

Not found.

(3.) *TE*, p. 108

See *kralam phak*, p. 157.

Conclusions There is insufficient evidence to suggest the action of this drug.

**YAA TAI BAI** บั้งไผ่บาน


It is difficult to know which species is indicated in the old prescriptions. If it is for fever, then it should be *P. niruri*, if it is a diuretic, then it is *P. urinaria*. (VJ)

leaves, fruit

Yaa tai bai

*P. urinaria*  *HE*, p. 14
Therapeutic uses of *Phyllanthus niruri* and *P. urinaria*

(1.) Thai

(a.) KFC

The name used in these prescriptions is *yaa tai bai*, never *yaa tai bai khaao*; sometimes the leaves or fruit are specified, but more often no part is mentioned. The leaves occur in a stomach mixture to protect babies from vomiting, and *taan saang*, and in another for the poison of *saang*; the fruit are also used in a mixture for *saang*. Other recipes include pills for flatulence, mouth and throat paints to apply to inflamed areas resulting from *saang*, to overcome excessive salivation. This drug is also an ingredient in mixtures for *lom* diseases for intestinal parasites associated with birth *saang*, and the resultant mucus and blood in the stools, and in one or two 'universal' remedies.

(b.) PP, p. 169

Bitter: *yaa tai bai*

Used for fevers, malaria, as a diuretic, and to improve the bile.

(c.) HE, p. 13

*Yaa tai bai khaao*

The whole plant is a diuretic, febrifuge, and stomachic.

*HE, p. 14*

*Yaa tai bai*

The whole plant is used as a diuretic, the root for insomnia.
The leaves of *P. niruri* contain a neutral bitter principle, phyllanthin, and are used as a fish poison.

See *kralam phak*, p. 157.

Conclusions From the KPC prescriptions, the use is unclear.
GERANIALES (RUTALES)

MAIIAAM  มะนาว   exotic    Bitter: fruit kernel

Bland: root
Sour: fruit juice

Citrus aurantifolia Swing.
Rutaceae

Lime

(VJ); LB, p. 52

fruit juice, fruit kernel, leaves, leaf sap, root, flowers.

Therapeutic uses of Citrus aurantifolia

(1.) Thai

(a.) KPC

In the 100 or so preparations in the text in which this name occurs, the fruit juice is the most common form, usually as an excipient or diluent. The flowers are an ingredient in a mixture for breathlessness, as are the roots. Two interesting mixtures to be taken or used as a mouth paint for la-ong, and containing rayom, also include the root of C. aurantifolia, one of these having the fruit and leaves as well. The leaves are used in two 'universal' remedies, one to be taken or applied for conditions ranging from epilepsy to asthma and parasites. The fruit kernels appear in seventeen prescriptions, almost all of these being mouth or throat paints, sometimes in association with the fruit juice, and frequently in association with prakham dee khwaai. The diseases and symptoms for which the mouth paints are used are mainly the effects of the poison of saang, such as inflammation of the mouth, and disorders of the chest and intestines.

(b.) PP, p. 169

Bitter: fruit kernel

Expectorant; also used to counteract the poison of taan saang.
PP, p. 185

Sour: fruit juice
Expectorant; anti-tussive; purifies the blood; and improves the condition of the skin.

PP, p. 191

Bland: root
For the heat of fevers, internal heat, thirst, and to counteract the symptoms of poisoning.

(c.) LB, p. 52

The leaves are used to treat headache; the leaf sap, for stomach ache; and an infusion of the leaves, as a mouth wash and throat gargle. The fruit juice is used for coughs and colds, and to improve the appetite. The root is an ingredient in decoctions for dysentery, and in preparations for the treatment of gonorrhoea; and the root bark is used for fever.

(2.) Western
Not found. Other citrus species, such as the orange and lemon, are used, but not the lime.

(3.) TE, p. 110

Constituents of the Rutaceae include a wide variety of alkaloids, volatile oils, rhamno-glucosides, coumarins and terpenoids. Alkaloids include alkaloidal amines, imidazole, indole, isoquinoline, pyridine, pyrrolidine, quinazoline and quinoline types. Many of the fruits are rich in citric acid and other acids and in vitamin C.

Conclusions The seeds are used in recipes to treat mouth diseases.
Therapeutic uses of *Picrasma javanica*

(1.) Thai

(a.) *KPC*

This is one of the ingredients in a mixture to be taken or used as a mouth paint for *la-ong*, and in a mixture to treat poisoning and tetanus. In combination with *dee ngu khruea*, it occurs in a mixture for the poison of *saang* and diarrhoea.

(b.) *PP*, p. 167

Bitter: —

To treat fever which makes the body hot, and fevers such as malaria.

(c.) *LB*, p. 49

The bark and wood are used in place of quassia, and the leaves as an insecticide.

(2.) Western

Not found.

(3.) *TE*, p. 110

Bitter principles are a characteristic of the Simaroubaceae.

Conclusions  Counteracts infections of various kinds.
**Therapeutic uses of *Eurycoma longifolia***

1. **Thai**
   
   (a.) *KPC*
   
   Four of the six preparations in which this occurs are mixtures to treat various kinds of poison, one is for heat and thirst, and one is an application for skin parasites.

   (b.) *PP*, p. 168
   
   Bitter: root
   
   To get rid of the poison of abdominal abscesses and various kinds of poison, to treat tuberculosis, and all sorts of fever.

   (c.) *LB*, p. 49
   
   The bark is used for fever, and the fruit for dysentery.

2. **Western**
   
   Not found.

3. **TE**, p. 110
   
   See *dee ngu tu ton*, p. 165.

**Conclusions** Used to counteract infections of various kinds.
SADAO  ต้นถิ่น

Azadirachta indica A. Juss. var. siamensis Valeton  Meliaceae
(VJ); HE, p. 2

leaf stems, heartwood, bark, leaves, flowers, seeds, leaf sap.

Therapeutic uses of Azadirachta indica var. siamensis

(1.) Thai

(a.) KPC

This drug occurs in about two dozen prescriptions, some of which are for treatment of the pregnant mother, and some for diseases of the elements, that is, Ayurvedic type treatment. Of the remainder, the heartwood is used in a decoction to be taken for intestinal parasites; the leaves are ingredients in mixtures and in applications and mouth paints to counteract poisons of various kinds, as well as in mixtures to prevent babies from vomiting, to treat fevers, diarrhoea and dysentery, intestinal parasites, and to act as a diuretic and laxative. The seeds are also used to treat poisoning; the bark is an item in tongue paints for saang, and in a decoction to be applied to cause retraction of a prolapsed rectum. Leaf sap is used in an oily preparation for the same purpose, as well as in oily ear drops.

(b.) PP, p. 169

Bitter: leaves

The leaves are used as a tonic for the fire element, and to aid digestion.

(c.) HE, p. 2

The rachis of the compound leaf is an antimalarial; the leaf, stomachic; the root, expectorant; and the heartwood is used to check nausea and vomiting.
(2.) Western

This particular variety is not found.

(3.) TE, p. 111

None of the Meliaceae provide drugs of importance, although Azadirachta bark has been used medicinally. Triterpenoids and limonoids are significant constituents.

Conclusions  The leaves are used to counteract the effects of infections of various kinds.

LLAN ใหน

Melia azedarach L.  Meliaceae
Persian lilac
leaf sap, bark, bark sap

Therapeutic uses of Melia azedarach

(1.) Thai

(a.) KFC

The leaf sap is an ingredient in oily drops both for ear abscess and to (see p. 244); the bark sap occurs in another oily ear preparation; and the bark is used in an application for skin parasites.

(b.) PP, p. 167

Bitter: leaves

The leaves are used as an anthelmintic, diuretic, and emmenagogue, as well as to treat [? bladder] stones.
(c.) _HE_, p. 12
All parts are used for skin diseases and as diuretics. The fruit is deadly poisonous if consumed, particularly for children; and is used as fish poison.

(2.) Western
(a.) _M27_, p. 253
_Azadirachta indica_ (*Melia azadirachta*) is the Margosa or Neem, the dried stem bark, root bark, and leaves of which are used as a bitter, usually in an infusion or tincture. The oil expressed from the seeds has been used as a hair tonic and in skin preparations.

(b.) _Burk._, pp. 1465, 6
The root bark is used as an anthelmintic for round worms, and the fruit as an insecticide in U.S.A.

(3.) _TE_, p. 111
See _sadao_, p. 168.

**Conclusions** The purpose for using the leaves in ear drops is not clear.
SAPINDALES

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<td><em>Aphania viridis</em> Pierre</td>
<td>สะพิอฟานีอาไวริดิส ปีรร</td>
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<td>Wild variety</td>
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<th>ชุมเรียงพิงก์2</th>
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<td>1. <em>phum riang baan</em></td>
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<td>2. <em>phum riang paa</em></td>
<td>(VJ)</td>
</tr>
<tr>
<td>roots</td>
<td></td>
</tr>
</tbody>
</table>

**Therapeutic uses of *Otophora cambodiana***

1. **Thai**
   
   (a.) *KPC*
   
   There are three occurrences - once with the wild *phum riang*, in a preparation for the pregnant mother to take or apply to protect the foetus; once in a mixture for *saang*; and once in a recipe for the heat and thirst of *saang* both for taking and applying.

2. **Western**
   
   Not found.
Therapeutic uses of *Aphania viridis*

(1.) Thai

(a.) *KPC*

In addition to its use with the domestic *phum riang*, above, the root of the wild *phum riang* is used in a mixture and application for thirst and internal poison, and in a decoction to be taken for a variety of symptoms, by the mother to improve the quality of her breast milk, and by the child for *saang* and parasites, hiccoughs, hunger, nausea, and mucus.

(b.) *HE*, p. 2

The root is antimalarial.

(2.) Western

Not found.

Therapeutic uses of *Otophora cambodiana* and *Aphania viridis* combined

(1.) Thai

*PP*, p. 163

Toxic: root

For malaria, delirium, *sarnibaat* (see p. 6), and heat, restlessness, and agitation caused by fevers.

(2.) Western

Not found.

(3.) *TE*, pp. 113, 114

In a few species of the Sapindaceae alkaloids have been found. Other constituents include saponins, cyanogenetic glycosides, cyclitols (for example, shikimic acid); the seed fats have a high proportion of oleic acid.

Conclusions There is insufficient evidence to indicate a specific use for these two drugs.
**PRAKHAM DEE KHWAAT**  ประการที่เคยว

*Bitter: fruit [pulp]*

_Sapindus emarginatus_ Wall.  
(VJ); _TS_, p. 295

_S. rarak_ A. DC.  
Sapindaceae (VJ)

Some sources give _S. emarginatus_ for prakham _dee khwaat_, and _S. rarak_ for makham _dee khwaat_, but both 'pra' and 'ma' here mean fruit, and both _S. emarginatus_ and _S. rarak_ fruit are prakham _dee khwaat_.

Fruit pulp, leaves, root, fruit juice

**Therapeutic uses of Sapindus emarginatus and S. rarak**

(1.) Thai

(a.) _KPC_

Most of the 50 or so prescriptions containing this item use the fruit pulp, while a small number use the juice, the leaves or the roots. The root is used only in mixtures and paints for mouth infections, but apart from its inclusion in one of the oily ear drops for ear abscess, in the form of fruit juice, practically every prescription, whether to be taken or applied, is to treat poisoning or infection of one kind or another, with an occasional mention of diarrhoea and similar symptoms.

(b.) _PP_, p. 168

The fruit [pulp] is used to counteract all kinds of poison, internal heat and poison, fevers, and the poison of _taan saang_.

(2.) Western

Not found.

(3.) _TE_, pp. 113, 114

See _phum riang_, p. 171.

**Conclusions** Used to counteract poisoning and infections of various kinds.
Cardiospermum halicacabum L.

Balloon vine; Heart pea.

leaves root

Bitter: stem

Therapeutic uses of Cardiospermum halicacabum

(1.) Thai

(a.) KPC

Four prescriptions include the leaves, one the root, and four do not state the part used, which could be the stem. Whatever part is used, this drug is used mainly in mixtures or applications to counteract poisons or infections.

(b.) PP, p. 170

Bitter: stem

To treat fevers and to improve the bile.

(c.) LB, p. 56

The whole plant is used to treat arthritis, and in shampoos for dandruff. The root is diuretic, emetic, and laxative; the root and leaves are used for arthritis; the leaf sap in eye lotions for painful eyes, and in preparations to relieve dysmenorrhoea. Both the seeds and leaves contain cyanogenetic glycosides, and are used to treat fever and produce sweating.

(2.) Western

Not found.
(3.) *TE*, pp. 113, 114

See *phum riang*, p. 171.

**Conclusions**  The stem is not mentioned, but might be used to counteract infections.
RONG THONG  ร่องทอง

Rong  ร่อง

Garcinia hanburyi Hook. f.  สารเคมี

Gamboge tree  (PT); LB, p. 38; WW, p. 652

Therapeutic uses of Garcinia hanburyi

(1.) Thai

(a.) KPC

This drug occurs in almost a dozen prescriptions, all but two of which are laxatives, purgatives, or to treat intestinal disorders, sometimes parasites, and such symptoms as flatulence, abdominal distension, dropsy, and inability to evacuate the bladder and bowels. In each of these recipes, Garcinia resin is used in conjunction with aloes. Most of these preparations are to be taken, but two are applications to the abdomen. The other formulae are a mixture and a mouth paint for saang.

(b.) PP, p. 164

Toxic: resin

Drastic purgative, expels mucus, and also bad serum from pustules; used to relieve pain in wounds, expel the fluid of abdominal ascites, and to reduce the blood pressure.

(c.) LB, p. 38

The gum-resin from the bark is a drastic purgative. It is also used to remove dye.

(2.) Western

(a.) BP1867, p. 66

Cambogia; Gamboge. A gum-resin obtained from Garcinia Morella, Desrous. var. pedicellata. Imported from Siam. An ingredient
in Pilula Cambogiae composita.

(b.) BP1898, p. 64
Cambogia; Gamboge. A gum-resin obtained from Garcinia Hanburii, Hook. f.

(c.) M17, p. 785
Cambogia. A yellow gum resin obtained from Garcinia Hanburii growing in Siam. A powerful purgative, which may cause severe griping. It will expel tapeworm. Rarely now given alone.

(3.) TE, p. 99
The Guttiferae contain resins, volatile oils, alkaloids, xanthones and seed oils.

Conclusions Purgative.
**Therapeutic uses of krabao**

(1.) **Thai**

(a.) *KPC*

The roasted seeds are used in oily ear drops to treat ear abscess, and the bark occurs in an external application for skin parasites.

(b.) *PP*, p. 162

Toxic: seeds

Used to treat leprosy, cancer, yaws, skin diseases, itchy rash, purulent serum, a form of eczema, and so on.

(c.) Oil from the seed is used to treat leprosy - nowadays by injection. Formerly the treatment was by fumigation, by burning the seeds. (VJ)

(2.) **Western**

*M27*, pp. 1503, 1504

Hydnocarpus oil, or Chaulmoogra oil, is the fixed oil expressed from the fresh ripe seeds of various species of *Hydnocarpus* including *H. anthelmintica*, and also *Taraktogenos kurzii*.

Hydnocarpus oil is still used in the treatment of leprosy,
especially in endemic areas of the East, although the sulphones are now preferred.

(3.) TE, p. 118

Hydnocarpus seed oil contains cyclic unsaturated acids which are bactericidal towards the micrococcus of leprosy. The Flacourtiaceae constituents include cyanogenetic glycosides, tannins and phenolic acids.

Conclusions One prescription for ear drops is insufficient information for us to know the reason why the seeds are used. Perhaps antibacterial.
MYRTIFLORAE

LEP MUE NAANG  นิยมใช้  (ton mai)  Toxic: root

Quisqualis indica L.  HE, p. 15; (VJ); WW, p. 696
Q. densiflora Wall.  (VJ); WW, p. 696
(Q. conferta Exell.)  (VJ)
Rangoon creeper  Combretaceae

root

If used as an anthelmintic, it is Quisqualis.

There is also a shrub by this name. The bark is used as a fish poison, and contains a large number of saponins. In Hong Kong it is called Goat's horn. This is Aegiceras corniculatum Myrsinaceae, but this has not been used in medicine as far as can be ascertained. (VJ)

Therapeutic uses of Quisqualis indica and Q. densiflora

(1.) Thai

(a.) KPC

Only the root is used, except for one recipe in which the part is not stated. In this case, a decoction of lep mue naang (ton mai) is used as excipient for pills to be mixed with one of several diluents to be taken as an expectorant, and for fever. The root is an item in two decoctions taken to contract the liver, another to treat the effects of taan saang in the chest, as well as hypertrophy of the spleen due to malaria, and one or two 'universal' remedies. Half of the fourteen prescriptions in which this drug is used are anthelmintics.

Lep mue naang is often prescribed together with boraphet, khee kaa, and yaa dam, or one or more of these. (See p. 118.)

(b.) PP, p. 166

Toxic: root

Used as an anthelmintic, and when the faeces are foamy, or offensive smelling and sour.
(c.) HE, p. 15
The kernel is used as an anthelmintic for roundworms and threadworms.

(2.) Western
USD, p. 1493
The seeds have been used as an anthelmintic.

(3.) TE, p. 120
The Combretaceae are usually rich in tannins.

Conclusions Mainly anthelmintic.

SAKAE ล้งแกะ
Sakae naa ล้งแกะน้า
Combretum quadrangulare Kurz Combretaceae (VJ); LB, p. 61
bark, young leafy shoots, fruit, leaf sap, seeds, root, wood

Therapeutic uses of Combretum quadrangulare

(1.) Thai
(a.) KPC
The wood is burnt with several kinds of shell in a calcination process in the preparation of an eye lotion for to (see p. 244). Most of the other sixteen or so prescriptions are mixtures or decoctions to be taken for anthelmintic purposes, some specifically for roundworms, and these prescriptions state sometimes the fruit, the seeds, fruit and seeds, root, leaves, root and leaves, or the leaf sap. Wood ash is an ingredient in a mixture to be taken to treat (?) bladder) stones.
Anthelmintic, and also used to treat abdominal distension and so on.

The seeds are an anthelmintic against roundworms and threadworms. The whole plant is anthelmintic.

Not found.

The Combretaceae are usually rich in tannins.

Conclusions Anthelmintic.

**THAP THIM** ถิ่นศิริ  exotic  Toxic: root

**Punica granatum** L.  Punicaceae

Pomegranate.  (VJ);  **HE**, p. 15; **WW**, p. 373

leaves, leaf sap, fruit, fruit rind, flowers, young leafy shoots

**Thap thim thang 5** ถิ่นศิริ 5

**Benchathapthim** บัณฑาทิพย์

All five parts of the tree - stem, root, flowers, leaves and fruit

**Therapeutic uses of Punica granatum**

(1.) Thai

(a.) **KPC**

There are more than 30 preparations using parts of this tree, three of these being for the mother - one, to improve the quality of the milk, having the flowers; the other two, mixtures for disorders
of pregnancy, having the leaves as ingredients. The root occurs in decoctions to be taken as anthelmintics and intestinal astringents to relieve the painful diarrhoea, mucus and blood resulting from intestinal parasites. The fruit is used for similar purposes, as well as cough, breathlessness, listlessness, thirst, and so on. The fruit rind tends to occur in mouth paints for *la* and *sang*, and the leaves, the most commonly used part, in mixtures and decoctions to be taken for such general conditions as poisoning of varying kinds, as well as painful diarrhoea, mucus and blood, listlessness and related symptoms arising from intestinal parasites. The leaf juice is used for breathlessness, fever, and in a decoction for malaria.

(b.) PP, p. 163

Toxic: root

To expel roundworms, tapeworms, threadworms, and *taan khamooi*. PP, p. 154

Astringent: fruit rind

To relieve the elements, diarrhoea, dysentery, and to act as an astringent for and to cleanse wounds. PP, p. 157

Astringent: leaves

For dysentery with mucus and blood, vomiting, and diarrhoea, and so on.

(c.) HE, p. 15

The fruit rind and leaves are used as an astringent for diarrhoea. The seeds are antiscorbutic, and the root bark is a taeniafuge.

(2.) Western

(a.) M27, pp. 107, 110

Pelletierine tannate, or Punicine tannate is a mixture of the tannates of the alkaloids obtained from the bark of the root
and stems of *Punica granatum*. It has a specific action against tapeworms, but is ineffective against other intestinal parasites. Its highly toxic nature prohibits its use in all but healthy adults and it is now seldom used.

Pomegranate bark, the dried bark of the stem and root of *P. granatum* has been used for the expulsion of tapeworms.

**Conclusions** The root is used mainly as an anthelmintic, and intestinal astringent.
KOT SO  ก_indxือ  Bitter: -

Kot so that  ก niektóry  

*Angelica sylvestris* L. Umbelliferae (VJ)

Kot thang 5  ก่อทัง 5

The 5 kot
1. kot chiang  ก่อเชียง
2. kot so  ก่อลง
3. kot hua bua  ก่อหัวบัว
4. kot khamao  ก่อเขยม
5. kot chulaa lamphaa  ก่อคุลล่าลำพา (VJ); KSY, p. 301

Kot thang 7  ก่อทัง 7

The 7 kot.
The 5 kot, plus
6. kot kradauk  ก่อกระดาด
7. kot kaan phraao  ก่อแกนพระรา (VJ); KSY, p. 301

Kot thang 9  ก่อทัง 9

The 7 kot, plus
8. kot phung plaa  ก่อพุ่งปลา
9. kot chadaa mangsee  ก่อชادาแมงSEE (VJ); KSY, p. 301

Therapeutic uses of *Angelica sylvestris*

(1.) Thai
(a.) KPC

*Kot so* occurs as one of the ingredients in over 30 prescriptions, and as one of the 5 or 9 *kot*, in a further two dozen or so. We

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1 For identification details see Appendix IV.
will not pursue the use of these compounds here, but note that many of the drugs of which they are comprised are commonly known, such as lovage, motherwort, costus and angelica (*A. archangelica*). Kot so appears to have a general use in mixtures, decoctions, applications, throat and mouth paints prescribed for the treatment of poisoning from all sources; fevers; intestinal parasites and the associated symptoms; as well as the element mucus; the convulsions, tetanus and related conditions of the seven kinds of *lom* associated with birth *saang*; malnutrition; and so on. Kot so is often prescribed with *kralam phak*, *chan thet* or *chan thang 2*, and *krisanaa* (see p. 118).

(b.) *PP*, p. 168

Used to treat malaria, bronchitis, asthma, fever causing hiccoughs, and diseases of the element mucus.

(2.) *Western*

*USD*, pp. 1551, 2

Quotes Read and Schmidt (Proc. S. Ex. B., 1923, 20, 395) as equating the root of *A. sylvestris* L. with the Chinese drug Tang-kuei or Man-mu, from which a liquid extract called *eumenol* was used in Europe to treat 'dysmenorrhea and other uterine complaints'.

(3.) *TE*, p. 122

The sub-family, Apioideae, which includes the genus *Angelica* contains volatile oils, resins, coumarins, furocoumarins, chromono-coumarins, terpenes and sesquiterpenes, triterpenoid saponins and acetylenic compounds; alkaloids are rare.

**Conclusions** There are too many variables in the prescriptions containing *kot so* for us to be able to determine the purpose for which it is used.
**Diospyros mollis** Griff.

bark, root, fruit, seeds, fruit juice

**Therapeutic uses of Diospyros mollis**

(1.) Thai

(a.) KPC

The seeds are included in a powder mixed with an egg and fried, taken to expel roundworms. Both stem and root combined, root, fruit, and bark are used in anthelmintic mixtures and decoctions, and to treat the symptoms resulting from intestinal parasites, such as diarrhoea, dysentery, mucus and blood in the stools, loss of appetite, listlessness, breathlessness, and thirst. The root is also an item in a decoction to contract and retract the bowel which has prolapsed as a result of *saang*. The fruit juice acts as diluent for a preparation to be dabbed on *la*.

(b.) PP, p. 164

Toxic: root and fruit

The root is used to counteract the poison of *taan saang*, to treat vomiting, and *lom*. The fruit is used to expel tapeworms and threadworms, and to counteract the poison of *taan saang*, and so on.

PP, p. 183

Salty: bark of the stem

To treat cachexia, to expel roundworms and threadworms, and to counteract the poison of *taan saang*.
(c.) *HE*, p. 8

The unripe fruit is an anthelmintic for all kinds of intestinal worms.

(2.) *Western*

Not found.

(3.) *TE*, p. 125

Naphthaquinones are characteristic of the Ebenaceae.

**Conclusions** Anthelmintic.

**PHAYAA RAAX DAM** พุษฎาракํา

*Diospyros variegata* Kurz

Resin

Bitter: resin

Ebenaceae

*(PT);* *PB*, p. 95

**Therapeutic uses of Diospyros variegata**

(1.) *Thai*

(a.) *KPC*

This drug occurs in only one prescription, of 28 ingredients, to be taken or applied to relieve the heat and thirst of *saang*.

(b.) *PP*, p. 168

Bitter: resin

For general muscular pain, backache, pain at the waist, and kidney disorders and so on.

(2.) *Western*

Not found.

(3.) *TE*, p. 125

Naphthaquinones are a characteristic of the family.
Conclusions Insufficient evidence.

**Taan dam** ตานดำ or ตาลดำ

*Diospyros montana* Roxb.

*Diospyros transitoria* Bakh.

Wood, root, nam (liquid) unspecified

Toxic: root and wood

(VJ); มพ, p. 332

(PT); ทส, p. 125

**Taan saan** ตาลเล่าน

*Diospyros montana* (PT); มพ, p. 333

Taan saan does not occur in these prescriptions.

**Taan khamooi** ตาณเขมร

*Diospyros sp.*

Fruit, root, leaf sap, nam (unspecifed)

Toxic: leaves and wood

(VJ); มพ, p. 331

**Bencha taan** เบญจาตาาน

**Taan thang 5** ตาานทัง ๕

The 5 taan

1. **taan mon**  root  ตาณโมน
2. **taan sian**  root  ตาานเสมิน
3. **taan dam**  root  ตาณดำ
4. **taan khamooi**  root  ตาณเขมร
5. **taan tanot**  root  ตาณดินเน็ง or ตาณตัด  KPC I, 2; 68

For identification of 1, 2, and 5 see Appendix IV.

**Therapeutic uses of taan dam and taan khamooi**

(1.) Thai

(a.) KPC

In this text, these drugs seldom occur as ingredients

1 Not to be confused with a parasitic disease of the same sounding name.

2 Since there is some doubt about the precise species, the Thai names are used here.
in a prescription without each other, the other three of the five 
taan, or else taan mon. The parts to be used are not always 
indicated, and the purposes for their inclusion are unclear, 
since the remedies in which they are ingredients are frequently 
'universal', and otherwise for very different symptoms. In three 
recipes the five taan are included; one, a decoction to be taken, 
and the other, a preparation to be taken or applied to prevent all 
ilnesses (see pp. 232-234). Both of these are called 
Yaa benchataan (Medicine of the five taan), but they are 
not identical. The sap from all five is used in an oily 
application for saang. Two almost identical mixtures contain 
both taan dam and taan khamooi, the roots of both being part of a 
tonic and stomach mixture, and the fruit of taan khamooi with 
taan dam (part unspecified) in the other, which is a 'universal' 
remedy. A third formula in which the two occur together is to 
be taken or applied to treat a stiff back caused by saang. The 
root of taan dam is used in a prescription for severe diarrhoea 
(see p. 240), and in another for mucus and blood in the stools. 
Taan khamooi is part of a decoction to treat hypertrophy of the 
spleen, and its leaf sap is used in a mixture and application to 
retract a prolapsed bowel.

(b.) PP, p. 163

Toxic: root and wood of taan dam

Anthelmintic, used to counteract the poison of taan saang, in 
malnutrition, to produce warmth, and to liquefy fat.

Toxic: leaves and wood of taan khamooi

The leaves are used to treat the effects of saang in the mouth 
such as infection and heat. The wood is used as an anthelmintic, 
and to treat the poison of taan saang, the effects of saang in 
the intestines, and so on.
(2.) Western

Not found.

(3.) TE, p. 125

Naphthaquinones are characteristic of the family.

Conclusions There are too many variables in the KPC recipes containing these drugs for their therapeutic use to be identified.
CONTORTAE (OLEALES)

FIN TON ต้มบน

Kradong daeng กระดองแดง

Linocera microstigma Gagnep.

Linocera sangda Gagnep.

Opium tree [which contains no opium].

(Toxic: leaves

Astringent: bark

Oleaceae

The leaves used to be chewed to avoid having to chew opium, but nothing has been found in them.

A comparatively recently introduced ornamental plant, also known as Fin ton

Malako farang มวลโคกฝรั่ง

Jatropha multifida L.

Euphorbiaceae

is not the fin ton of the ancient prescriptions. (VJ)

Fin thang 2 ต้มที่ 2

(The two fin)

1. fin (see p. 147)

2. fin ton

There is some disagreement about the identity of fin ton,¹ and the inclusion of opium as one of the two fin might also be questioned since one prescription includes both fin thang 2 and yaa fin, the last being a synonym for fin (opium).²

¹ Some authorities give malako farang - (PT); That materia medica, Vol. II, p. 183; some give kradong daeng - FT, p. 1014; KP, p. 304.

² KFC V, 199; lines 24, 25.

See fin, p. 147.
Therapeutic uses of *Linoceira microstigma*, and *L. sangda*

(1.) **Thai**

(a.) **KPC**

If this is the *fin ton* of the two *fin*, it is prescribed as bark in a few mixtures and decoctions for diarrhoea and dysentery. The toxic leaves do not occur in these prescriptions.

(b.) **PP, p. 156**

Bark: astringent. Protects the body elements; relieves pain caused by swelling and inflammation, muscular pain, dysentery, rectal bleeding, and vomiting.

(2.) **Western**

No record of the medicinal use of these two species has been found.

(3.) **TE, p. 126**

The Oleaceae contain sugar alcohols, saponins, tannins, coumarins, and iridoid glycosides; rarely alkaloids.

**Conclusions** This drug does not occur in *KPC* as leaves.

**KHRAI KHRUEA**

<table>
<thead>
<tr>
<th>因 manifold</th>
<th>Bitter: root</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jasminum sp. Oleaceae</td>
<td></td>
</tr>
<tr>
<td>root (VJ)</td>
<td></td>
</tr>
</tbody>
</table>

Not to be confused with *khrai khruea ton* or *khrai ton*

Therapeutic uses of *khrai khruea*

(1.) **Thai**

(a.) **KPC**

Occurs in more than 40 prescriptions, mostly mixtures to be taken, or mouth and throat paints to treat poisoning of many kinds, from
the internal effects of *saang*, to snakebite, smallpox, boils and abscesses. It is also used in recipes for diarrhoea, dysentery, chest conditions, fevers, convulsions, tetanus, listlessness, thirst, and breathlessness. *khrai khruea* is prescribed with *rayom* in several recipes (see p. 118).

(b.) *FP*, p. 168

**Bitter: root**

Used to treat fevers of various kinds, and to improve the appetite.

(2.) **Western**

*Jasminum* species are usually reported to be used for their perfume only.

(3.) *TE*, p. 126

See *fin ton*, p. 192.

**Conclusions** Used to treat poisoning of various kinds.
CONTORTAE (GENTIANALES)

**KOT KAKLING**  กอรักกักLING  seeds  
**Toxic:** seeds  
(VJ);  LB, p. 67

**Tum (tuum) kaa daeng**  ตูม(ตูม)ก้าฉ่ง  
**LB, p. 67; WW, p. 347

**Salaeng chai**  ลาล้างไช่  
**LB, p. 67; HE, p. 17.

**Salaeng thon**  ลาล้างโทน  
**LB, p. 67.

**Strychnos nux-vomica**  
**(VJ), LB, p. 67; HE, p. 17; WW, p. 347

Strychnaeaceae (Loganiaceae)

Nux-vomica tree; Dog button; Quaker button; Poison nut.  LB, p. 67.

seeds

The seeds of *S. nux-vomica* are called *kot kakling*.

**Therapeutic uses of Strychnos nux-vomica**

(1.) **Thai**

(a.) **KPC**

1. As *kot kakling*, the seeds of *S. nux-vomica*, it occurs only once in a mixture of 30 ingredients to treat diseases of *kamdao*, internal heat, associated with the three seasons (see p. 6), and to cheer up and enliven the child.

2. As *tum kaa daeng*, it is used seven times. The part used is not stated except on one occasion, when the fruit (probably the seed) is specified. Most of these prescriptions are mixtures to be taken or mouth paints to treat poisons or infections.

(b.) **PP, p. 162**

**Toxic:** *kot kakling* [i.e. the seeds].

Tonic for the nerves and the heart; and to treat flatulence and *ritseeduang* (see p. 96 note 1).

**PP, p. 164**

**Toxic:** *ton salaeng chai* [i.e. the tree]
Tonic for the nerves and heart; stimulates the appetite; and counteracts fever and the poison of cachexia.

(c.) HE, p. 17

The seed of *salaeng chai* is used as a tonic, diuretic, anthelmintic, spinal cord stimulant, and as dog and rat poison.

(2.) Western

*Nux vomica*, the dried ripe seeds of *Strychnos nux-vomica*, contains strychnine, brucine, and other alkaloids. It has the actions of strychnine. Because of its extremely bitter taste and its potent action on the central nervous system, strychnine has long had a reputation as a bitter 'tonic', but there is no evidence to show that it is of special value for this purpose. The use of strychnine is without therapeutic justification. Strychnine has also been used as an analeptic but it stimulates respiration and the cardiovascular centre only if used in convulsive doses, and repeated doses may have a cumulative effect.

**Conclusions**  Probably used as a stimulant, although the evidence in *KFC* is insufficient to confirm this. Cheering up the child would suggest analeptic activity, but there are 30 ingredients in the prescription which has this effect, and this property might be found in more than one of these.

**RAYOM**  

*Bitter:* root

*Rauwolfia serpentina* Benth.

Insanity herb.

root
Therapeutic uses of *Rauwolfia serpentina*

(1.) Thai

(a.) KPC

There are 14 prescriptions in this text which include the root of *Rauwolfia serpentina* in the treatment of young children. Most preparations are mixtures to be taken or applied as mouth paint to treat the poisonous effects of *saang*, *la*, and *la-ong*; sometimes for convulsions, tetanus and similar symptoms of the *lom* diseases associated with *saang*. It is also used in oily ear drops for ear abscess.

*Khrai khruea* is often prescribed in conjunction with *rayom* (see p. 235).

(b.) PP, p. 169

Bitter: root

Used to treat *'kaan lueat'*;¹ and insanity caused by the bile and blood [elements]; to improve the appetite; to calm the nerves; reduce blood pressure; improve the bile; and as an anthelmintic.

(c.) HE, p. 15

Sedative, hypotensive, bitter tonic, aphrodisiac, and application for scabies.

(2.) Western

*M27*, pp. 674-677

The dried roots of *Rauwolfia serpentina* contain numerous alkaloids, the most active being reserpine and rescinnamide. *Rauwolfia serpentina* is used for the same purposes as reserpine, which has central depressant and sedative actions, and a primarily peripheral antihypertensive effect accompanied by bradycardia.

**Conclusions** Probably used to counteract the CNS effects of poisoning.

¹ *kaan lueat*  การเสียด  meaning unclear. Literally, black blood.
Therapeutic uses of *Wattakaka volubilis*

(1.) **Thai**

(a.) **KPC**

Two mixtures to be taken, and one external application contain the leaves, and a decoction to be taken to treat (?) bladder stones caused by parasites uses the root of this plant.

(b.) **PP,** p. 164

Toxic: root

Overcomes the poison of fever, counteracts the poison of boils and abscesses, and of bubonic plague, reduces the temperature, is a diuretic, and is used to treat the intensification of bile (see p. 6), to treat headache, and listlessness.

(c.) **HE,** p. 19

The root is diuretic and antimicrobial.

(2.) **Western**

Not found.

(3.) **TE,** p. 128

The latex cells usually contain a latex rich in triterpenes. Other constituents include alkaloids of the indole phenanthroindolizidine and pyridine groups; cardenolides; cyanogenetic glycosides; saponins; tannins; and cyclitols. Although the family yields no important drugs, many members are used in folk medicine in their countries of origin and others as arrow-poisons.

**Conclusions** Used in one recipe to treat (?) bladder stones.
RUBIALES (GENTIANALES)

**NAM NOM RAATCHASEE TON** น้ำม่วงราชเชีว

*Anotis trimera* Craib

**Rubiaceae**

(PT)

**Therapeutic uses of *Anotis trimera***

(1.) **Thai**

(a.) **KPC**

This drug, not to be confused with *nam nom raatchasee khruea*, which is *Euphorbia hirta*, is not used in any of the children's prescriptions, but only in a mixture for the mother to take to improve the quality of her breast milk.

(b.) **PP**, p. 170

Bitter: -

Used to give energy, and to improve the breast milk.

(2.) **Western**

Not found.

(3.) **TE**, p. 128

Alkaloids of the indole, oxindole, quinoline and purine types are common in the Rubiaceae.

**Conclusions** Insufficient evidence.

**KRATHUM KHEE MUU** กระทุ้มฆีว

*Mitragyna brunonis* Craib

leaves, bark

**Rubiaceae**

(VJ); **WW**, p. 378
Therapeutic uses of *Mitragyna brunonis*

(1.) Thai

(a.) KPC

Both leaves and bark are used to treat diarrhoea (see p. 240); the leaves in an application to the lower abdomen, and the root in a mixture to be taken.

(b.) PP, p. 162

Toxic: leaves

Used to treat stomach ache, diarrhoea, dysentery, and muscular pain.

PP, p. 155

Astringent: bark

To protect wounds against infection (parasites), to treat yaws, and amoebic dysentery.

(2.) Western

USD, p. 1446

Various species of *Mitragyna* have been used as medicines and intoxicants. Some contain alkaloids which relax involuntary muscles.

(3.) TE, p. 128

See nam nom *raatchasee ton*, p. 198.

The leaves of *Mitragyna* spp. contain alkaloids.

Conclusions  Insufficient use of the leaves in KPC recipes for any conclusions to be reached.
Therapeutic uses of *Gmelina hystrix*

(1.) Thai

(a.) KPC

The root is an ingredient in an anthelmintic decoction.

(b.) PP, p. 168

Bitter: root

For tuberculosis, cachexia, internal heat and thirst, and intestinal parasites.

(2.) Western

Not found.

(3.) TE, p. 134

The Verbenaceae contain volatile oils, saponins, tannins, quinones, iridoids, and piscicidal constituents; rarely alkaloids.

Conclusions The root is used in only one prescription - an anthelmintic.
Therapeutic uses of *Clerodendron paniculatum* var. *diversifolium*

(1.) Thai

(a.) *KPC*

The root of this plant is used in only two preparations, each for the lactating mother. One is a decoction to be taken by the mother to improve the quality of the breast milk, the other to be applied to the nipples to counteract the harmful effects in the infant of poor quality breast milk.

(b.) *PP*, p. 169

Bitter: root

For fever caused by [the element] blood, malaria, and tuberculosis.

(c.) *LB*, p. 77

The whole plant is used as a purgative.

(2.) Western

Not found.

(3.) *TE*, p. 134

See *song maeo*, p. 200.

Conclusions Insufficient information. Perhaps it counteracts infection.
Therapeutic uses of *Adhatoda vasica*

(1.) Thai

(a.) *KFC*

Most of the dozen prescriptions using this drug specify the leaves. Several mixtures are to prevent infants from vomiting, and protect them from *taam saang*; two are to counteract the poison of *saang*; one mixture with 40 ingredients is to treat the 7 kinds of *lom*; one is for the internal heat and thirst of *saang*; and another to improve the appetite and prevent the abdominal pain and diarrhoea caused by intestinal parasites. A decoction using, amongst other things, leaf sap of *saniat*, is used as an anthelmintic and for the listlessness, and mucus and blood in the faeces associated with parasites. A preparation of 27 items including the leaves of this plant is to be taken or applied to counteract the poison of *la* affecting the heart and causing breathlessness, restlessness and agitation, and tetanus. The leaf sap is used in an application for swollen feet.

(b.) *PP*, p. 169

Bitter: leaves

Used for fever, asthma and coughs, and as a bile tonic.

(c.) *HE*, p. 1

The leaves are used for bronchitis, asthma, and as an expectorant.

(2.) Western

(a.) *M27*, p. 596

The fresh or dried leaves of *Adhatoda vasica* contain a bitter
crystalline alkaloid, vasicine (peganine), and adhatodic acid. It has been used as an expectorant. Large doses are irritant and cause vomiting and diarrhoea.

(b.) LL, p. 364

*Adhatoda vasica* has an antibiotic action, undefined, against the Tubercle bacilli.

(c.) A preparation, Bromhexine Hydrochloride, derived from the alkaloid vasicine, the active principle of *Adhatoda vasica*, is used as 'an orally effective mucolytic and represents a successful approach to the problem of sticky, tenacious secretions in asthma, bronchitis and emphysema.'

This is an example of a modern synthetic drug developed from a chemical obtained from a plant used for the same purpose for centuries.

**Conclusions** There are too many variables in the recipes in *KPC* containing this drug for us to draw any conclusions about its therapeutic use.

1. **KHOP CHANAANG** ข้มฟ้าแอง

   *Thunbergia laurifolia* Lindl.

   leaves

   Toxic: -

   Thunbergiaceae (VJ)

   (Acanthaceae *Burk.*, p. 2197)

2. **THONG PHAN CHANG** ทองพันchang

   *Rhinacanthus nasutus* (L.) Kurz.

   leaves, root

   Toxic: root, leaves

   Acanthaceae

   *HE*, p. 15; *WW*, p. 369

**Therapeutic uses of Rhinacanthus nasutus**

(1.) Thai

(a.) *KPC*

The leaves are used in a mixture to treat *saang*, and the root, in an external application for parasites.

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Toxic: root, leaves
The root is used to treat ringworm, and itchy skin rashes.
The leaves are used for fever, blood poisoning, skin diseases
and as an anthelmintic.

The leaves and root are used for the treatment of skin
diseases, especially ringworm, and also as a diuretic and laxative.

Not found.

The Acanthaceae constituents include alkaloids, tannins,
cyanogenetic compounds and saponins.

Insufficient use in KPC for any certainty. Probably
counteracts infections of various kinds including parasitic skin
diseases.

Therapeutic uses of *Picrorhiza kurroa*

(1.) Thai

(a.) KPC

There are about a dozen mixtures containing this drug. Symptoms
for which these are prescribed range from diarrhoea and vomiting,
dysentery, hiccoughs, intestinal parasites and the weakness
resulting from them, to the convulsions and tetanus of the lom diseases associated with saang, the effects of poor quality breast milk, and the effects of the poison of saang in the throat and upper chest.

Kot kaan phraao is also prescribed as one of the five kot called kot thang 5, which are dispensed as a compound in another 22 formulae.¹

(b.) PP, p. 167
Bitter
Used for fevers, hiccoughs, breathlessness, and diseases resulting from poisonous mucus.

(2.) Western
(a.) M26, p. 327
The dried rhizome is a bitter, administered as a liquid extract or tincture.

(3.) TE, p. 136
The rhizome of Picrorhiza kurroa, Indian gentian, contains a bitter glycoside and cathartic acid, a laxative.

Conclusions There are too many variables in the KPC prescriptions for conclusions to be drawn.

*PHROM*  
Bitter: heartwood

Brahmi Skt  
Oily: bark

Bacopa monniera (L) Wettst.  
Scrophulariaceae (VJ)

Bacopa monniera Pennel  
HE, p. 3

Thyme-leaved Ceratiola  
LB, p. 82

¹ For the other 4 members of kot thang 5 see p. 184, and Appendix IV.
There seems to be some conflict over the name of the author.

*FT*, pp. 1094, 1095 has:

*Bacopa monniera* L. is given in *KP*, p. 61 as namon নমন

*Herpestis monniera* H.B. et K. is given in *KP* p. 258 as

*Bacopa monniera* Wettst. phrom or phak mee ফ্রোম ; and quotes Burk., p. 1142:

"Herpestis monniera "Bēremi; in Siam, Pak mi."

"Its Malay name is sanskritic, and natives of India consider it the 'brahmi' plant of their ancient medicine, a plant eaten after a religious fast and credited with magic powers." See Burk. 2nd ed., p. 1160.

*TPS2*, p. 110 has:

*Bacopa monniera* (L.) Pennell

(Monniera cuneifolia) Michx.

*Herpestis monniera* H.B.K. Scrophulariaceae

### The Therapeutic uses of *phrom*

1. **Thai**
   
   **(a.) KPC**

   Phrom is prescribed in two compounds to be taken or applied; one for the poisoning of *saang*, the other to treat heat and thirst caused by *saang*. It is also an ingredient amongst 28 in an eye lotion for *to*. (See p. 244).

   **(b.) PP**, p. 170

   Bitter: heartwood

   A general tonic to promote vigour and build up the body.

   **PP**, p. 177

   Oily: bark

   Tonic for the liver and to fatten.

---

1 The botanical name is not used here because the identification is disputed.
The whole plant is used as an alterative, febrifuge, expectorant, and cardiotonic.

**Western**
Not found.

The Scrophulariaceae constituents include cardiac glycosides, aucubin glycosides, cyanogenetic glycosides, steroidal and triterpenoid saponins, naphthoquinones, anthraquinones, aurones, iridoids, and in some species, monoterpenoid, quinazoline and quinolizidine alkaloids.

**Conclusions** Insufficient evidence. Probably counteracts infections of various kinds.

**LAMPHONG** ลำพòng

*Datura alba* ถั่งอกดำ

Authorities differ as follows:

**LAMPHONG**

*Datura alba* L.
Thorn apple  
*HE*, p. 8

*Lamphong kaa salak* ลำโพงกล้ลังก์

*D. fastuosa* L.
Black thorn apple  
*HE*, p. 8
Lamphong kaa salak

*D. metel* L.
(Dark-violet double-flowered var.)

**Lamphong**

*D. metel* L.
Thorn apple

*D. metel* L.  
Thorn apple  
(lamphong, lamphong kaa salak)

(D. *fastuosa* L.)

(D. *alba* L.)

leaves, fruit juice, whole plant

Therapeutic uses of *Datura metel*, *D. alba* and *D. fastuosa*

(1.) Thai

(a.) KPC

The leaves of *lamphong* are used in a boiled, oily preparation to be taken or applied to the body to clear up mucus and blood in the stools;\(^1\) and the whole plant in a decoction to apply to relieve inflammation and retract a prolapsed rectum. The fruit juice is an ingredient in three prescriptions for oily ear drops for ear abscesses (see p. 243). The flowers of *lamphong kaa salak* are an ingredient in an application to the crown of the head to treat insomnia (see p. 243).

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\(^1\) The absorption through the skin of oil soluble substances was practised in European folk-medicine centuries ago, but was not always a method of orthodox medicine, since the skin was once considered to be impermeable to all medicaments. *LL*, p. 419. See also *boraphet*, p. 144; *ching chaa chaalee*, p. 145.
(b.) PP, p. 162

Toxic: seeds, root, flowers of larnphong

The seeds are used for fevers causing restlessness and agitation; skin parasites; itchy skin rashes. Overdose causes insanity. The root is used for coughs, asthma, breathlessness, and bronchitis; the flowers for sinusitis.

(c.) HE, p. 8

Larnphong kaa salak flowers are smoked to relieve asthma; seeds used for skin diseases; root powder applied to relieve inflammation.

(d.) LB, p. 74

Larnphong leaves, flowers, seeds, and root are smoked for asthma, and used in eye lotions to remove film. The root is also used for toothache, to paint the gums, and to fill cavities. The leaves are applied to wounds, boils and so on, and for rheumatism, ringworm, and haemorrhoids. Fresh leaf sap is instilled into the ear for ear-ache. The seeds are used for toothache; small doses improve the memory, but overdose causes insanity.

(2.) Western

(a.) M27, p. 234

The dried leaves and flowering tops of Datura metel and D. metel var. fastuosa, containing about 0.25% to 0.55% of hyoscine with only traces of atropine and hyoscyamine are used in India for the same purposes as belladonna, hyoscyamus, and stramonium.

(b.) USD, p. 1345

From Datura alba, the thugs of India prepared the poison Dhat (whence is derived the generic name), which they used to stupify their victims.
Conclusions While the alkaloids present in Datura spp. are well known and used in Western medicine, the recognition by these doctors of the sedative properties of hyoscine is of interest.

**Mawaeng** | Bitter: fruit
---|---
Mawaeng could refer to either mawaeng ton or mawaeng khruea

**Mawaeng ton**
*Solanum indicum* L.  
Solanaceae  
Fruit juice, fruit, root

**Mawaeng khruea**
*Solanum trilobatum* L.  
Solanaceae  
Juice, fruit, root

**Mawaeng thang 2**
1. mawaeng ton
2. mawaeng khruea

Therapeutic uses of *Solanum indicum* and *S. trilobatum*

1. Thai
   - *KPC*
     - Mawaeng fruit juice is the diluent for an application for the pustules of *saeng saeng phra chan* when this disease causes diarrhoea and insomnia, and as excipient in another application for the same disease.
Mawaeng ton fruit is used twice in anthelmintic mixtures, and once in a mouth paint.

Mawaeng khruea juice occurs in a decoction for cough, and in an expectorant; the root in a mixture for taan saang, and the fruit in mouth and throat paints as well as in an external application for skin parasites.

Mawaeng thang 2

Three recipes with these ingredients are of the Ayurvedic type, being treatments for the elements, which we cannot interpret in modern medical terms. The roots are used in anthelmintic mixtures, and a mouth paint for saang, and the fruit, in a mouth paint. An interesting mixture containing the fruit is an emulsion of the oil obtained after boiling down various juices and saps, using three brown eggs as emulsifying agent.

(b.) PP, p. 169

Mawaeng

Bitter: fruit

Expectorant, and for sugar in the urine.

(c.) HE, p. 16

Mawaeng khruea

The whole plant is diuretic, diaphoretic, anti-tussive, and anti-asthmatic. The root is anti-tussive, expectorant, and diuretic; and the fruit is anti-diabetic.

(2.) Western

These species of Solanum are not found.

(3.) TE, p. 136

A wide range of alkaloids occur in the Solanaceae, the types corresponding well with their botanical classification. Other
constituents of this family are steroidal saponins, withanolides, coumarins, cyclitols, and pungent principles.

Conclusions These species of *Solanum* appear to have a wide range of uses, both external and internal, particularly in mouth paints and anthelmintic preparations. They are not used to treat diabetes in the *KFC* prescriptions, but this reported effect is interesting.
CUCURBITALES

KRADOM  kadom  (kadom  kadom)
Gymnopetalum cochinchinense Kurz
flowers, fruit, whole plant

Bitter: fruit
(VJ); HE, p. 10; WW, p. 285
Cucurbitaceae

Gyrmopetalum cochinchinense
whole plant, i.e. stem, leaves, root, flowers, and fruit

Therapeutic uses of Gymnopetalum cochinchinense

(1.) Thai
(a.) KPC
The fruit, flowers, and the whole plant are ingredients in mixtures and decoctions to treat the mother for disorders of pregnancy. The fruit is used in an expectorant mixture for babies, and in a decoction to be taken to treat intestinal parasites caused by the elements internal heat and mucus, as well as in two other Ayurvedic type recipes for unidentifiable conditions.

(b.) PP, p. 168
Bitter: fruit
Used to improve the appetite, to treat fevers, and to improve the bile.

(c.) HE, p. 10
The fruit is a tonic, cholagogue, and antidote for poisoning.

(2.) Western
(a.) NSD, p. 551
Most of the Cucurbitaceae have similar actions, varying only in
degree. They are laxative, purgative, diuretic, and often anthelmintic.

(3.) TE, p. 119

Cucurbitacins and glucose result from hydrolysis by the enzyme elaterase of the bitter glucosides of the Cucurbitaceae.

Conclusions There is insufficient evidence in the KPC prescriptions for the intended therapeutic use to be determined.

KHEE KAA KHAO  ชีเกะขาว  Bitter: fruit
Muun kaa khaao  มุนก้าขาว

Trichosanthes cordata Roxb.  Cucurbitaceae
White variety
leaves, fruit  (VJ); WW, p. 118

Khee kaa daeng  ชีเกะแดง  Bitter: fruit
Muun kaa daeng  มุนก้าแดง

Trichosanthes bracteata Voigt.  Cucurbitaceae
Red variety
fruit, leaves  HE, p. 18

Khee kaa  ชีเกะ
Muun kaa  มุนก้า

Can be either white or red variety.

Khee kaa thang 2  ชีเกะท้2  Bitter: stem
1. khee kaa khaao
2. khee kaa daeng
roots
Therapeutic uses of *Trichosanthis cordata* and *T. bracteata*

(1.) Thai

(a.) *KPC*

The roots of both, i.e. *khee kaa thang 2*, are used in two mixtures, one being a decoction to be taken for the poison of *taan saang*; the other a recipe for tetanus and other forms of *lom*, as well as intestinal parasites and other symptoms. The leaves are used in an anthelmintic decoction, which is also given to children who are thin and yellow, or thin and dehydrated. Both the white and red varieties are prescribed in mixtures and decoctions as fruit or leaves, mainly anthelmintic preparations, but two decoctions using the leaves are to be taken to contract the liver. Either or both varieties occur frequently in combination with *lep mue naang*, *yaa dam*, and *boraphet* or one or more of these.

(b.) *PP*, p. 167

**Bitter: fruit of khee kaa daeng**

Used as a laxative, anthelmintic, and for the poison of *taan saang*.

**Bitter: fruit of khee kaa khoao**

Anthelmintic, and also used to drive out the poison of *taan saang*

**Bitter: stems of khee kaa thang 2**

To counteract the poison of mucus and blood elements, to improve the bile, and to expel mucus.

(c.) *HE*, p. 18

The fruit of *khee kaa daeng* is a drastic purgative, and is used for smoking to treat asthma. The stem is expectorant, and the root, febrifuge.

(2.) Western

(a.) *NSD*, p. 551

See *kradom*, p. 213.

**Conclusions** The fruit seems to be used mainly as an anthelmintic.
Mara khee nok  

Phak hai  

Momordica charantia L.  

Cucurbitaceae  

Bitter gourd; African cucumber; Balsam pear; Balsam apple (PT); LB, p. 89

Therapeutic uses of Momordica charantia

(1.) Thai

(a.) KPC

*Mara* leaves occur in seven prescriptions, four being mouth paints, and one, an external application to reduce the temperature of the body. Another is a poultice to be applied to the tendons - possibly muscles in this case - and the other is medicine to be taken to counteract the poison of *saang*.

(b.) PP, p. 168

Bitter: leaves

Antipyretic, used to treat mouth inflammation, abscesses, bruises and infected swellings, painful joints caused by obstructed lom; a tonic for the bile, also used to treat disorders of the spleen and liver.

(c.) LB, p. 89

The leaves are used as an anthelmintic, antipyretic, emmenagogue, poultice for headache, children's laxative, and wound dressing. The leaf sap is used to treat children's coughs, and as an emetic. The root is used as an astringent, and to treat haemorrhoids. The fruit is used as a bitter to improve the appetite, often used as a strong purgative, anthelmintic, and to treat leprosy.

(2.) Western

(a.) NSD, p. 551

See kradom, p. 213.
(3.) LL, pp. 36, 97

The seeds and wall of the fruit contain a resin and a saponic glycoside which gives elaterin, also alkaloids which cause vomiting and diarrhoea.

*Momordica charantia* has lectinic (including mitogenic) properties.

Conclusions Used here mainly to counteract the effects of infections.
ANIMAL AND MINERAL SUBSTANCES

The following toxic and bitter animal and mineral substances also occur in the prescriptions of KPC.

Nguu luean  นูลี้ งอม  bones  toxic

*Python reticulatus* (Schneider) Boidae
Reticulated python  (VJ); *CS*, p. 493

Chorakhe  ชระzie  bile  bitter

*Crocodile*  (VJ); *CS*, p. 464

Kammathan  ก้ามเท็น  toxic

Kammathan lueang  ก้ามเท็นเหลือง

Sulphur, Brimstone  (VJ)

Saan nuu  สานนุ  toxic

Suphan than  สุภันทน  Arsenic  (PT)
SUMMARY

From the prescriptions in *KFC*, it is difficult to reach firm conclusions about the expected therapeutic actions of most of the toxic and bitter drugs described above. In some cases, there are not enough examples, in some cases, there are too many ingredients in many of the recipes, and often, the range of applications of a single prescription is too wide to provide specific information. The other sources quoted in this Chapter frequently give quite different therapeutic uses for the same drug, so that these sources can only be used as guides. Taking a very broad view, however, many of the toxic and bitter drugs seem to be used for antiparasitic or antibacterial purposes, or both. In such cases, they would probably all have some effect, and would therefore be interchangeable. This common use of antiparasitics and antibacterials probably reflects the enormous problem of parasitic and infectious diseases in paediatric medicine in Thailand.

These drugs would not have been used for so long unless they served some useful purpose, but each one needs to be tested scientifically for its pharmacological action to be confirmed.
CHAPTER 11

CONTRASTING PRESCRIBING PATTERNS

The first impression obtained after reading any collection of traditional Thai medical prescriptions is the overwhelming number and variety of the ingredients; the lack of uniformity in the choice of drugs to treat the same symptoms, so that the majority of ingredients in two recipes prescribed for the same purpose seldom appear to have anything in common; and the wide range of symptoms and conditions for which individual prescriptions are used. The difficulties in identifying the ingredients in scientific terms compound the problem of interpreting such prescriptions.

To the best of our knowledge, the prescribing patterns, that is, the formulation of recipes, and the reasons for the choice of particular groups of drugs for the treatment of particular symptoms have not previously been demonstrated. Of the few scholars who have attempted to decipher Thai prescriptions, the comments of the following explain the problem. Hofbauer said, in 1943,¹

Originally, I had the idea to speak about "Old Medicine in Thailand"; but as there are so many unsurmountable [sic] difficulties regarding the translation of old Pali and Sanskrit words and regarding the description of old herbs, old medicine, etc., I had to give up this idea.

More recently, in introducing a scientific paper presented at ICTAM, 1979,² Pittaya et al. had this to say:

In many cases information from folklore medicine can present a problem. For example, one can find many books which describe the therapeutic properties of plants. After spending a considerable amount of time reading these materials, one can end up totally confused as to how to apply modern methods to detect or substantiate the alleged properties.

A statistical method of analysing Thai prescriptions was suggested by Brun in a paper read at ASOMPS IV, 1980, in which he showed the lack of relationships between the ingredients in groups of prescriptions used for the same purposes. Similar results were obtained when prescriptions from KPC were analysed in the same way. The possible active ingredients do not become apparent when we try to isolate one or more drugs common to several recipes. Such drugs seldom exist. Brun proposed 'statistical studies of a large body of prescriptions as the best method to single out valuable information from the confused mass of data contained in complex medical traditions, like those of lowland Southeast Asia.' But his examples of the expected results proved that his proposal would not supply the answers required.

The purpose of our desire to understand the prescribing patterns evident in the recipes in KPC is to take a step forward towards finding a way to discovering which of the many ingredients in any one prescription are the active or effective drugs believed to help the patient recover. While arguments continue about the relative psychological and medical effects of any medicinal treatment, it cannot be denied that some drugs do have a beneficial result. Consequently, since Brun is attempting to take the next step - identifying the active drugs in prescriptions - we will diverge for a moment to suggest further reasons why the statistical approach is unsatisfactory.

As mentioned above, a possibly active drug common to several prescriptions recommended to treat the same condition is seldom found in Thai recipes. Therefore, it must be assumed that two or more drugs are considered to have the same effect (see p. 219), or that certain combinations of ingredients are required to produce the desired effect.

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In fact, unlike Western medicine, Thai traditional medicine does permit the substitution of certain drugs for others.\(^1\) Without some prior knowledge of the therapeutic effects expected from each ingredient or compound, the criteria on which to establish a statistical search cannot be stated.

Frequency of use does not necessarily suggest an important specific effect. For example, ingredients are included in prescriptions sometimes to make them palatable by adding flavour, to improve their appearance by adding colour, to prevent deterioration by adding preservative properties, to make them acid, alkaline or neutral, to dissolve or suspend other drugs, and sometimes to counteract the harsh effects of a necessary item. All these ingredients must be accounted for before the rest can be considered. For many reasons, even though a single drug is believed to be capable of producing the desired effect, it cannot be administered alone. The patient cannot be expected to eat a handful of leaves, for instance. But the analyst must know, before comparing the uses of drugs, which ones to compare - which are active, and which are secondary to that action.

The multiple purpose of many medicaments is yet another factor likely to invalidate statistical analysis of prescription ingredients.

Finally, it is possible to have several drugs which are effective in different degrees for the same symptom. For example, Western medicine uses morphine for severe pain, and aspirin or something similar for slight pain; sometimes it uses the two together. A statistical analysis of Western prescriptions for pain would not indicate the superiority of morphine over aspirin.\(^2\) Morphone is much more potent than aspirin, and often gives relief from severe pain when aspirin has little or

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1. PP, pp. 141, 142.
2. Although the statistical distribution of drugs in a large body of prescriptions is not likely to identify the most useful items from the pharmacologist's point of view, computer analysis is helpful in locating individual drugs, and groups of medicaments frequently used in combination.
no effect.

For these reasons, we have adopted a different approach to our study of the prescriptions in KPC. By applying the systems of drug classification used by the Thai doctors, we will show the way these recipes are formulated. To go further, and isolate the active ingredients is beyond the scope of this thesis. However, bearing in mind that the drugs classed as toxic or bitter are more likely to prove pharmacologically interesting in the long run, we will confine our analysis, with a few exceptions, to some of the prescriptions containing one or more of these.

Thai drugs are classified in two ways: in fixed groups or phikat, forming compounds in which each item has a purpose; and, individually, according to taste. The taste is believed to imply the therapeutic use of a medicament (see p. 8).

Of the 90 or so phikat or standard prescriptions of the Large and the Great Classes, four are used specifically to treat disorders of the elements, and diseases of the tridoṣa (see p. 6). These formulae are called Benchakuun, the Five Spices, Treephalaa, the Three Fruits, Treekatuk, the Three Hot and Spicy Substances, and Treesaan, the Three Strong or Potent Substances. Phrik Thai, pepper, is usually added to the Five Spices to make six ingredients, because 'no other substance is more effective against lom than pepper'. The origin of the use of the Five Spices has been explained in an article already published, and the uses of the other three formulae in another. The ingredients of these four phikat, and their therapeutic uses in the treatment of diseases of the elements in general, and of the tridoṣa, are as follows:

1 Mulholland, SEAR, p. 34; PP, pp. 201-248; KSY, pp. 296-304. See p. 9.
2 เชื้อถิ่น, สิริมูล, พระพุทธ, พระพิษ. PP, pp. 205, 211.
3 KSY, p. 296.
4 Mulholland, JSS, p. 105.
5 Mulholland, SEAR, pp. 35-37.
<table>
<thead>
<tr>
<th>Benchakuan, Five Spices</th>
<th>Piper longum</th>
<th>flowers or fruit</th>
<th>hot-and-spicy</th>
<th>for earth</th>
</tr>
</thead>
<tbody>
<tr>
<td>dee plee¹</td>
<td>Piper rostratum</td>
<td>root</td>
<td>slightly hot-and-spicy</td>
<td>for water</td>
</tr>
<tr>
<td>chaa phluu</td>
<td>Piper sp.</td>
<td>stem</td>
<td>hot-and-spicy</td>
<td>for wind</td>
</tr>
<tr>
<td>sakhaan</td>
<td>Plumbago spp.</td>
<td>root</td>
<td>hot</td>
<td>for fire</td>
</tr>
<tr>
<td>chetta muu phloeng</td>
<td>Zingiber officinalis</td>
<td>dried rhizome</td>
<td>hot-and-spicy</td>
<td>for ether</td>
</tr>
<tr>
<td>khing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>phrik Thai</td>
<td>Piper nigrum</td>
<td>fruit</td>
<td>hot-and-spicy</td>
<td>for lom²</td>
</tr>
</tbody>
</table>

1 For the full scientific names and other details of the drugs mentioned in this Chapter, see Appendix IV. To avoid duplication, the toxic and bitter substances already described in Chapter 10 are listed there, with the relevant page numbers, for easy reference.

2 The term 'lom' is not translated here because of its many meanings in addition to 'wind', whereas the term used in relation to sakhaan is 'waayothaat' วายอิทธาถ, meaning 'the element wind'.
**Treephala**, Three Fruits

<table>
<thead>
<tr>
<th>Name</th>
<th>Species</th>
<th>Part</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>samo phiphek</td>
<td>Terminalia belerica</td>
<td>fruit</td>
<td>astringent</td>
</tr>
<tr>
<td>samo Thai</td>
<td>Terminalia chebula</td>
<td>fruit</td>
<td>sour</td>
</tr>
<tr>
<td>makhaam pom</td>
<td>Phyllanthus emblica</td>
<td>fruit</td>
<td>sour</td>
</tr>
</tbody>
</table>

**Treekatuk**, Three Hot-and-spicy Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Species</th>
<th>Part</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>khing</td>
<td>Zingiber officinalis</td>
<td>dried rhizome</td>
<td>hot-and-spicy</td>
</tr>
<tr>
<td>phrik Thai</td>
<td>Piper nigrum</td>
<td>fruit</td>
<td>hot-and-spicy</td>
</tr>
<tr>
<td>dee plee</td>
<td>Piper longum</td>
<td>flowers</td>
<td>hot-and-spicy</td>
</tr>
</tbody>
</table>

**Treesaan**, Three Strong Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Species</th>
<th>Part</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>chetta muun phloeng</td>
<td>Plumbago spp.</td>
<td>root</td>
<td>hot</td>
</tr>
<tr>
<td>sakhaan</td>
<td>Piper sp.</td>
<td>stem</td>
<td>hot-and-spicy</td>
</tr>
<tr>
<td>chaa phluu</td>
<td>Piper rostratum</td>
<td>root</td>
<td>slightly hot-and-spicy</td>
</tr>
</tbody>
</table>

for bile generally

for bile in the gall-bladder

for wind in the heart

for mucus in the throat

for wind generally

for bile outside the gall-bladder

for internal wind

for mucus in the chest

for mucus generally

for body heat

for wind in the tendons

for mucus in the rectum
All the ingredients of the Treesaan are included in the Benchakuun, and when phrik Thai is added to the Benchakuun, the resulting compound includes all of the Treekatuk.

Already we find more than one therapeutic use for some drugs. Of those common to the Benchakuun and one of the other three formulae, dee plee flowers or fruit are used to treat the earth elements in the first instance, and the flowers, for one of the water elements in the second. Khing dried rhizome is for the ether elements in one case, and one of the water elements in the other; bile in this context, in fact, represents the fire element,¹ making the situation more complex.

The remaining standard prescriptions are used to treat specific symptoms or groups of symptoms and diseases rather than the elements.

When we examine the prescriptions in KFC, we do not find a single phikat on its own. Sometimes, one of these standard formulae is included by name, for instance, Treekatuk or one of the Small Class, in a larger recipe. Example 2, p. 232, with mawaeng thang 2; and examples 3, p. 232; 4, p. 234; 7, p. 239; and 8, p. 240, all including chan thang 2, show the use of standard formulae of the Small Class. Occasionally, all the ingredients of one of the phikat are found listed amongst other items in a medicine. This prescribing pattern is illustrated in examples 1, p. 231, and 3, p. 232. More often, some are missing, as shown in the last two ingredients in example 1, p. 231, and the use of two of the five taan in example 8, p. 240.

In some cases, two or three drugs occur frequently together which do not belong to one of the phikat. Rayom and khrai khruea,

¹ Mulholland, SEAR, p. 35.
in example 4, p. 234; *chan thet* (as one of *chan thang* 2) and
*khrai khruēa*, in the same example 4; and *vaan keep raet* and *vaan ron thong*, in example 7, p. 239, are instances of this pattern.

When we look for medicines prescribed for the treatment of the elements, and diseases of the *tridoṣa*, we find very few, most of these occurring in Book VI, separate from the rest. One of these is example 1, p. 231; another, example 2, p. 232. Sometimes, a disease of the elements is mentioned amongst several other conditions for which a prescription is recommended to be used, but, on the whole, the application of the theory of the elements is no more evident in the recipes than in the discursive sections of *KPC*.

Most of the formulae are collections of individual medicaments, belonging to no particular group other than their taste classification, see examples 4-12, pp. 234-245; although some do stand out because they contain groups of drugs which have a common feature. For example, most ingredients might be leaves, flowers or roots, or there might be several different kinds of animal horns or teeth prescribed together. Or a large proportion of the ingredients might have the same taste. See examples 2, p. 232, and 3, p. 232, mainly roots; 4, p. 234, with half its ingredients having a bitter taste; 5, p. 236, containing a number of calcium-producing animal substances - cobra's head, crab carapaces, and egg-shells - and several items with a cool taste; 6, p. 238, with several kinds of bones; and 8, p. 240, with seven kinds of roots, and four barks.

Considering that there are only three principal tastes; hot, cool, and mild; and nine medicinal tastes; astringent, sweet, toxic, bitter, hot-and-spicy, oily, cool-and-fragrant, salty, and sour; and the bland taste (see pp. 8, 9); and that some drugs have a combination of two or more tastes, the number of substances necessary to fulfil
the prescriber's requirements would appear to be very small. However, to many items, particular therapeutic properties are attributed which do not coincide exactly with those of the taste group or groups to which they belong. Also, a hot taste can result from a combination of drugs; a cool taste, from a combination of certain substances reduced to ashes.¹

The therapeutic uses of each taste, according to MD, are quoted below. A certain amount of overlap in the uses of various tastes may be observed.

Hot: To treat lom diseases, that is, diseases of the element wind, such as gastric pain and indigestion, and to expel flatus; to act as a tonic for the elements; and to counteract toxic fevers.²

Cool: For fevers, that is, diseases of the element fire; for toxic fevers; heat within the body (inflammation); fevers caused by the element internal heat; to subdue the heat of poisons; and for lom diseases.

Mild: For mucus and blood, that is, diseases of the element water; for lom diseases; to act as a heart tonic; and to counteract toxic fevers.

Astringent: To close wounds; heal and protect the elements; for diarrhoea; and dysentery; and to treat constipation.

¹ MD, p. 313.
² There are 30 kinds of toxic fevers, generically named khai phit קחי פית or khai mee phit קחי מי פית, KSY, p. 273. Some of these names have been interpreted in the following Western terms: khai phit can mean malignant malaria; it is also a name describing a particular type of fever involving the general body, which used to be called blood poisoning. The patient is extremely ill. In order of severity of progression, phit ron פית רון is a high temperature; phit khai פית קhai is a very high temperature, resulting in delirium, but not loss of consciousness; and khai phit is a toxic fever which produces the eruption of pustules on the skin. (VJ).
³ MD, p. 313.
Sweet: To permeate and moisten the flesh; provide energy; to treat exhaustion; for diseases due to increased mucus; and for cuts and wounds.

Toxic: Antitoxic; to treat poisoning of the bile, blood, and mucus; for poisoning caused by the bites of venomous animals, and toxic fevers; and to counteract diseases of the heart, and disorders of the bile.

Bitter: Tonic for the blood, and the bile; to treat fevers due to bile; for blood disorders; to improve the appetite; and to counteract heart disease.

Hot-and-spicy: For *lom*, gastric pain, and indigestion, and to expel flatus; to act as a tonic for the elements; and to counteract toxic fevers.

Oily: For disorders of the tendons; to act as a tonic for the tendons; to enrich the body fats so as to provide warmth to the body; and to counteract mucus disorders.

Cool-and-fragrant: For its refreshing properties; to act as a heart tonic; and as a tonic for the womb; and to counteract diseases of *lom*.

Salty: To permeate the skin; to treat skin diseases; preserve the condition of the skin; and to counteract abnormalities of the faeces.

Sour: For mucus; to cleanse the blood; loosen the bowels; counteract jaundice; and to treat cuts, wounds, and diarrhoea.

Bland: For diseases of the fire element, and as a diuretic.¹

When we compare the therapeutic uses of bitter drugs in general with those of some of the bitter tasting drugs described in Chapter 10, we find some variation in use from one substance to another, but a general tendency in the same direction. It is therefore necessary to assess each prescription on its own merits, taking into account its purposes as well as the accepted therapeutic uses of each ingredient, in order to understand what the prescribing doctor had in mind.

¹ *MD*, pp. 313, 314; also Mulholland, *JSS*, pp. 106-108.
To illustrate the points discussed, examples of each type of prescription pattern, together with the taste, where possible, of each ingredient, are set out below. Examples of some interesting prescriptions for different kinds of preparation, such as mixtures, pills, eye lotions, and ear drops are included. See examples 4-12, pp. 234-245. We will not attempt to go into the individual uses of each ingredient, because there are too many inconsistencies in the literature, and each drug is, in itself, a separate topic for research.
The first example, *KPC VI; 220, line 13*, contains none of the bitter or toxic drugs described in Chapter 10, but it is a very good illustration of three of the features of prescription formulation noted above. It is prescribed for the treatment of an intensification of the element fire, it contains one complete *phikat*, *Treekatuk*, in this case not under the name of the *phikat*, but included as a list of the three ingredients of *phikat* *Treekatuk*, and it also contains two other items which are members of another *phikat* of five drugs, *phikat* *Benchaphonthaat*. 1

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>dee plee</em></td>
<td><em>Piper longum</em></td>
<td>hot-and-spicy</td>
</tr>
<tr>
<td><em>phrik Thai</em></td>
<td><em>Piper nigrum</em></td>
<td>hot-and-spicy</td>
</tr>
<tr>
<td><em>khing dried</em></td>
<td><em>Zingiber officinalis</em></td>
<td>hot-and-spicy</td>
</tr>
<tr>
<td><em>waan proh</em></td>
<td><em>Kaempferia galanga</em></td>
<td>hot-and-spicy or hot-and-spicy</td>
</tr>
<tr>
<td><em>haeo muu</em></td>
<td><em>Cyperus rotundus</em></td>
<td>oily and sweet</td>
</tr>
</tbody>
</table>

Equal parts of each ingredient to be ground together, and made into pills, then these are taken mixed with hot water. 3

---

1 *Benchaphonthaat* บวชพงษ์พน SARU  the Five Drugs Effective in Treating the Elements. *PP*, p. 211.

2 The tastes of the ingredients are obtained from *PP* and *MD* unless otherwise stated.

3 The quantities and doses of prescriptions are seldom given. The doctor or pharmacist knows these things from experience. See p. 108, note 2.
Example 2, KPC VI; 221, line 1, for disorders of the element fire, contains five bitter tasting drugs, and five of the seven ingredients are roots. Two items, mawaeng thang 2, the two mawaeng belong to the Small Class or phikat, being different only in size.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>chetta mam phloeng</td>
<td>Plumbago spp.</td>
</tr>
<tr>
<td>mawaeng thang 2</td>
<td>Solanum indicum and Solanum trilobatum</td>
</tr>
<tr>
<td>phak khuang</td>
<td>Glinus oppositifolius</td>
</tr>
<tr>
<td>boraphet</td>
<td>Tinospora tuberculata</td>
</tr>
<tr>
<td>sadao</td>
<td>Asadirachta indica var. siamensis</td>
</tr>
<tr>
<td>chaa phluu</td>
<td>Piper rostratum</td>
</tr>
</tbody>
</table>

Equal parts to be made into a decoction, reduced by boiling to one third its volume. To be taken.

Example 3, KPC I, 2; 68, line 23, is called Benohataan,¹ Five Taan, and includes phikat Benohataan, a group of five substances with names beginning with taan,² to treat the children's disease called taan.³

---

¹ ลบูดตาด
² ตา
³ โรคตาด PP, p. 214.
There are several other ingredients in this particular prescription, which is intended to protect children from illness. Preventive medicine is a feature of a number of the recipes found in Book I. However, this one smacks of a mystical relationship between the names of the drugs and the name of the disease; not quite the same as that of the doctrine of signatures, which associates the appearance of the drug with the appearance of the affected part of the body, or the cause of the disease. *Chan thang* 2, the two *chan*, belong to the Small Class of fixed formulae, differing only in colour.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Plant Name/Description</th>
<th>Part Used</th>
<th>Quality of Taste</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>taan mon</em></td>
<td><em>Vernonia elliptica</em></td>
<td>root</td>
<td>sweet</td>
</tr>
<tr>
<td><em>taan sian</em></td>
<td><em>Diospyros montana</em></td>
<td>root</td>
<td>bland and slightly toxic</td>
</tr>
<tr>
<td><em>taan dam</em></td>
<td><em>Diospyros transitoria</em></td>
<td>root</td>
<td>toxic and very sweet</td>
</tr>
<tr>
<td><em>taan khamooi</em></td>
<td><em>Diospyros sp.</em></td>
<td>root</td>
<td>toxic</td>
</tr>
<tr>
<td><em>taan tanot</em></td>
<td><em>Borassus flabellifer</em></td>
<td>root</td>
<td>sweet and cool</td>
</tr>
<tr>
<td><em>chan thang 2</em></td>
<td><em>Santalum album</em> and <em>Dracaena loureiri</em></td>
<td></td>
<td>bitter</td>
</tr>
<tr>
<td><em>khrai khruea</em></td>
<td><em>Jaesminum sp.</em></td>
<td></td>
<td>bitter</td>
</tr>
<tr>
<td><em>san phraa naang ae</em></td>
<td><em>Carallia brachiata</em></td>
<td>bark</td>
<td>astringent</td>
</tr>
<tr>
<td><em>phitsanaat</em></td>
<td><em>Artemesia indica</em> var. <em>heyneana</em></td>
<td></td>
<td>hot, sweet, and slightly bitter</td>
</tr>
</tbody>
</table>

Use 1 *baht* of each of these, and 2 *salueng* of *chan*, *Myristica fragrans*, seeds (hot and fragrant) to prepare pills. If this medicine is to be taken in the morning, add *nguu lueam*, *Python reticulatus*, bile (bitter);
if it is to be taken at midday, mix with nam dok mai, flower water (cool-and-fragrant); if to be taken in the evening, mix with nam chan (bitter). To reduce the temperature, it can be used as a lotion. To expel flatus, first divide the medicine in halves, then cook sawaat, Caesalpinia crista, leaves (bitter) and salot, Croton tiglium, leaves (astringent, toxic, and cool) by steaming. Then mix these with an equal quantity of the medicine first prepared, and give this mixed with nam makhaam piak, juice of Tamarindus indica (sour). It will give great relief.

The next examples, showing various kinds of preparation, such as mixtures, lotions, ear drops, and so on, do not refer to the elements at all, nor do they include any of the phikat, other than the two chan of the Small Class. Taste is our only guide to interpretation.

Example 4, KFC III, 3; 156, line 18, is a special recipe to be taken as a mixture or applied to treat la-ong kaeo morakot. This is one example of a specific treatment for a potentially fatal disease (see pp. 45 note 2; and 81, note 1).

---

1 Thai flower water is usually made from mali, Jasminum sambac flowers.
2 Prepared from the wood. See p. 138.
3 The taste was obtained from Mc, p. 831, which says that the active principle in the seeds and leaves is a bitter substance, bonducin.
<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>chan thang 2</td>
<td>Santalum album and Dracaena loureiri</td>
</tr>
<tr>
<td>neraphuusee</td>
<td>Microlepia speluncae</td>
</tr>
<tr>
<td>khrai khruea</td>
<td>Jasminum sp.</td>
</tr>
<tr>
<td>dee ngu ton</td>
<td>Picrosma javanica</td>
</tr>
<tr>
<td>rayom</td>
<td>Rauwolfia serpentina</td>
</tr>
<tr>
<td>phitsanaat</td>
<td>Artemesia indica</td>
</tr>
<tr>
<td>nguu lueam</td>
<td>Python reticulatus</td>
</tr>
<tr>
<td>waai takhaa</td>
<td>Calamus tigrinus</td>
</tr>
<tr>
<td>waai tamoi</td>
<td>Pothos scandens</td>
</tr>
<tr>
<td>bitter</td>
<td>astringent</td>
</tr>
<tr>
<td></td>
<td>bitter</td>
</tr>
<tr>
<td></td>
<td>hot, sweet, and slightly bitter</td>
</tr>
<tr>
<td></td>
<td>toxic</td>
</tr>
<tr>
<td></td>
<td>cool, and bland</td>
</tr>
</tbody>
</table>

Prepare pills from equal parts of each ingredient. To be taken or applied, mixed with flower water.

**Comments:** The two chan and khrai khruea frequently occur together in these prescriptions, also rayom and khrai khruea.
Example 5, *KPC* III, 3; 155, line 1, is an interesting formula for *yaa kwaat*, medicine to be smeared on the throat (see p. 107), being composed almost entirely of animal and mineral substances. The taste classification system deviates somewhat from standard, and odours are sometimes noted. This prescription for *saang kranae* is called *Chiaranai phet*.1

<table>
<thead>
<tr>
<th>Muang Malaeng Saap</th>
<th>Pariplana australasia (Cockroach)</th>
<th>Faecal matter (this is usually burnt, giving a cool taste)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raak Din</td>
<td>Earthworm2</td>
<td>Roasted</td>
</tr>
<tr>
<td>Kraben</td>
<td>Dasyatis blackeri (Stingray)</td>
<td>Smoked skin</td>
</tr>
<tr>
<td>Nam Prasaan Thong Sat</td>
<td>Anhydrous borax</td>
<td>Very unpleasant, anaesthetic</td>
</tr>
<tr>
<td>Nok Yuang</td>
<td>Pavo muticus (Peacock)</td>
<td>The eyes of the tail feathers, scorched brittle</td>
</tr>
<tr>
<td>Nguu Hao</td>
<td>Naja naja (Cobra)</td>
<td>Head</td>
</tr>
<tr>
<td>Puu thale</td>
<td>Sea-crab</td>
<td>Carapace</td>
</tr>
</tbody>
</table>

1 *Chiaranai phet* โพษรานีไฟ  Gem Cutter.

2 The English name only is given when the scientific name is not known. English names are given in addition to scientific names in this prescription only, because of their special interest.
<table>
<thead>
<tr>
<th>Puu naa</th>
<th>Field-crab</th>
<th>Carapace</th>
<th>-</th>
<th>Salt, unpleasant, bland, with an unpleasant smell, salty, and cool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katang muut</td>
<td>Concrete deposit from human urine</td>
<td>Shell</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khai fak</td>
<td>Hatched hen's egg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lin thale</td>
<td>Os sepiæ Cuttle-fish bone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benkaanee</td>
<td>Quercus infectoria Aleppogall; Nut gall</td>
<td>Galls</td>
<td>Very astringent</td>
<td></td>
</tr>
<tr>
<td>Kammathan daeng</td>
<td>Arsenic disulphide</td>
<td></td>
<td>Unpleasant</td>
<td></td>
</tr>
<tr>
<td>Bia phuu</td>
<td>Cypraea eglantina Cowrie shell</td>
<td>Calcined shell</td>
<td>Salty, and unpleasant</td>
<td></td>
</tr>
<tr>
<td>Muek hom</td>
<td>Carbon</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chaat kon</td>
<td>Red mercuric sulphide</td>
<td></td>
<td>Cool</td>
<td></td>
</tr>
<tr>
<td>Chamot chiang</td>
<td>Moschus moschiferus Musk deer</td>
<td>Musk</td>
<td>Cool, with an unpleasant smell</td>
<td></td>
</tr>
<tr>
<td>Amphan thong</td>
<td>Pine amber</td>
<td></td>
<td>Oily, very sweet, unpleasant odour</td>
<td></td>
</tr>
<tr>
<td>Thong kham pleo</td>
<td>Gold leaf</td>
<td>10 sheets</td>
<td>Cool</td>
<td></td>
</tr>
</tbody>
</table>

Powder together equal parts of each ingredient. Prepare pills to be mixed with nam manaao, fruit juice of Citrus aurantifolia (sour), to apply to the throat.

Comments: Bones, horns, shells, and similar animal parts are usually reduced to ashes before use.
Example 6, KPC II; 135, line 24, called Mahaanin tua phuu, is to be taken as a mixture for smallpox, boils, and taan saang; to be used as a mouth paint; or to dab on the pustules of bubonic plague.

<table>
<thead>
<tr>
<th>nam prasaan thong</th>
<th>Borax</th>
<th>very unpleasant, anaesthetic</th>
</tr>
</thead>
<tbody>
<tr>
<td>muek hom</td>
<td>Carbon</td>
<td>-</td>
</tr>
<tr>
<td>plaa chon</td>
<td>Channa striatus</td>
<td>baked scales</td>
</tr>
<tr>
<td>kraben</td>
<td>Dasyatis blackeri</td>
<td>smoked skin</td>
</tr>
<tr>
<td>maeo dam</td>
<td>Black cat</td>
<td>roasted head</td>
</tr>
<tr>
<td>nguue lueam</td>
<td>Python reticulatus</td>
<td>burnt bones</td>
</tr>
<tr>
<td>nguue thap thaang</td>
<td>Bungarus multicintus</td>
<td>burnt bones</td>
</tr>
</tbody>
</table>

Powder together equal parts of each, and prepare pills. To be taken, mixed with alcohol, for smallpox and boils; mixed with flower water, to treat taan saang. To paint the mouth or to dab on the pustules of bubonic plague, add a little phimsen, borneol (cool-and-fragrant); and if this is ineffective, mix with the following

---

1 Mahaanin tua phuu  มหาภานินตัวพู่  Great Sapphire, Male.
<table>
<thead>
<tr>
<th>chaat horakhun thet</th>
<th>? Red mercuric sulphide</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>khanthatsakon</td>
<td>Rock sugar</td>
<td>sweet</td>
</tr>
<tr>
<td>kammathan thang 2</td>
<td>Sulphur</td>
<td>toxic</td>
</tr>
<tr>
<td></td>
<td>Arsenic disulphide</td>
<td>unpleasant</td>
</tr>
</tbody>
</table>

Example 7, *KFC II; 123, line 23, called Yaay lueang*,¹ is to treat unconsciousness resulting from the poison of *taan saang* or smallpox; and to treat snakebite.

| chang thang 2       | Santalum album          | bitter |
|                     | Dracaena loureiri       | bitter |
| benkaaneee          | Quercus infectoria      | galls |
| neraphuusee         | Microlepia speluncae    | very astringent |
| waan keep raet       | Angiopteris evecta      | astringent |
| waan ron thong      | Globba sp.              | astringent, cool, and bland |
| sang karaneey        | Barleria strigosa       | unpleasant² |
| kravaan              | Anomum krervanah        | - |

¹ Yellow Medicine.

² *waan keep raet* and *waan ron thong* are almost invariably prescribed together.
kaan phluu  
Eugenia caryophyllata  
hot-and-spicy
karmathan daeng  
Arsenic disulphide  
unpleasant

Powder together 1 fueang of each of these 10 ingredients, then add:

nguu lueam  
Python reticulatus  
dried bile  
bitter
phimsen  
Borneol  
cool-and-fragrant

Prepare pills, using water as excipient. To be taken mixed with syrup. To treat unconsciousness resulting from the poison of taan saang or smallpox, to be taken mixed with alcohol. To treat snakebite, add Chorakhe, Crocodyllus siamensis, bile (bitter).

Example 8, KPC III, 1: 142, line 10, is a very special mixture for severe diarrhoea caused by saang phloeng, saang kraai, and other forms of saang. When other medicine fails, this will ensure that the diarrhoea ceases.

kaang plaa daeng  
Phyllanthus reticulatus  
root  
bland
lep mue naang  
Quisqualis densiflora  
root  
toxic
chum het thet  
Cassia alata  
root  
toxic, and very sweet
chum het Thai  Cassia tora  root  bitter, and toxic
salot nam  Ficus heterophylla  root  bland
taan dam  Diospyros transitoria  root  toxic
taan mon  Vernonia elliptica  root  sweet
maduea (? m. chumphon)  ? Ficus glomerata¹  bark  astringent
thaeng thuai  Jussiaea repens  bark  -
phutsaa  Zizyphus jujuber  bark  astringent, and slightly sour
krathum khee muu  Mitragyna brunonis  bark  astringent
chan thang 2  Santalum album and  Dracaena loureiri  bitter
prakham kai  Putranjiva roxburghii  bitter
ching chaa chaalee  Tinospora cordifolia  bitter
khamin oi  Curcuma zedoaria  astringent

Prepare pills from equal parts of these 16 items. To be taken mixed with nam thoa, river water.

¹ Maduea chumphon is used to treat diarrhoea. MD, p. 372. This name is given as a synonym for maduea uthumphon by FT, p. 486, which quotes the botanical name, Ficus glomerata from Mo, p. 634.
Example 9, *KPC* II; 117, line 25, is a recipe for gold-coated pills to be given for *saang khamooi*, to treat internal poisoning causing unconsciousness. If a child is unconscious for a whole day, and still remains so by night time, it will revive if it is able to take this medicine. It is for the poison of all forms of *saang*.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Plant Name</th>
<th>Part Used</th>
<th>Taste</th>
</tr>
</thead>
<tbody>
<tr>
<td>akkhanee chawaa (? akkhee thawaan)</td>
<td>? Clerodendron serratum¹</td>
<td>fruit</td>
<td>bitter</td>
</tr>
<tr>
<td>raatchadat</td>
<td>Brucea javanica</td>
<td>fruit</td>
<td>bitter</td>
</tr>
<tr>
<td>prakham dee khwaai</td>
<td>Sapindus emarginatus</td>
<td>fruit</td>
<td>bitter</td>
</tr>
<tr>
<td>chan</td>
<td>Myristica fragrans</td>
<td>seeds</td>
<td>hot and fragrant</td>
</tr>
<tr>
<td>manaao</td>
<td>Citrus aurantifolia</td>
<td>seeds</td>
<td>bitter</td>
</tr>
<tr>
<td>fin</td>
<td>Papaver somniferum</td>
<td>dried latex</td>
<td>toxic</td>
</tr>
<tr>
<td>nguu lueam</td>
<td>Python reticulatus</td>
<td>dried bile</td>
<td>bitter</td>
</tr>
</tbody>
</table>

Prepare pills using equal quantities of each ingredient; gold-coat them, and give mixed with alcohol.

¹ The first name could mean Javanese fire; the second, fiery opening or entrance. The botanical name applies to the queried synonym, and comes from *FT*, p. 1063, and *WW*, p. 818.
Example 10, *KPC II*; 134, line 25, is a paint to apply to the crown of the head to treat insomnia.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Description</th>
<th>Quantity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>horadaan thong</td>
<td>probably a mixture of Sulphur and Arsenic disulphide</td>
<td>1 salueng</td>
<td>toxic</td>
</tr>
<tr>
<td>lamphong kaa salak</td>
<td><em>Datura fastuosa</em> flowers</td>
<td>2 salueng</td>
<td>toxic</td>
</tr>
<tr>
<td>kanchaa thet</td>
<td><em>Leonurus sibiricus</em></td>
<td>3 salueng</td>
<td>-</td>
</tr>
<tr>
<td>muun kho</td>
<td>Cow dung [burnt]</td>
<td>2 salueng</td>
<td>bitter, cool, and foul smelling</td>
</tr>
<tr>
<td>phimsen</td>
<td><em>Dryobalanops aromatica</em> leaves</td>
<td>1 salueng</td>
<td>cool-and-fragrant</td>
</tr>
</tbody>
</table>

Mix with flower water and apply to the crown of the head.

Example 11, *KPC V*; 209, line 9, is a recipe for oily ear drops to treat *saang* which affects the ear.

If this becomes a chronic abscess which remains for several months or years, these drops are used.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Description</th>
<th>Quantity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>lamphong</td>
<td><em>Datura alba</em> fruit juice</td>
<td>1 cupful</td>
<td>toxic</td>
</tr>
<tr>
<td>manaao</td>
<td><em>Citrus aurantifolia</em> seed oil</td>
<td>1 cupful</td>
<td>bitter</td>
</tr>
<tr>
<td>prakham dee khaaai</td>
<td><em>Sapindus emarginatus</em> fruit juice</td>
<td>1 cupful</td>
<td>bitter</td>
</tr>
</tbody>
</table>
nam yaa fin  Papaver somniferum  (see p.147) 1 cupful  toxic
het muun kho  A type of mushroom which grows in cow dung  juice 1 cupful  toxic
neraphuusee  Microlepis speluncae  sap 1 cupful  astringent
nguu lueam  Python reticulatus  liquid bile 1 cupful  bitter
nam man ngaa  Sesamum indicum  oil 1 cupful  oily

Boil until only the oil remains, then use as ear drops. If the disease spreads to the external ear, this can be cleared up by applying the oil. If there is a discharge from the ear, moisten some Chinese straw fibre paper with the oil, gently insert this into the ear, and leave it there for half an hour.

Probably the most interesting prescriptions in Thai medicine are the eye irrigations, and there are several included in KPC. The worst kinds of birth saang and taan chon affect the eyes.\(^1\) In some cases to (corneal ulcers or opacities)\(^2\) develop in the eyes. There are many different kinds of to, which, in modern medical terms, are divided into three groups.

\(^1\) KPC IV; 189; V; 204.
\(^2\) วัด Mc, p. 347.
(1.) to hin (glaucoma)

(2.) to krachok or kaohok (cataract)

(3.) to lin maa or to nuea (pterygium)

Of the various kinds of each of these types of to, some are mentioned in KPC, and since surgery is not normally practised in Thai traditional medicine, the treatment in every case is medicinal, usually by means of eye lotions or irrigations.

Prescriptions are included for the treatment of three kinds of glaucoma, to klet kadee, to kon hoi, and to klet hoi; one type of cataract, to lam yai; and two varieties of pterygium, to lin maa, and to saai lohit. We include here, as example 12, one eye irrigation used to remove the to of taan chon, because it has only four ingredients including the diluent, and every one is used in one or more of the other recipes to treat to. KPC V; 218.

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1 ต้อหิน, ต้อกระจก or ตาแขป, ต้อเยื้อมา or ต้อรี (PT, personal communication, 9.11.81).

2 The successful removal of to kaohok or to krachok, in which a 'glass or glossy cataract' covering the 'iris or the eyeball' was removed after five days treatment with eye irrigations and massage of the eyeball, was reported by V. Egereff, 'Traditional herbal cures still practised to-day in Bangkok,' Bangkok Post, 23.1.77, p. 5.

3 ต้อแก้วหลี, ต้อกระจก, ต้อเยื้อเหลือง

4 ต้อเลื้อย

5 ต้อดำปิดดี
phak bung  
Ipomoea pes-caprae  
the whole plant  
acrid, and cool

sang  
Strombus canarium  
calcined shell  
salty, and unpleasant

din thanam  
A golden coloured clay  
cool

Finely powder equal parts of each item, prepare a stick [or pills], and dilute with nam thao tamlueng juice of Coccinia indica (bland), to use to irrigate the eyes.

It can thus be seen that the traditional doctor uses several different methods in formulating prescriptions. He can prescribe drugs according to their action on the elements, or for their specific action in relieving certain symptoms or diseases. He can select his treatment from a collection of standard compounds or phikat, and use these alone or in combination with other drugs; or he can decide on the appropriate medication by relying on the therapeutic properties inherent in the taste attributed to each substance.
CHAPTER 12
CONCLUSION

*KPC* is a confusing mixture of information gathered together from many sources, seemingly to provide an omnibus or encyclopaedia of all Thai traditional knowledge of reproduction, birth, and diseases of infants and young children available at the time of its compilation in 1871. Some of this material stems from the influence of Indian *Āyurvedic* medicine, which is known to have been brought to South-East Asia at least seven and a half centuries ago, because it is mentioned in the inscriptions of Jayavarman VII (A.D. 1181-1220) of Kamphuchea.¹ These inscriptions predate the first known Thai inscription, found at Sukhothai, the early Thai capital, and dated 1292 A.D.² Some of the medical theory appears to be indigenous to the area, or could have been brought there by the Tai people when they migrated from their former homeland.³ This is thought to have been the southern Chinese province of Yunan, but is unconfirmed. Some of the texts mentioned in *KPC* as sources of information are named in Thai literature of the seventeenth century. We have no earlier written proof of its origins. The use of the seven day week as a key factor in the medical theory surrounding the group of symptoms and syndromes called birth *saang* might appear to provide some way of pinpointing the time when the theory was first postulated, but this is not so. The seven day week is mentioned in inscriptions of Sukhothai during the fourteenth

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3 The Tai people migrated to many parts of South-East Asia. Those who settled in what is now Thailand are called Thai.
century. This knowledge might well have been in use prior to
that time, but even if not, we have a vacuum of five centuries
between the time of those inscriptions and the time of the compilation
of KPC as received.

We must await further research into Thai history before a
date can be assigned to the main substance of this text.

However, it appears that KPC reveals, in the main descriptions
of birth saang and its associated diseases, some of the ideas,
independent of Indian influence, underlying the practice of medicine
of the traditional Thai doctor. These concepts could have originated
with the Thais themselves, or have been adopted from neighbouring
people. As yet, there is insufficient evidence concerning indigenous
medicine in other South-East Asian countries for any conclusions to
be reached about the source of the concept of birth saang.

We have noted, in the translated sections presented in
Chapters 4, 5, and 6, and elsewhere in the text, a tradition of
careful and detailed recording of medical phenomena concerning diseases
of children; and conclusions which demonstrate a high degree of
scientific application to a great amount of experience gained over a
long period of time when there were no technological aids: when
experience was the only measure of observations. The physician authors,

1 A.B. Griswold, and Prasert na Nagara, 'The Epigraphy of
Mahādharmarājā I of Sukhodaya,' JSS, Vol. 61, Part 1
(January, 1973), mentions 'Wednesday, a "tau ni" ้ถวี
day in the Tai reckoning', p. 88, lines 30-31; Friday, a
"katt rau" วันศุกร์ day, p. 87, line 1; and Saturday, a
"räy sann" วันเสาร์ day in the Tai reckoning', p. 89, line
47; all included in Inscription No. 3, erected in 1357. This
suggests that the seven day week, known in Indian astrological
circles since the fourth century A.D., was known to this
astrologer-king Mahādharmarājā, who also knew medicine (pp. 90,
lines 75-78; 91, lines 1-2), but that a Tai method of
reckoning days was still in use.

2 See p. 1, note 1.
whether of one, three, six or even more centuries ago, have passed on their knowledge, and the fact remains that this knowledge is still applied in Thailand to-day: not just in remote villages, but also in the heart of Bangkok. It is used, not only by illiterate peasants, but by all ranks of society.

We must not forget that these doctors themselves survived, and apparently helped many others to survive the ravages of some of the appalling diseases which are endemic to Thailand. Recent investigators still list, amongst the diseases to which these people are subject, scourges of the worst kind.

In 1980, diarrhoeal disease was reported to rank fourth of the ten major causes of death, and first in infants. Pathogenic enteric bacteria isolated included *Vibrio cholerae*, *V. parahaemolyticus*, non-agglutinable *vibrio*, salmonella, shigella, and enteropathogenic *E. coli*.¹

In 1978, some of the diseases reported to be prevalent in Thailand included malaria, filariasis (in the south mainly, and in Kanchanaburi), leprosy, tuberculosis, venereal diseases, dengue haemorrhagic fever, diarrhoea, cholera, bacillary dysentery, typhoid, paratyphoid, infectious hepatitis [sic], diphtheria, pertussis, tetanus, poliomyelitis, and measles. A 'survey for certification of Thailand as free of smallpox was carried out', but no results are given.²

In 1977, the major medical problems and causes of death were reported to be gastroenteritis, respiratory infections, tuberculosis,

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accidents, venereal diseases, malaria, trachoma and leprosy, with widespread malnutrition, especially among the young.¹

An excellent guide to the probable diseases and conditions described in KPC is the report of Stahlie on the medical conditions observed in a cross-section of the less affluent, that is, the majority, of Thai mothers during pregnancy and lactation, and their children from birth to four years of age.² Although this study was made during the years from 1956 to 1958, in many respects the conditions reported would not be very different from those to which KPC might apply. At that time, the author noted that the back of endemic diseases, such as malaria and yaws, in Thailand had been broken.³ Amongst the diseases encountered, and not already mentioned above, were helminthic infestations, scabies, smallpox, rabies, hereditary haemoglobinopathies, endemic goitre, pyoderma, skin abscess, and otitis media.⁴

In addition we should note snakebite, and bubonic plague, which are included in the conditions for which some of the medicines are prescribed.

Saang, la, and la-ong still exist. During the second period of field work, the writer was privileged to be permitted to observe several traditional doctors at work examining and treating patients. At one large clinic, where dozens of small children were seen at each session, I asked to be shown cases of birth saang, la, and la-ong. Birth saang, as described in KPC, did not appear to be taken seriously.

² Teunis Dirk Stahlie, Thai Children Under Four (Amsterdam: Vrije Universiteit van Amsterdam, 1959).
³ ibid., p. 255.
⁴ ibid., pp. 60-68, 197.
The first child pointed out had a distended abdomen, diagnosed as *saang thong*, abdominal *saang*. When pressed for the birth *saang* of the child, the doctor asked the mother what day the boy was born. The answer was Tuesday. 'The child has *saang daeng*,' said the doctor unconvincingly. But a little while later he showed me two cases of *saang khum*, which proved the reality of some of the mouth diseases described in the text. One – a boy about eight years old, who, I was told, had the more advanced form of the disease – had already been seen by someone else, as his tongue had been painted with gentian violet. The tongue was otherwise clean, but there was a film of pus on the palate, and there were small, round red vesicles on the mucous membrane inside the lower lip, rather like pomegranate seeds. These had no pus. I was told that the child had these lumps inside his cheeks also, but did not manage to see them for myself. The second case – a boy about six, with a less severe form of *saang khum* – had black, green, and yellow speckled fur on the back of his tongue.

The doctor differentiated between what many laymen would call white fur on the back of the tongue, and *la-ong*. A baby diagnosed as having *la-ong* had white particles on the whole tongue, and the gums, and a patch in the middle of the palate. It resembled thrush. This doctor has not seen *la-ong* of any other colour. A baby with *la* did not have fur or particles on the surface of the tongue or mucous membrane, but the gums appeared a creamy white colour beneath a pearly surface.

At another clinic, a traditional doctor was observed irrigating a girl's eyes and applying gentle massage to them, as described on p. 245.

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1 ฃำำธปธ
What, then, are some of the assumptions of the Thai traditional doctors concerning the diagnosis and treatment of children's diseases?

The children referred to in KPC, and the children referred to by Stahlie and others are the same children. The diseases described in KPC, and the diseases listed by Stahlie and others are the same conditions described in different terms. Is it any wonder that the Thai doctors do not attempt to identify individual diseases as perceived by Western science? Perhaps that is not their attitude. They do not seem to place much store on the classification of children's diseases into discrete, manageable entities, with a sharp division between black and white. We find, instead, a continuum of all the symptoms likely to beset a child during its first years, including what, in Western terms, might be seen as the overlapping, grey areas. Finding exacerbations of certain conditions arising from time to time, the Thai doctors align these with all the intervening illnesses. Hence saang, children's disease.

Faced with the almost overwhelming odds of trying to rear children in such a hostile environment, it is natural to presume that all children will have saang; that is, all will suffer from illnesses.

Even though the text lacks clarity because of inconsistencies in the differentiation of diseases, inadequacies in the classification of diseases, and diversity in medical theory, certain diagnostic patterns are discernible.

In almost every case, children's diseases are called saang. The descriptions of the various diseases found in Thai infants and young children tend to adhere to one of three conceptual approaches. The most prominent of these is the theory of congenital disease - birth saang or saang of the seven days of the week - occurring in
the foetus, and affecting the child in severe or mild form for several years. This congenital disease is classified according to symptoms observed in the mother when she is three months pregnant. The severity of her symptoms indicates the kind of birth saang the foetus has, the day of its conception, and the day of birth. This reasoning has obviously proved impractical, and so we find one or two passages explaining that there is a great deal of flexibility to be expected in reality, and almost any form of birth saang can affect any child. Nevertheless, all children are born with this disease. Birth saang is apt to be complicated by a secondary form of saang, mouth diseases called la, and la-ong, and diseases involving the central nervous system, such as tetanus, which are known as various types of lom of birth saang. Eventually, after about five years, when this pattern of early childhood diseases has run its course, it is supplanted by severe parasitic infestations, also associated with particular kinds of birth saang, and the effects can carry on throughout life. At its most rigid level, the classification of birth saang, and its diagnosis follows a vertical, rather than a horizontal pattern in time. There are seven kinds of birth saang, one for each day of the week, and each kind has its own particular complications or associated diseases right through childhood.

Outside this complex of diseases, but recognized within the same system, are diseases believed to be caused by spirits.

The second system of medical theory postulated within the text is the theory of the elements and the tridosa, adopted from

1 KPC VI; 223. The authors warn that unless the doctor rids the child of taan chon, this will remain until the age of 30 or 40 years, after which it will turn into a form of ritseeduang (see p. 96, note 1), the type depending on the kind of birth saang or minor saang previously affecting the child.
the Indian Ayurvedic system. Passages explaining children's diseases in these terms are inserted, from time to time, usually at the end of long sections on birth saang, and seemingly out of context. The greatest occurrence of Ayurvedic theory is found amongst the extracts from supplementary texts included in Book VI, at the end of KPC. While most of the descriptions of diseases in terms of the elements speak of saang, a few attempt to incorporate these ideas with the concept of birth saang. Others include references to spirits or relate to the physical appearance of the body. At no time are Ayurvedic ideas adapted to explain the diseases associated with birth saang, which is understandable, since Ayurveda reduces most illnesses to three—those resulting in disorders of the tridoṣa, wind, bile, and mucus.

In this text, the medical theory based on the Ayurvedic system of medicine, relating disease to disorders of the body elements and the tridoṣa, which is taught in Thai schools of traditional medicine now, is secondary to the theory of birth saang. Ayurvedic ideas have been superimposed on an indigenous, calendrical theory of children's diseases which owes nothing to Ayurveda. This suggests that the saang theory was in use before the Thais adopted Ayurvedic ideas, and could predate the arrival of the Tais in what is now Thailand.

Finally, the third approach to diagnosis is pragmatic. This method also has two forms of expression—in simple symptomatic description, and in terms of birth saang. It is within this category that we find the rationalization which overcomes the rigidity of the birth saang theory, insisting that the doctor should be careful in his diagnosis of a particular form of birth saang, being guided
primarily by the symptoms observed in the child rather than its birthday. The uncomplicated illnesses of infancy, and the minor upsets which occur at the times of change in a baby's development are also described in this straightforward manner. The latter are explained in *Ayurvedic* terms as well. The effects on the infant of the way it is born, and the quality of the mother's milk also come under this category of diagnostic pattern.

When we examine the prescribing patterns found in the recipes for medicine which abound in *KPC*, we discover a similarly wide range of options available to the traditional doctor. Having seen the many diagnostic alternatives, we can understand why so many of the medicines are intended for multiple use. There are a few recipes to treat one or more types of birth *saang*, *la*, *la-ong* or *lom*, some specifically for the elements, and some for only one or two symptoms, but most are for a combination of several symptoms often together with one or more of the birth *saang* group of diseases, and occasionally, a disease of the elements. Likewise, several methods of selecting ingredients are offered. The prescriber may choose a formula based almost entirely on standard compounds or *phikat* designed for specific treatment, following either the *Ayurvedic* or symptomatic methods. He can order a recipe in which each item is included on the basis of its taste or a preparation which is a combination of both standard compounds and individual drugs. The ingredients are dispensed in many different ways for internal or external use, and often the same prescription is used for both purposes. For example, a preparation to be taken internally as a mixture is often recommended to be applied externally as a lotion.

This very complex system of traditional medicine practised in Thailand is thus shown to comprise at least three systematic methods
of medical diagnosis and treatment. On the one hand, there is an elaborate, but impractical system based on a calendrical association of disease with the week-day of birth; on the other, an adaptation of Ayurvedic medicine; and alongside these two extremes, is a simple system relying on observation and experience, and symptomatic treatment.

In this thesis, we have explored the text, KPC, in a rather general way, searching primarily for the patterns from which more detailed research might begin. Many theses could be written from the very interesting material found in KPC. There is something here for the anthropologist, the historian, the social scientist, and the scientist. As far as the drugs are concerned, we have analysed their use with a view to removing just one or two of the many hurdles which make it so difficult to select the potentially valuable substances, those most likely to benefit the whole world, from the rest.

From the point of view of the Thai people, most of whom have access to this system of medicine, and some of whom also have access to Western medicine, a great deal can be done to incorporate the best of both systems for the common good.
APPENDIX I

Thai Traditional Medicine: A Preliminary Investigation

Copy of Pages 4-12

SOURCES

As this is an ancient system of medicine, and many Europeans have been interested in it, it might be expected that a detailed explanation of it has been written in English, as is the case with Chinese and Indian medicine. But this does not seem to be so. Since the brief account of Siamese knowledge of medicine and chemistry published in 1691 by Simon de la Loubère (since translated into English), the few articles written in English on Thai traditional medicine give a very general description of the subject.

De la Loubère says the Siamese know nothing about anatomy and surgery, requiring the help of Europeans for this purpose, nor do they have 'any principle of Medicine'. They rely on recipes learnt from their ancestors, which they never alter. The King's principal physicians are Chinese, but he depends more on one of the French secular missionaries than on all his Chinese, Siamese, and 'Peguin' physicians. He also refers to the practice of massage: 'When any person is sick at Siam he begins with causing his whole body to be moulded by one that is skilful herein, who gets upon the Body of the sick person, and tramples him under his feet.'

More detail is given in an unsigned article which appeared in the Bangkok Calendar (1865). It was thought to have been written by Dr D.B. Bradley, who, from 1835 on, practised European medicine in


Thailand for almost forty years. Unfortunately, the writer devotes much of his long paper to patronizing and offensive remarks.

Nevertheless, this article gives a very good general picture of the practice of medicine in Thailand at the time, although the description of the concept of the causes, symptoms, and treatment of disease is very brief. The original texts were still followed completely and faithfully, as the knowledge of medicine was believed to have been received miraculously by the 'Father of medicine'. There was still an almost total ignorance of anatomy; Thai physicians knew a little about a few of the bones and superficial tendons, but were unaware of the nervous system, and there was no word for 'nerve' in the language. Foreign surgeons were still employed when surgery was required, as the Thai doctors, apart from a few who had learnt to lance abscesses, dared not use a surgical instrument.

The mā nībat (doctors of massage, called by this writer 'shampooing doctors') were still very much in evidence, as a group of them was attached to each division of physicians in the King's service.

Over forty years later, Dr C. Beyer and Dr O. Frankfurter investigated Thai medicine. At the National Library they were able to examine copies, made in 1871, of original medical manuscripts held at the Royal Scribe Department. From knowledge gained from these texts, in particular a text which he referred to as 'the Rogānidān', Dr Beyer improved a little on the earlier article, and added:

9 Bertha Blount McFarland, McFarland of Siam..., p. 66.
10 'Siamese Theory and Practice of Medicine,' Bangkok Calendar, (1865), 55, 56. This refers to Jīvaka Komārabhacca, see p. 6.
11 ibid., p. 84-86.
12 ibid., p. 61.
13 Beyer, 'About Siamese Medicine...', p. 1-5. The Rogānidān was probably Phrakhampī ṛikñithān of Phra-āchān Komāraphat (Pali: Komārabhacca; Sanskrit: Kaumārabhrtya).
Siamese medicine has its origin in Indian medicine. Siamese tradition says it was first taught by Komarabhacca, who lived at the time of Buddha. As the name implies, he was the son of a courtesan and was put away by his mother, and was adopted by King Bimbisara. He fled from Bimbisara, and studied medicine for seven years with a teacher in Taxila. After seven years he was sent out by his teacher to collect plants which had medical properties. He came back with the answer that all plants could be used in medicine, upon which his teacher declared that he had completed the studies. Komarabhacca is the author of the old Indian writings on medicine, which are considered as sacred, and which even to this day are kept translated into Siamese in temples.

Jivaka Komārabhacca is a well-known figure in the Pali Canon, and several versions of this legend are found in Thai and Indian literature.

In 1933 H.H. Prince Dhani Nivat wrote on 'The Inscriptions of Wat Phra Jetubon' (Wat Pho), mentioning the large collection of inscriptions on medicine which can be seen there. Subsequently, in 1943 Dr Rudolf Hofbauer outlined the contents of the inscriptions, and presented summaries of translations of one group of them.

Dr Hofbauer may not have been aware of the existence of the original texts from which many, if not all the inscriptions on medicine at Wat Pho were obtained, as in his opinion these inscriptions were, at that time, the best sources of information for 'a medical retrospect of Thailand'. Even so, Dr Hofbauer said he found it impossible to write about 'Old Medicine in Thailand' because of the insurmountable difficulties of translation and of identification of drugs.

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14 Bimbisāra, in Thai, Phimphisān.


16 Beyer, 'About Siamese Medicine...,' p. 1, 2.


19 ibid., p. 183, 168.
Because most of these translation and identification difficulties have now been overcome by the publication of several explanatory books and dictionaries, written in the Thai language, it should be possible to elucidate the details of the Thai traditional system of medicine. And it is no longer necessary to search for individual texts in libraries, or to try to assemble the jigsaw of inscriptions to get a clear picture, as all have been collected and published in an orderly fashion. The ancient Thai texts on medicine have an interesting history, which I shall relate briefly before attempting to explain some of the principles of Thai traditional medicine.
CHAPTER 2

THE HISTORY OF THE TEXTS ON MEDICINE

A theme common to nearly all Thai writings on traditional medicine is the need to preserve the ancient texts on medicine received from the ancestors, so that they may be handed down in their original form to future generations for their benefit. This desire to maintain links with the past was probably strengthened by the disastrous loss of most old records at the sack of Ayutthaya in 1776.

During his restoration of Wat Phrachettuphon (Wat Phö), started in the year of the python, 1832, King Rama III ensured this continuity for many generations to come, by having all available knowledge of the finest quality in the fields of art, letters, technical skills, medicine, and other disciplines engraved on stone plaques and fixed to the walls of the buildings of this Royal wat, so that it would be accessible to all.

The inscriptions on medicine at Wat Phö include hundreds of ancient texts as well as dozens of illustrated diagrams of the human body showing the points on the body used in the practice of Thai massage, and verses describing exercises demonstrated by statues of yogis performing them.

The example set by King Rama III was followed by King Rama V (Chulalongkorn), who, in the year of the horse, 1871, appointed a committee of court doctors to collect all known texts on medicine, and to check them, compare them with the originals, and revise them. He

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20 Wat a wat, a temple, a church, a monastery; comprising the monks' quarters, the church proper (bōt, ubōsoth; upavasatha (S)), an edifice housing a large image of Buddha (wihan; vihāra (Pali)), and a place for sermons (kānprian). So Sethaputra, New Model Thai-English Dictionary (Bangkok: Thai Watana Panich Co. Ltd., 1972), vol. ii, 848.

then had a record of them made and kept in the Royal Library as the basis for future dissemination of this knowledge.\textsuperscript{22}

The Wat Pho Traditional Medical College Association has carried on this work by collecting and publishing ancient texts. Copies are presented to the King.\textsuperscript{23} In accordance with this spirit, most of their important publications bear a history of their contents, and it is mainly from these histories that we can get an overall history of these ancient texts, at least for the last one hundred and fifty years.\textsuperscript{24}

From these texts the modern Thai student of traditional medicine learns his art, and perhaps, in the same way, the interested \textit{farang} can try to understand it and possibly learn something from it as well.

The inscriptions on medicine at Wat Pho have been published in a single volume, \textit{Tamrā phēsat}.\textsuperscript{25} The arrangement of the texts on medicine is similar to that in \textit{Collection of the Inscriptions on the Walls of the two Pavilions dedicated to Medical Science in Wat Pho}, published by the Royal Institute in 1929 and already described by Dr Hofbauer in his paper mentioned on page 6. But to date, only sketchy translations of a few of the texts have been published in English.

These inscriptions do not include all the ancient texts. Most of the officially recognized old texts on Thai traditional medicine are to be found in six volumes which constitute the syllabus for teaching Thai traditional medicine and pharmacy at the Wat Pho Traditional Medical

\textsuperscript{22} Phāetthayasāt songkhrq (The Study of Medicine) (Bangkok: Samākhom rōng rān phāet phāen bōrān Wat Phrachēttuphon (The Wat Pho Traditional Medical College Association), 1961, vol. i, s, w, l.

\textsuperscript{23} Tamrā phēsat..., photograph 4.

\textsuperscript{24} Other interested individuals and organizations have made and are still making valuable contributions to the literature on Thai traditional medicine, but most of the sources used for this history have been published by the Wat Pho Traditional Medical College Association.

\textsuperscript{25} Tamrā phēsat (Texts on Medicine) (Bangkok: Samākhom rōng rān phāet phāen bōrān Wat Phrachēttuphon (The Wat Pho Traditional Medical College Association), 1962.
College, namely Phäetthayasät songkhvq (The Study of Medicine), vols. i, ii, and iii, published in 1961 by the Wat Phō Traditional Medical College Association, and, in an abridged form under a single cover, Wetchasu’ksā phäetthayasät sangkhēp (Manual for Students of Traditional Medicine), vols. i, ii, and iii, originally edited and published in 1909 (Bangkok era 127) by Phrayā Phitsanuprasātwet.

The origin of the ancient texts is obscure, but it might be revealed by their contents. They are referred to by a variety of names such as phrakhamphī phāet, khampī phāet, phratamrā lūang, phratamrā, tamrā phāet, tamrā yā, and tamrā. All mean texts on medicine.

This medical knowledge was handed down orally from teachers to pupils, who used to learn it by heart until writing was developed, when the original medical canons (khamphī phāet) were engraved on palm leaves in the same way as the Dharma canon (phrakhamphī tham). The original texts were written mainly in the Pali language and Khmer script, as was the practice in recording sacred and royal texts. Later they were translated into Thai when they were copied in samut khqi and renamed tamrā. They still contain many words of Pali derivation. The prefix phra was added for three reasons; the resemblance of the khamphī phāet to the phrakhamphī tham; the veneration in which they were held; and their association with royalty. Many prescriptions of the tamrā were presented to members of royalty, as most of them in

26 Phäetthayasät songkhvq..., vol. i, Foreword and Preface, and vol. iii, Foreword. The remainder of this history is taken from the same text, vol. i, 'The History of the Texts on Traditional Medicine,' ṛ, ṣ.

27 See Appendix IV. List of words with their equivalents in Thai script.

28 samut khqi a long book made of one long strip of paper, pleated (but not bound) so that it could be opened like a book, used before the introduction of printing into Thailand. The pulp for the paper came from trees of the family Urticaceae. If the pulp came from other trees, the book is called samut Thai. So, New Model..., vol. ii, 886. See Appendix III. Botanical Notes.

29 phra prefix to names of kings and of things associated with royalty, gods, objects of worship... So, New Model..., vol. ii, 644.
those days were doctors. When these tamrā were given away by members of royalty, they came to be called phratamrā. Eventually the King had his own stock of medicines and phratamrā, which were called phratamrā lūang. 30

The texts which King Chulalongkorn had had collected and checked as a record for the future (see page 8) were mainly used by the court doctors, and ordinary people had very little opportunity to use them. But publication commenced in 1895 of instalments of a text-book which the King intended should be made available for the benefit of the general public, as well as for use at Rāng rān rāotchaphāetthayālai (the Royal Medical College). Entitled Phāetthayasat songkhrq, it contained sections on both Thai traditional medicine and farang medicine, but publication ceased after only three issues.

In 1907 the Department of Nursing of the Ministry of Education compiled and collated all the Thai phrakhampī phāet and the farang medical books in use at the Royal Medical College, including the phratamrā khāng phrathī (the Royal Texts, which had already been checked, see page 8), and various phrakhampī phāet from the textbook Phāetthayasat songkhrq (1895) which it superseded, and re-edited and published them under the title Tamrā phāetthayasat.

In 1904 the Medical Society, whose members were graduates of the Royal Medical College, together with the Ministry of Education published another collection called Tamrā phāetthayasat songkhrq consisting almost entirely of farang medicine. This publication took the form of a monthly journal which failed, for financial reasons, after only four issues, after which it was continued as a column in Witthayāchān (the Journal of Education). By this time Tamrā phāetthayasat (1901) was having little effect, and was disappearing from use, as the new text-books had become entirely text-books on foreign medicine.

30 lūang here used as an adjective meaning 'royal' or 'official'. 
In June 1907, Phrayā Prasōetsātthamrong, who was medical superintendent at Sirirāt Hospital and a lecturer in traditional medicine at the Royal Medical College since its establishment at that hospital by King Chulalongkorn in 1889, published the texts he used for teaching there, under the title Wetchasāt wannanā. The texts compiled and used by the other doctors who lectured at Sirirāt Hospital at that time were not published, and have not been found.

In March of the same year, 1907, Phrayā Phitsanuprasātwēt, a specialist in medicine and lecturer at the Royal Medical College, published the Royal Medical Texts as Phäetthayasāt songkhra, royal edition, in two volumes. A year later, 1908, realizing that these two volumes might be difficult for students and the general public, he edited and published an abridged edition as a handbook for doctors and nurses, and as the basis for teaching at the Medical College. This book, which is divided into three volumes, was called Wētchăsu'ksā or Phäetthayasāt sangkhăp.

These five volumes published by Phrayā Phitsanuprasātwēt are the official texts of traditional medicine and pharmacy authorised by the Ministry of Public Health as the syllabus at the Wat Phō Traditional Medical College in 1957, when the College was granted permission by the Ministry of Education to commence teaching medicine and pharmacy. At the same time, the Committee of the College, while searching for old texts, found the series published as Wētchăsāt wannanā in 1907 by Phrayā Prasōetsātthamrong, and added these texts to the authorised syllabus as

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31 Phrayā Prasōetsātthamrong is not a personal name, but a title of rank, used by the occupant of that position as his name.

32 Phrayā Phitsanuprasātwēt, the official title of Āchān Khōng, also referred to informally as Chaokhun Phitsanuprasātwēt.

33 Phäetthayasāt songkhra..., vol. i, Preface.
Phaetthayasāt songkhraṅ (The Study of Medicine), vol. iii. All six volumes were carefully examined and re-edited before publication, for use at the College.34

Although doctors and pharmacists of traditional medicine may use prescriptions which are not in these texts, they are obliged to register them. In other words, all innovations must be registered, and thus the authenticity of the texts is guaranteed. This requirement ensures the continuity of the tradition of handing down the ancient texts in their original form — a tradition remarked upon by Simon de la Loubère three hundred years ago.

The texts record the causes of diseases, their symptoms and diagnosis; the treatment of diseases, the medicines used, and the properties of the drugs used to make these medicines. Overall there is some repetition in the texts, which are listed in Appendix II, attached, showing the volumes in which they appear, the names of the texts, and a brief summary of the contents of each.

34 Phaetthayasāt songkhraṅ... , vol. iii, Foreword.
APPENDIX II
Glossary of Thai Words Used in the Thesis

excluding plant, animal, and mineral names listed separately in Appendix IV.

These words are arranged in Thai alphabetical order. The list of initial consonants given on p.vii should provide sufficient guidance, although it is not in precise alphabetical order because there are sometimes two or more Thai letters corresponding to a single English letter. In the spelling of some Thai words, the initial pronounced consonant is preceded by a silent '๑' (h). Such words are to be found towards the end of the list. Words with an initial pronounced vowel are preceded by a glottal stop, written 'ʻ', and follow the above. Neither the silent ๋ (h) nor the glottal stop is transcribed here.

Each entry is followed by the number of the page where it first occurred.

katt rau กัดเรา (day) a day in the 60 day cycle 248
krasai กระบุช, กระบุ or kasai กระบุ wasting disease; cachexia 35
klam กลาม a measure of weight 109
klom กลม a measure of weight 109
kwaat yaa วาตยา to paint the throat; a commonly used method of administering medicine to a child whereby the medicine is applied to the throat with the finger 66, 107
kop mue กอปมือ a measure of weight 109
kaan ก้าน leaf stalks 118
kaalapaksee กาลากาศ a disease of children 40
kaalarok กาลาโรค bubonic plague 40
kaanluwat กาวลำวัด literally, black blood; a symptom or disease 196
kamdao กาม dao internal heat, one of the body elements 39
kam mue กัมมือ a measure of weight 109
kumphanthayak ภูมิพานทะยา  a condition characterized by convulsions 83
kumaatthasang ภูมิมหาสง a demon 57
keson ก่ำซอน, เกสร pollen 117
kaen แก่น heartwood 117
khat bao ขัดบ่อ difficulty in micturition; to suffer from an obstruction to the flow of urine; to be unable to pass urine 33
khamao เขม offence; a symptom or condition of infants 35
khai phikaat ไข่พิกัด literally, a fever or disease which kills 84
khai phit ไข้พิษ toxic fever 228
khai mee phit ไข้เมี้ยน toxic fever 228
khruema เขี่ยว vine; creeper; climber 118
khon เขื่อน stump; root-stock 118
nguang ง้วง flowering stalk, inflorescence 118
ngao เง่า a synonym for hua; root-stock; rhizome; bulb; tuber or corn 117
chon ช่อน moveable; wandering. In describing a disease in relation to another, it means a disease of a type which sometimes occurs during or following the course of the other disease; a complication of a disease 41
chok ข้อ a cupful 109
chang ชัง a measure of weight 108
chang Thai ช่างไทย a measure of weight 108
chaleo เขลาง a device made of intertwined, thin strips of bamboo, placed on top of a pot of medicine to ward off evil 105
dok ดอก flower 117
ton ต้น plant; tree; stem; trunk 112
trabong Rāhu ระบบรองราหู or tabong Rāhu ระบบรองราหู a demon; Rāhu’s club 56, 57
to ตา corneal ulcers or opacities 77, 244
to kon hoi ตาอักเสบ a type of glaucoma 77, 245
to krachok ตาแพร่ or kachok ตาแพร่ cataract 245
to klet kadee ตาเล็กลแคดี a type of glaucoma 245
to klet hoi ต้อเกลียดหมอบ  a type of glaucoma

to nuea ต้อเนื้อ  pterygium

to lam yai ต้อลามใหญ่  a type of cataract

to lin ma ต้อสีเท้า  a type of pterygium

to saai lohit ต้อผักยิสะดี  a type of pterygium

to hin ต้อหิน  glaucoma

taphan ตาพัน  or saphan สาพัน  a disease of infants

taphan fai ตาพันไข่  a disease

taan chon ตาเนื่อง  parasitic disease

taan saang ตาเนื่อง  name of two diseases

tamliniang ต่างหนึ่ง  a measure of weight; a plant (see Appendix IV)

tau ทิ้ง  เตาทิ้ง  (day) a day in the 60 day cycle

thao เทา  vine

thanaan ทานาน  a measure of volume, the capacity of a coconut shell

thanaan luang ทานานหลวง  one litre

theppheapaksee ทุพเทพกิจ  a disease of children

nonthapaksee นนทบุปปชี  a disease of children

naaphee น้ำ脐  navel or abdomen

nam น้ำ  water; liquid; juice; sap

nam man น้ำมัน  oil

nuea naaphee เนื้อน้ำ脐  abdominal or umbilical flesh

nuea mai เนื้อมัน  wood

boriwaan บอริวาร  followers, attendants, satellites

baht บาท  a measure of weight; a coin

benchakhan บทศักดิ์ Pali pāṇicca khandha  the five constituent elements of being; here used to describe the intestines, stomach, liver, lungs, and heart

bai ใบ  leaf

pañcha saakkhaa ปัญชวลักษ์ Pāli pāṇicca sākkha  the five branches: the head, hands, and feet
pathommakan ปัทโธมภัณฑ์ or prathommakon ปทโธมภัณฑ์, ปทวัณณภัณฑ์ primary
puang ngu hao ปัทโธมภัณฑ์ cobra disease
paksee ปัทโธมภัณฑ์ a winged creature; a bird; a disease of children
peesaat ปัทโส a spirit
pun cha param ปัทโธมภัณฑ์ พัณฑ์ a spirit; Pāli puna ca param next
plueak ปัทโธมภัณฑ์ bark; rind; husk; shell
phon ปัทโธมภัณฑ์ fruit
phak ปัทโธมภัณฑ์ leafy parts of a plant; vegetable
phoe ปัทโธมภัณฑ์ spirit
phuuk ปัทโธมภัณฑ์ book
farang ปัทโธมภัณฑ์ a person of European extraction
fak ปัทโธมภัณฑ์ pod
faa mue ปัทโธมภัณฑ์ a measure of weight
phayuha ปัทโธมภัณฑ์ a symptom or disease, meaning unclear; literally, a procession
phanranai ปัทโธมภัณฑ์ a skin condition which results in the outer skin flaking off
phratamraa khaang phrathee พระธรรมราชพราหมณ the Royal medical texts
phratamraa luang พระธรรมราชองค the Royal medical texts
phikat ปัทโธมภัณฑ์ fixed; set; class
phit khai ปัทโธมภัณฑ์ a very high temperature, resulting in delirium, but not loss of consciousness
phit ron ปัทโธมภัณฑ์ a high temperature
phai ปัทโธมภัณฑ์ a measure of weight
fueang ปัทโ воп a measure of weight
manutsamup มนุษย์รูป human form
mahatsamup มหาเทวสูต meaning unclear
maanthalun มหาเทวสูต a disease
mue ผ้า tendril; hand (commonly)
met เหม่ต seed or fruit kernel 117
malet เหม่ต seed or fruit kernel 117
malet khaao pluak เหม่ตข้าวเปลือก grain of paddy 109
malet ngaa เหม่ตนงา sesame seed 109
mao buea เหม่ตเปื้อ toxic, narcotic, poisonous 9
mae sue เหม่ต a spirit 41
yot หม้อ pustule, abscess, boil or pimple; head 31
yom mue kam mue หม่อมีก้าวิ a measure of weight 109
yaa kwaat ย่ากวาด throat paint 107
ya kae... ยาแก่ medicine to treat... 101
yaa khieo ยาเขียว green medicine 105
yaa tom ยาต้ม a decoction 104
yaang ยาง latex, resin or gum 118
rot รส taste 8
ruap ruam lae riap riang ราวาระและเรียบเรียง to compile and collate 22
raduu khaao ราดูฉาว leucorrhoea 137
raak ราก root 117
ray sann รายสัปดาห์ (day) a day in the 60 day cycle 248
ritseeduang ริตซีดิว a condition in which lumps occur 96
ruap รูป Paliรูป bodily form; material qualities 35
rok klaak โรคกลาก a kind of eczema 75
rok taan โรคตาน a disease of children 232
Lom ลม wind or air in motion; one of the body elements; a disease category 56
Lom kong yai ลมกองใหญ่ a disease 56
Lom kotthasaayaawaataa ลมโคททาอาอาอาตาตา the lom disease of children born on Monday 69
Lom kumphan ลมกุมพัน possibly tetanus; one of three lom diseases of children born on Saturday 70
Lom champraap ลมช่มปราพ possibly tetanus; one of three lom diseases of children born on Saturday 70
Lom baatthayak ลมบัดทายกร tetanus; one of three lom diseases of children born on Saturday 70
Lom prawaatakhun ลมประจำวัน the lom disease of children born on Sunday 69
lom sunthonwaat  the lom disease of children born on Wednesday
lom hatsakhinee  the lom disease of children born on Thursday
lom arit  the lom disease of children born on Friday
lom utthonwaat  the lom disease of children born on Tuesday
la-ong a mouth disease
la-ong kaeo morakot  emerald la-ong, the la-ong of children born on Tuesday
la-ong kaeo witchian  a form of follicular pharyngitis; diamond la-ong, the la-ong of children born on Monday
la-ong pleo fai faa  blazing la-ong, the la-ong of children born on Sunday
la-ong pleo fai faa thap thim  blazing ruby la-ong, the la-ong of children born on Saturday
la-ong phrabaat  the dust of the royal feet; the dust of the Buddha's footprint; la-ong, a mouth disease
la-ong phrabaat kaanlasingkhlee  a form of la-ong, black and hidden, possibly the la-ong of children born on Friday
la-ong mahaamek  la-ong of the great cloud, the la-ong of children born on Thursday
la-ong saeng phloeng  firelight la-ong, the la-ong of children born on Wednesday
luuk  fruit or seed
wat  a monastery
waan  a plant used for making amulets
waayothaat  the element wind
vinyaan  Pāli vīmaṃsā intelligence, consciousness or thought faculty
wetthanaa  Pāli vedana sensation; feeling
samut khoi  a long, concertina-like book
salueng or salu'ng a measure of weight
sadue  the navel
saphan  ส่วน or taphan  สาร  a disease of infants 41, 42
sangkhaan  สังขาร Pāli sankhāra  predisposition or active tendency to arrangement; coefficients of consciousness 35
sanyaa  สัญญา Pāli saṁyāna  perception 35
sannibaat  สันนิบาต Skt samipātā  a disease caused by all three of the trīḍoṣa, wind, bile, and mucus 6
saang  แสง or  พระ children's disease 7
saang kraduuk  แสงกระดูก  the minor saang of children born on Friday 67
saang kratang  แสงกระแทง  the minor saang of children born on Wednesday 7
saang kranae  แสงกระ.bundle  the minor saang of children born on Tuesday 67
saang kraai  แสงกระ  the minor saang of children born on Sunday 49, 67
saang kaan  แสงกาลี black saang, a synonym for saang ninlapat and saang ninlakaan 54
saang komnoet  แสงกมโน  birth saang, a synonym for saang chet wan 7
saang khamooi  แสงขมือ robber saang, a synonym for saang chon, the birth saang of children born on Saturday 27
saang khwak  แสงขาว vacillating saang 38
saang khaao  แสงขาว white saang 38
saang khaao  แสงขาว  rice saang 74
saang khaao plueak  แสงขาวเปื้อน rice-husk saang, the minor saang of children born on Thursday 67
saang khun  แสงซึม pitted saang 38
saang khwaaai  แสงควาย buffalo saang 74
saang kho  แสงโข cow saang, a synonym for saang wua, the birth saang of children born on Thursday 20
saang chet wan  แสงเจตวัน saang of the seven days, a synonym for saang komnoet 7
saang chon  แสงช่อง a kind of saang which sometimes occurs during or following birth saang, called in this thesis, minor saang, to avoid confusion with saang chon below 41
saang chon  ชาวชอน  robber saang, a synonym for saang khamooi, the birth saang of children born on Saturday
saang chaang  ชาวช้าง  elephant saang, the birth saang of children born on Friday
saang daeng  ชาวแดง  red saang, the birth saang of children born on Tuesday
saang tamo  ชาวเติม  a painful pustule under the skin of the toes; possibly paronychia
saang thong  ชาวต้อง  abdominal saang
saang naangriv  ชาวนาางริว  the minor saang of children born on Saturday
saang nam  ชาวนาม  water saang, the birth saang of children born on Monday
saang nin  ชาวนิน  sapphire saang
saang ninlakaan  ชาวนินลากาน  black sapphire saang, a synonym for saang kaan and saang ninlapat
saang ninlapat  ชาวนินลัพธ์  saang with a black base
saang faai  ชาวฝ้าย  cotton saang, the minor saang of children born on Monday
saang phloeng  ชาวเพลิง  fire saang, synonym for saang fai, the birth saang of children born on Sunday
saang fai  ชาวไฟ  fire saang, synonym for saang phloeng, the birth saang of children born on Sunday
saang maa  ชาวม้า  horse saang
saang sako  ชาวศักก์  vigorous saang, the birth saang of children born on Wednesday
saang sian  ชาวศิ่น  treacherous saang
saang wua  ชาววัว  cow saang, synonym for saang kho, the birth saang of children born on Thursday
saang haeng  ชาวอัง  coeliac disease; a combination of saang chon and saang phloeng
sithi kaariya  ศิทธิข้ารีย  Pāli siddhi kāriya  so be it
sunthomwaat saang  ซัน Themesวิธี  Pāli sundaravātā  beautiful, harmonious saang
sen en  เส้นเอ็น  tendons, cartilages, ligaments etc.
naam  น้ำม  thorns
mo tamyae  หมอต่าย  traditional Thai midwife  32
yip mue  ยิปมือ  a measure of weight  109
haritathaat  หีระธาตุ  probably one of the body elements  39
haritaruup  หีระรูป  a green appearance  39
la  ลำ  a mouth disease; pustules or small, inflamed elevations of the skin, either convex or flat, of which there are various kinds, of different colours  27, 78
la foi fai  ลำเผายไฟ  shower of fire la  78
la ninlakaan  ลำนิลก้าน  black or black sapphire la, the la of children born on Thursday  70
la ninlaphloeng  ลำนิลพลดึง  fire sapphire la, a synonym for la niaraphloeng and la niarakanthee or nerakanthee, the la of children born on Wednesday  69
la ninlaphet  ลำนิลเพท  diamond sapphire la  78
la nerakanthee  ลำเนระกันที  or niarakanthee  เป็นรักนิมิตร  synonyms for la ninlaphloeng, the la of children born on Wednesday  69
la niaraphloeng  ลำนิราพลดึง  a synonym for la ninlaphloeng  69
la mahaoninlakaan  ลำmahอนิลก้าน  great black sapphire la, the la of children born on Saturday  70
la salakphet  ลำสาระเพท  diamond la  82
la saeng phrachan  ลำแสงพระจำปีน  moonlight la, the la of children born on Monday  50
hat  หาท  rubeola, measles  37
hua  หัว  a synonym for nga0; root-stock; rhizome; bulb; tuber or corn  117
haap  หาป  a measure of weight  108
hueat  หูเอะ  rubella, german measles  37
wai khruu  ไหว้ครู  paying respect to teachers  24
lot  ลอย  a measure of weight  108
ongkhasuut  องค์สะตอ  gonorrhoea  96
athitsarupa  อาทิตยา  the physical appearance of one type of infant  38
amanutsarupa  ภูมิพุฏ  not human appearance  37
asunonthapaksee  อาสนถพิกシー  or asunonpaksee  อาสนนพิกシー  a disease of children  40

akhamuukkhee  อัคคีศี  a disease of children  57

at  ธีร  a measure of weight  108

atsawamukkhee  อัตตวมีศี  a synonym for trabong Rāhu, maanthalun, and taphan fai; a disease of children  56

utthangkhamaawaat  อุทตังคณาวัด Pāli uddhāṅgamāvātāa  a lom disease or one of the wind elements of the body  56

utthangkhawaat  อุทตังคยาวัด Pāli uddhāṅgavātāa possible misspelling of above  56

ek  โอ  primary  46

en  เอน  synonym for sen en; tendons, cartilages, ligaments, etc.  35
APPENDIX III

Glossary of Some Scientific Terms Used in the Thesis

In the references to TE and LL, and occasionally elsewhere, some chemical terms are used which are of interest only to the specialist. Since their definition will be of little assistance to the general reader, these terms are not included here. Nor are the names of diseases known to Western medicine explained.

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<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>Abortifacient</td>
<td>Inducing abortion</td>
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<tr>
<td>Active drug</td>
<td>Not all ingredients in a medicine are intended to affect the patient's condition. Those which are, are called the active drugs.</td>
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<tr>
<td>Addictive, addicatable drugs</td>
<td>Drugs which cause physiological dependence.</td>
<td>110</td>
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<tr>
<td>Alkaloids</td>
<td>White crystalline solids which contain nitrogen, are basic in reaction, and possess pharmacological activity. Not all alkaloids conform to these criteria, and not all substances which do conform are alkaloids.</td>
<td>122</td>
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<tr>
<td>Alteratives (obsolete term)</td>
<td>Medicines which produce certain ill-understood changes throughout the body.</td>
<td>207</td>
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<tr>
<td>Analgesic</td>
<td>Pain reliever.</td>
<td>148</td>
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<tr>
<td>Anthelmintic</td>
<td>A remedy for worms, usually present in the intestines.</td>
<td>132</td>
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<tr>
<td>Antibacterial</td>
<td>Suppressing the growth of bacteria, and perhaps, killing them.</td>
<td>107</td>
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<tr>
<td>Antibiotics</td>
<td>Chemical substances produced by various species of micro-organisms, such as bacteria, fungi, and actinomycetes, that suppress the growth of other micro-organisms and may eventually destroy them.</td>
<td>203</td>
</tr>
<tr>
<td>Antimicrobial</td>
<td>Suppressing the growth of microbes (fungi, bacteria or viruses), and perhaps, killing them.</td>
<td>133</td>
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<tr>
<td>Antipyretic</td>
<td>Fever-reducing.</td>
<td>137</td>
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<tr>
<td>Antiscorbutic</td>
<td>Medicine to treat scurvy.</td>
<td>182</td>
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<tr>
<td>Anti-tussive</td>
<td>Cough suppressant.</td>
<td>164</td>
</tr>
</tbody>
</table>
Aphrodisiac  A sexual stimulant.  196
Bacteriostatics  Substances which inhibit the growth of bacteria, but do not kill them.  131
Biosynthetic pathways  See p. 121, note 2.  121
Bitter  A bitter substance given to improve the appetite.  169
Calcined substances  Calcium bearing substances, such as shells and bones, which have been burnt to produce calcium or lime.  113
Cardiotonic  Heart stimulant.  207
Carminative  An aromatic substance which assists the eructation reflex.  143
Central depressant  Depressing the level of CNS excitability.  196
Chelating agents  Heavy-metal antagonists which prevent or reverse the effects of heavy metals in the body.  105
Cholagogue  A medicine which increases the flow of bile, thus acting as a laxative.  213
CNS  The central nervous system.  131
Compound (chemical)  A chemical consisting of more than one element.  118
Compound (pharmaceutical)  Two or more medicinal substances mixed together.  118
Curare-like activity  Having a similar action to Curare, that is, interruption of transmission of the nerve impulse at the skeletal neuromuscular junction by blocking the transmitter action of acetylcholine.  152
Decoction  A liquid obtained by boiling drugs in water. For the traditional Thai method, see pp. 104, 105.  104
Diaphoretic  Inducing perspiration.  148
Diluent  A substance, liquid or solid, used to dilute another.  103
Diuretic  Increasing the quantity of urine.  127
Drug  A medicinal substance.  4
Emmenagogue  Stimulating menstruation.  137
Excipient: An ingredient of a medicine which makes it suitable for administration.

Expectorant: Promoting the removal of secretions from the bronchial tubes.

Febrifuge: Reducing the body temperature in a fever.

Fumigant medicines: Drugs which are administered as vapour by burning them and allowing the fumes to envelope the body or the affected part. See p. 139.

Glycoside: A chemical compound which contains a saccharide unit attached to a non-carbohydrate moiety which is termed the aglycone.

Halucinogenic: Causing hallucinations.

Hypertensive: Raising the blood pressure.

Hypotensive: Lowering the blood pressure.

Infusion: A liquid obtained by steeping substances, usually plant material, in hot or cold water for a short time.

Intoxicant: Making drunk; exciting, exhilarating, beyond self-control.

Maceration: Prolonged infusion, often in an alcoholic solution. The process of steeping crushed ingredients in a liquid and allowing to stand for a certain period. The supernatant liquid is then drained off and used.

Mixture (as a form of medicinal preparation): A liquid preparation to be taken by mouth.

Mucolytic: Liquefying mucus.

Narcotic: A drug which relieves pain and induces deep sleep.

Neuromuscular-blocking effect: Interruption of transmission of the nerve impulse at the skeletal neuromuscular junction.

Pharmaceutical botany: The study of plants used in medicine.

Pharmacognosy: The name is derived from the Greek, pharmakon, a drug, and gignosco, to acquire a knowledge of. Pharmacognosy is mainly concerned with naturally occurring substances having a medicinal action.

Pharmacology: In broad terms, is mainly concerned with the action of drugs.
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<tr>
<td>Phytopharmacy</td>
<td>The study of the reciprocal relationship between plants and drugs.</td>
<td>121</td>
</tr>
<tr>
<td>Poisonous</td>
<td>Potentially lethal.</td>
<td>9</td>
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<tr>
<td>To potentiate the action of a drug</td>
<td>To increase the effects of a drug.</td>
<td>107</td>
</tr>
<tr>
<td>Refrigerant (obsolete term)</td>
<td>An agent which cools the body or blood.</td>
<td>137</td>
</tr>
<tr>
<td>Saponin</td>
<td>A type of glycoside which produces a lasting froth when shaken with water.</td>
<td>153</td>
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<tr>
<td>Sedative</td>
<td>Producing drowsiness. At one time, a medicine which, by easing pain, permitted a patient to sleep.</td>
<td>135</td>
</tr>
<tr>
<td>Stomachic (obsolete term)</td>
<td>Aiding digestion or appetite.</td>
<td>146</td>
</tr>
<tr>
<td>Taeniafuge</td>
<td>An anthelmintic which expels tape-worms.</td>
<td>154</td>
</tr>
<tr>
<td>Therapeutic action or use</td>
<td>The use of medicine in disease.</td>
<td>8</td>
</tr>
<tr>
<td>Tincture</td>
<td>An alcoholic solution usually prepared by dissolving drugs in alcohol, or by maceration.</td>
<td>105</td>
</tr>
<tr>
<td>Toxic</td>
<td>Poisonous.</td>
<td>9</td>
</tr>
<tr>
<td>Tranquillizer</td>
<td>A drug that allays anxiety.</td>
<td>135</td>
</tr>
<tr>
<td>Trituration</td>
<td>Rubbing or grinding together two or more substances, usually solids, but sometimes a mixture of solids and liquids.</td>
<td>104</td>
</tr>
<tr>
<td>Vehicle</td>
<td>A medicinal vehicle is the diluent or medium by means of which drugs are made suitable for administration.</td>
<td>104</td>
</tr>
</tbody>
</table>
APPENDIX IV

Medicinal Substances, Plants, Animals, and Minerals mentioned in this Thesis

(arranged in Thai alphabetical order, see p. vi)

Plants and Plant Products

kraadon daeng  กะระตกแดง
see  fin ton, p. 191

kraadom  กะระตอม
see p. 213

kraadung maa baa  กะระตุหนึก
see p. 197

kraadum khee mau  กะระตูหนิบ
see p. 198

krabao  กะระบอย
see p. 177

krabian  กะระบิน
Gardenia turgida  Roxb. Rubiaceae (VJ); TS, p. 160
bark, seeds.

kralam phak  กะระลำพัก
see p. 156

krawan  กะระวัน
krawan khaao  กะระวานช่วย
Anomum krengn  Pierre  Zingiberaceae (VJ); LB, p. 8
Siam cardamom; Camphor seed
seeds, fruit.
The seeds are used as a carminative, expectorant, and stomachic. HE, p. 2

kraam raet (ton)  กะระแม่ (ต้น)
Aralia armata  Seeom. (Chumphon) WW, p. 7
Ginseng root.  TS, p. 29

krisanaa  กฤษณา
Aquilaria agallocha  Roxb. Thymelaeeae (VJ)
A. arisna  Pierre  (VJ); HE, p. 2
A. malaccensis  Lam.  (VJ)
Eagle wood; Aloes wood.
The wood is used as a heart stimulant. HE, p. 2
The seed oil is toxic. PP, p. 163.

kanocha  กนิชชา
see p. 135

kanocha thet  กนิชชาเทท์
kanchaa cheen  กันชาเชน
chaa kanocha  ข้ากันชชา
Leonurus sibiricus  L.  Labiatae (VJ); LB, p. 80; WW, p. 35
Siberian motherwort.
seeds, root, leaves, stalk.

kaang plaa daeng  ก้านปลาแดง
Phyllanthus reticulatus  Poir. Euphorbiaceae (VJ); WW, p. 49
root
Eugenia caryophyllata Thunb. Myrtaceae
(E. aromatica Kuntze) (VJ); LB, p. 62
Eugenia caryophyllus Bullock et Harrison HE, p. 9
Clove tree
flower buds
The flower buds are used as a stimulant, aromatic, and carminative;
the oil is used as a local anaesthetic and antiseptic HE, p. 9

Cinnamomum camphora (L.) Ness et Ebermaier Lauraceae (VJ); LB, p. 21
Gum camphor; Laurel camphor; 2-Camphanone
obtained from the wood
There are two kinds of camphor, see phimsen

Silica, obtained by burning rice husks. (VJ)

Costus rhizome

Anacyclus pyrethrum (L.) DC. Compositae (VJ)
Pellitory root

see p. 194

Atractylodes lycra Lieb. et Zuce Compositae (VJ); TPS2, p. 26
Atractylis

Mugwort; wormwood; Motherwort leaves

Nardostachys jatamansi DC. Valeriaceae Nard

Levisticum officinale Koch Umbelliferae (VJ)
Lovage root and rhizome

Terminalia chebula Retz Combretaceae (VJ); TPS2, p. 85
Black myrobalan leaf gall

see p. 184

Angelica archangelica L. Umbelliferae (VJ)
root

Angelica archangelica L. Umbelliferae (VJ)
root

see p. 204
kot thang 7  กอตทัง 7
kot chiang  กอตชิ่ง
kot so  กอตสู
kot hua bua  กอตหัวบัว
kot khamao  กอตขามาโอ
kot chulaa lamphaa  กอตชุล้าลำพ้า
kot kraduuk  กอตกระดุก
kot kaan phraao  กอตกลางพระ
kot thang 9  กอตทัง 9
kot chiang  กอตชิ่ง
kot so  กอตสู
kot hua bua  กอตหัวบัว
kot khamao  กอตขามาโอ
kot chulaa lamphaa  กอตชุล้าลำพ้า
kot kraduuk  กอตกระดุก
kot kaan phraao  กอตกลางพระ
kot phung plaa  กอตพุงปลา
ekot chadaa mangsee  กอตฉัตรมาสซี

khamin khruea  ขมิ่นเครา
see p. 143

khamin oi  ขมิ่นโอ
curcuma zedoaria Rosc.  Zingiberaceae (VJ); LB, p. 9; WW, p. 99
Zedoary rhizome, dried rhizome, long rhizome

khop chanaang  ข่ำปะแง่
see pp. 136, 203

khoi  ข่อย
Streblus asper Lour.  WW, p. 102
Bark-paper tree. Gerini, p. 264
Siamese rough bush. TS, p. 317

khanthatsakon  ค้านทัศกทาน
khanthatsakaraa  ค้านทัศกทานา
Concrete saccharine exudate (VJ)
Syrup used as medicine; rock sugar, rock candy; thick molasses, Mc, p. 150

khing  ซิง
khing khrang  ซิงกระ
Zingiber officinalis Zingiberaceae (VJ); WW, p. 116
Ginger rhizome, fresh rhizome, dried rhizome

khee kaa  ขีก้า
khee kaa daeng  ขีก้าแดง
khee kaa thang 2  ขีก้าทัง2
see p. 214

khee lek  ขีเลย์
see p. 155

khrop chakrawaan  ข์ร陛下วาน
Abutilon graveolens W. et A. Malvaceae (VJ); LB, p. 39
Abutilon hirtum Sweet Malvaceae TS, p. 1
bark, root

khok kra-om   kokkráom
see p. 173
Sesamum indicum L. Pedaliaceae HE, p. 16; WW, p. 202
(S. orientale L.)

Sesame

The seeds are edible; the seed oil is used as a nutrient, emollient, and demulcent.

Nymphaea lotus L. var. pubescens Hk. f. et Th. Nymphaeaceae (VJ); WW, p. 439

Water lily - pink, double, with frilled petals

Myristica fragrans Houtt Myristicaceae

Nutmeg

seeds ([luuk]), seed + aril ([phon] + [dok]), i.e. nutmeg and mace, roasted seeds.

The use of the word 'phon' in this context is an error, as 'phon' can only mean 'fruit', while 'luuk' can mean 'fruit' or 'seeds', or anything round. On the other hand, 'dok' here means the 'aril', not 'flower'. The seed of nutmeg contains an amphetamine derivative. It also contains a volatile oil which irritates the kidneys, and in this way could be considered to be an aphrodisiac. The seed, with the seedcoat removed, is used for curry. (VJ)

Michelia champaca L. Magnoliaceae (VJ); WW, p. 222

flowers, petals

Plumbago rosea L. (PT)

Plumbago indica L. (PT); WW, p. 234

Rose coloured leadwort

Plumbago zeylanica L. (PT); WW, p. 234

White leadwort

Piper rostratum Roxb. Piperaceae HE, p. 14

root, fruit

The fruit are used as an ingredient in an asthma remedy HE, p. 14

Piper champae Piperaceae HE, p. 14

flowers, petals
chum het  ชุมเหต
chum het Thai  ชุมเหตไทย
Cassia tora  Caesalpiniaceae (VJ); HE, p. 5; WW, p. 260
Foetid cassia leaves
The leaves are used as a purgative; an infusion of roasted seeds is used as a diuretic and to treat insomnia.  HE, p. 5
chum het thet  ชุมเหตเทท
see p. 153
song maeo  ซองแม่
see p. 200
dee nguu khruea  ดีเห็นกระเรื้อ
dee nguu ton  ดีเห็นหยอด
dee nguu thang 2  ดีเห็นหยอด 2
see p. 165
dee plee  ดีเพล
Piper longum  L.  Piperaceae (VJ), (PT)
Piper chaba Hunter (VJ); (PT); WW, p. 294
Piper retrofractum  Vahl.  Piperaceae HE, p. 14; (PT)
Long pepper flowers, baked (this is done to kill fungus etc.) (VJ)
The fruit are used as a carminative, stomachic, and tonic, also to treat haemorrhoids  HE, p. 14
dee mee ton  ดีเม่ถนน
see p. 157
tree katuk  ต้นกะทัก
tree katuk saam  ต้นกะทักสาม
1. khang
2. phrik Thai
3. dee plee
The three hot-and-spicy substances
tree phalaa  ต้นพะลาด
tree phalaa hom  ต้นพล่าห้อม
1. samo phiphek
2. samo Thai
3. makhaam pom
The three fruits
tree saam  ต้นสาม
1. chetta muun phloeng
2. sakhaan
3. chaa phluu
The three strong substances
tabaek  ตบเบ๊ก
ton tabaek  ตับเบ็ญ
khondok  ขอนดอก
Lagerstroemia floribunda  Jack.  Lythraceae (VJ); LB, p. 59
taan  ตำน or taan  ตำน
taan tonot  ตำนโทนต์
Borassus flabellifer  L.  Palmae FT, p. 334; WW, p. 334
Palmyra palm
nam taan  น้ำตำน
Palm sugar
taan khamooi  ตำนานช่วยยา  
see p. 188


taan dam  ตำนานตา
see p. 188


taan sian  ตำนานเสียก
Diospyros montana  Roxb. Ebenaceae (PT)


taan mon  ตำนานมอน
Vernonia elliptia DC. Compositae (VJ); HE, p. 18; WW, p. 333
(V. elaeagnifolia DC.)
Lee Gkwan Yeu Vine


leaves, root
The whole plant is used as a stomachic, and tonic, and as an anthelmintic for round worms. HE, p. 18


taan thang 5  ตำนานท่าง
bencha taan  บงหยุดาน


taan mon

taan sian

taan dam


taan khamooi


taan tonot
roots

	amalueng  อ่ามาลิง
thao tamlueng  เก่าดำฝิ่ง
Coccinia indica W. et A. Cucurbitaceae (VJ); HE, p. 7; WW, p. 336
There are both male and female plants, but these have no special names, and are not to be confused with tamlueng chaek.


leaves, root, and stem sap
The young leaves contain an amylolytic enzyme and are used to treat skin inflammation.
The stem is used as an ingredient in an asthma remedy. HE, p. 7

	un kaa daeng  อุ้มเข่าแดง
see kot kakling p. 194

	thop thaep  ทองเทาป
see p. 150

	thong phan chang  ทองพันชี้
see p. 203

	thong laang naam  ทองหลางหนาม
see p. 151
thap thin พืชแกม
see p. 181
thaeng thuai แห่งหวาย
phang phuai พังหวาย
Jussiaea repens L. Onagraceae (PT)
Water primrose
bark
nom sawan นโอมสวาน
see p. 201
nam dok mai นำดอกไม้
nam dok mai Thai นำดอกไม้ไทย
rot sukhon dok mai รัตสุก้อนดอกไม้
tha arakhon/ankhon เทากระคน
Aromatic water, usually prepared from Jasmine flowers; flower water
nam tao นำเตา
nam tao khom นำเตาชม
nam tao taek นำเตาแตก
Lagenaria leucantha Rusby Cucurbitaceae (VJ)
(L. vulgaris Ser.) (PT); Me, p. 454
Calabash cucumber; Bottle gourd; Trumpet gourd
leaves tendrils
nam nom raatchasee ton นำชมราชาแหงดิน
see p. 198
nam man ngaa นำผงด่าง
see ngaa

neraphuusee เนราพูสี
Microlepiia speluncae Moore Dennstaedtiaceae (VJ); TS, p. 227; WW, p. 423
Pteridium symmatia C. Chr. Filicales
(Dryopteris symmatia O. Kuntze) Mc, p. 463; FT, p. 235
A fern
rhizome and stipe
boraphet บอระเพ็ด
see p. 144
bua khom บัวชม
see chong konianee ชองกันدليل
buk บูก
Amorphophallus campanulatus Bl. ex Decne. Araceae (PT); LP, p. 158
Elephant yam
tuber
benkaanee เบนำกัน
Quercus infectoria Olivier Fagaceae (VJ); FT, p. 472
Aleppo gall; Nut gall
'phon' here means gall
prakham kai ประคำแก
see p. 158
prakham dee khwaai ประคำดีขาว
see p. 172
Kaemferia galanga  L. Zingiberaceae (VJ); (PT); HE, p. 11; WW, p. 504
The rhizome is used as an expectorant, carminative, and diuretic. HE, p. 11.

Phak khung  ปัทยาว
see p. 142

Phak bung  ปัทบูง
Ipomoea aquatica  Mc, p. 484
Ipomoea reptans  Poir.  WW, p. 452

Phak bung khan  ปัทบูงชัน
Ipomoea pes-caprae  Roth. Convolvulaceae (PT); WW, p. 452

Bencha phak bung  เบขนิปัทบูง
the whole plant

Phak bung Thai  ปัทบูงไทย
Ipomoea reptans  (PT)

Phak plang  ปัทปล่าง
Phak plang khaao  ปัทปล่างขาว
Basella rubra  L. Basellaceae (PT); HE, p. 3; (VJ)
(B. cordifolia) Lamk.
Ceylon spinach; Malabar nightshade
leaves, root
The whole plant is used for ringworm, and the root for leucoderma
of the extremities.  HE, p. 3

Fin  ฟิน
see p. 147

Fin ton  ฟินทอน
see p. 191

Phayaa raak dam  พยาเราะค่า
see p. 187

Phanom sawan  พนมตัวราษ
see p. 201

Phrom  พระเมธ
see p. 205

Phrik thai  พิธกไท
Phrik  พิธ
Piper nigrum  Piperaceae (VJ); HE, p. 14; WW, p. 531
Black pepper
The fruit or seeds are used as a stomachic, carminative, stimulant, febrifuge, tonic, and irritant  HE, p. 14
The rind or shell of the pepper seed becomes black.
This is mixed with the white pepper of the shelled seed to make a milder
and better product, which is more fragrant due to the oil from the shell rind (VJ)

Nam phrik Thai  น้ำพิธกไท
Infusion of the seed powder of  Piper nigrum  (VJ)

Phrik Thai lon  พิธไทยละ
The seed or fruit of just ripened pepper. The seed goes green, then yellow,
then red. The riper it is, the more important is the piperine.  (VJ)

Phrik khee  พิธขี้
Pepper seed from bird droppings. This is the most potent. Birds eat
only the red fruit, which has the most important piperine content, but
cannot digest the seed. The growers collect these seeds and use them.  (VJ)
Dryobalanops aromatica Gaertn. Dipterocarpaceae (VJ); LB, p. 37
(D. camphora Colebr.)
Borneo camphor; Borneol; et. al.
flakes
It is distilled from the wood (VJ)
There are two kinds of camphor, see kaarabuun

Artemisia indica Willd. var. heyneana Pampan. Compositae (PT); TS, p. 34

Zizyphus jujuber Lamk. Rhamnaceae (VJ)
Z. mauritiana Lamk. TS, p. 355 (PT disagrees with TS)
Indian jujube; Chinese date
The leaf is oval shaped, and about 1" across;
The wild fruit is the size of a cherry, the cultivated fruit is egg sized. (VJ)

Zingiber cassumunar Roxb. Zingiberaceae WW, p. 564
rhizome only
The rhizome has cardiac depressant properties. In liquor, it used
be applied to the stomach to warm it to counteract wind, just
as asafoetida was used to smear over a baby's stomach. It is also
used to make a tincture for application as a mosquito repellant. (VJ)

Adenanthera pavonina L. Mimosaceae
Sandalwood tree; Fake red sandal (PT)
fruit

Tamarindus indica L. Caesalpiniaiceae (VJ); (PT); HE, p. 17
m. kradaan has a large pod
m. khee maeo has a small pod
bark
The pulp is used as a mild laxative, and refrigerant; the heartwood
is used as an expectorant. HE, p. 17
mokhaam pom
see tree phalaa

Phyllanthus emblica L. Euphorbiaceae (VJ); HE, p. 13; WW, p. 110
Malacca tree; Emblic myrobalans; Indian gooseberry
The fruit is anti-scorbutic HE, p. 13

mokhaam piak
see mokhaam

Tamarindus indica
The ripe fruit pulp of the tamarind
nam mokhaam piak, nam som mokhaam piak, is a triturate of the fruit pulp
in water

maduea
Ficus spp. WW, p. 303
? perhaps maduea din leaves, bark, young twigs

maduea din
Aganosma marginata G. Don. C. (PT); FT, p. 1022
bark

manao
see p. 163

mufai
Baccaurea sapida Muell. - Arg. Euphorbiaceae (VJ); WW, p. 570
leaves

mara
see p. 216

mali
mali son
mali laa
Jasminum sambac Ait. Oleaceae (PT); TS, p. 194
Jasmine
flowers
mali son is the double variety
mali laa is the single variety

mawaeng
see p. 210

muun kaa
see khee kaa, p. 214

yaa dam
see p. 129

yaang
Dipterocarpus spp. Dipterocarpaceae (PT); TS, pp. 126-128
fruit

rong
rong thong
see p. 175
Rayom  รำยอม
see p. 195

Raatchadat  ราษฎร
Brucea japonica Merr. Simarubaceae
(B. amarissima Deve.) Simarubaceae (PT); HE, p. 4
The kernel is used to treat amoebic dysentery HE, p. 4

Lamphong  สلامฟง
see p. 207

Lep mue naang  เลปมิ้วบาง
see p. 179

Lian  ไชย
see p. 168

Lueat raet ton  เลือดระดอน
?

Waan keep raet  วานเก็บเรต
Waan keep maa  วานเก็บมาก HE, p. 2
Keep maa lom  กิ่มหลาม HE, p. 2

Angiopteris evecta Hoffm. Angiopteridaceae (VJ); HE, p. 2; TS, p. 22; WW, p. 63
Rhizome
Used as a styptic HE, p. 2

Waan proh  วานปะะะ
Proh hom  ปราะห่อม
See proh hom

Waan ron thong  วานรอนทอง
Globba sp. Zingiberaceae (PT); WW, p. 654
Rhizome

Samo that ส้มอททราย , samo ส้มอ
Terminalia chebula Retz. Combretaceae (PT); (VJ); HE, p. 18; WW, p. 737
Chebulic myrobalans
Fruit juice
The fruit are used as a febrifuge and carminative;
the leaves yield 'Terminalia gail', an astringent product HE, p. 18

Samo phiphek ส้มอปิภิก
Terminalia belerica Roxb. Combretaceae (VJ); HE, p. 18; WW, p. 737
Ink nut; Beleric myrobalans
Fruit - ripe or young
Nam samo phiphek  น้ำส้มอปิภิก
A decoction of the ripe fruit (VJ)
The young fruit are laxative; the ripe fruit are astringent HE, p. 18
The name 'Ink nut' is derived from the use of the fruit mixed with iron rust to make blue-black ink (VJ)

Salot  สอลต
Hatsakhun  หัตสกุล
Sahatsakhun  สิทธาสกุล
Croton tiglium L. Euphorbiaceae (VJ); (PT), WW, p. 740
Leaves, root
The dose of the oil is one drop, therefore one seed is a very drastic purgative (V
Salot nam สอลต์น้ำ
Ficus heterophylla L. Moraceae (VJ); WW, p. 741
Root
Caesalpinia crista L. Caesalpiniaceae (VJ); WW, p. 743
Nickernut; Grey nickers
leaves
The seed is shiny and grey, about 1" in diameter (VJ)

sakae ลำเก
see p. 180

sakhaan ลำกาน
Piper sp. Piperaceae (VJ)
stem

sadao ลำเดา
see p. 167

sabaa ลำบ้า
see p. 152

sang karanee แสงกาน
Barleria strigosa Willd. Acanthaceae HE, p. 3; WW, p. 750
The root is used to treat spasmodic cough HE, p. 3

sattabut สัตตะบุบ
Nymphaea lotus L. Nymphaeaceae (VJ); FT, p. 525
White lotus (large white flower)

san phraa naang ae เส้นพราวนางแอ
chiiang phraa naang ae เชิงพราวนางแอ
Carallia brachiata Merr. Rhizophoraceae (VJ); WW, p. 752
bark

saniat เส้นยืด
see p. 202

yaa teen nok พายเต็นนอก
see p. 127

yaa tai bai พายเตัยบ
see p. 160

yaa non taai พายหนอนยำ
see khop chanaang, pp. 136, 203

waai takhaa วางตะข่า
Calamus tigrinus Kurz. Palmae (VJ); WW, p. 713
Rattan
stem

waai tamoi วางเตมะไอ
Pothos scandens L. Araceae LP, p. 172

haang ohorakhe หางจอระคา, จระคา
see p. 129

het thet เห็ดเทพ
see p. 153

het muan kho เห็ดม่วนโค้ม
Juice from a mushroom which grows in a cow pat (PT)
mueat kho เหมอตกะ
see p. 140

haeo mau เหเออโค้ม
Cyperus rotundus L. Cyperaceae (VJ); HE, p. 8; WW, p. 812
Nutgrass
rhizome
The rhizome and root is a diuretic, febrifuge, and stomachic
akkhanee chawaa  ต้นฝ้าว  ต้นฝ้าว
? akkhee thavaan  ต้นฝ้าว
Clerodendron serratum Spreng.  FT, p. 1063; WW, p. 818

amphan thong  อัมพันทอง
Lamphan thong (misprint)  อัมพันทอง
Amber from pine; Pine amber (PT)
This is used as an expectorant
Animals and Animal Products

krot กระตอ
see nok krot นกกระตอ

kradee (plaa) กระดี (ปลา)

kadee กระดี
malet เมาเลต kadue (misprint for klet เมาเลต kadee) (see KPC pp. 204, 207)

Trichogaster trichopterus (Pallas) Osphronemidae
Trichopodus trichopterus
Trichopodus maculatus (VJ); CS, p. 339
A species of fresh-water fish scales

krathing (plaa) กระทิง (ปลา)
kathing กระติง

Mastacembelus armatus (Lacepede) Mastacembelidae (VJ); CS, p. 205; Me, p. 35
Spiny eel - a flat, long fish, with a pattern of yellow and brown patches and marks.

krathing กระทิง
wua dam

Bos gaurus (Ham. Smith) Bovidae
Gaur ox; (VJ)
Indian bison, known in Malaya as seladang Me, p. 35

krabue กระเบ็ย
khwaai ควาย

Bos bubalis (L.) Bovidae
Water buffalo (VJ); Me, p. 38
horn, burnt horn from an albino buffalo, water squeezed from the dung of a water buffalo

kraben กระเขา
kaben กระเบน

kraben thale กระเบนเพาะเล

Dasyatis bleekeri (Blyth.) Dasyatidae
Dasyatis spp.
Ray; Stingray (VJ); CS, p. 185

kraam raet กระมาแรม
Molar tooth of the rhinoceros see raet

kraai (plaa) กระรำ (ปลา)
Notopterus chitala (Buchanan) Notopteridae CS, p. 202
A species of featherback with 7 or 9 black spots along the sides of the body. (Dept. Agri. & Fisheries). Me, p. 51. A very tiny silvery fish which glitters; looks and moves very smoothly. Becomes fierce when protecting young, and bites. Has a row of black spots on both sides. (VJ)

kwaang กระวาง
Cervus spp  Cervidae
Deer (VJ); CS, p. 591
horn, newly grown horn

katang muut กระตงมุ่ยตร
kluea kratang เกลือกระบัง
Concrete deposit from collected, kept human urine (VJ). Uric acid salts Me, p. 12

kapi กะปี
Acetes spp, Sergestidae
Caridina spp. Atydae
Shrimp
paste made from partially burnt shrimps (VJ)
Corvus coronoides andamanensis (Beavan) Corvidae
Crow (VJ); CS, p. 647

Nemorhaedus crispus (Temm.) Bovidae
Deer; Stag (VJ)
horn

Nemorhaedus crispus (Temm.) Bovidae
Deer; Stag (VJ)
horn

Ovis aries (L.) Bovidae
Sheep (VJ)
horn

Gallus
Chicken
fong kai พ่อไก่
Hen's egg (VJ)

Homo sapiens
Human being
breast-milk, roasted hair from the head, urine.
see also katang muut, nam muut.
khwaat  เกษว
see krabue

kho  โค

Bos taurus (L.) Bovidae

Cow (VJ)

roast beef; pure, fresh, cow's milk;
fresh cow dung; urine from a black cow; early evacuated faecal matter of
the foetus calf

ngaa chaang  งาช้าง

Elephant tusk (VJ)

see chaang

ngaa chaang kamohat  งาช้างกามอหต

When an elephant attacks a tree with its tusks, sometimes a tusk breaks,
and the broken end remains embedded in the tree. This is ngaa chaang
kamohat (VJ)

ngaa chaang dee  งาช้างเดี

Undamaged elephant tusk, as opposed to
ngaa chaang kamohat (VJ)

nguu thap thaang  งูหัวทอง

Bungarus multicintus (Blyth.) Elapidae

Many banded krait

bones

There are three or more such snakes.
This is a deadly poisonous snake. It is said that if it bites, the victim
will drop dead on the path, as the name implies. (VJ)

nguu lueam  งูลัวม

Python reticulatus (Schneider) Boidae

Reticulated python (VJ); CS, p. 493

dried bile, kept as the whole gall bladder; grease
The reticulated python, nguu lueam, is very close to nguu laam  งูหัวล้าม ,
but they are not identical. It is usually nguu lueam which is used in
medicine (VJ)

nguu hao  งูห่า

Naja naja (L.) Colubridae

Cobra (VJ)

Cast off skin, bile, head, bones, scales

chorakhe  ช่องกระ

Crocodylus siamensis (Schneider) Crocodylidae CS, p. 464

Crocodile, usually the above fresh water crocodile (VJ)

bile, teeth

chamot  ชามอต

1. chamot chet  ชามอตชเต
2. chamot chiang  ชามอตชีอง

1. Viverra Zibetha (Schneider)

Asian civet (VJ)

Viverra megeaspila (Blyth.)

Burmese civet (VJ); CS, p. 578

Viverricula malaccensis thai (Kloss) Viverridae

Thai civet (VJ); CS, p. 581

2. Moschus moschiferus (L.) Moschidae

Musk deer

the secretion of the odoriferous gland of

1. both sexes of the civet cat
2. the male musk deer (VJ)
chaang ช้าง
Elephas maximus (L.) Elephantidae
tusk (see nqaa chaang, nqaa chaang dee);
teeth; a triturate of powdered elephant tooth in water, obtained by rubbing
the tooth in water on a rough surface (VJ)

dee nquu ดี นั้า
Dried bile of a snake, usually the reticulated python (VJ)
see nquu lueam

taphaap nam ทะพานา
Trionyx cartilagineus CS, p. 470
soft-shelled turtle (VJ)
bile, carapace

tuk kae ตุกแก้ว
Gecko (PT); CS, p. 471
faeces

tao lueang เท่าเหลือง
Testudo elongata (Blyth.) Testudinidae
Tortoise (VJ)
carapace

taan (rang) ตาน (ราง)
Wasp (nest)

nok krot นอกرؤด
? nok prot นอกพระดท
Pycnonotus blanfordi Pycnonotidae (VJ); Mc, p. 496
Bulbul
The eggs are very pale turquoise colour and speckled (VJ)

nok yuang นกยวน
Pavo muticus (L.) Phasianidae (VJ); CS, p. 614
Peacock; The common peafowl
bile, tail feathers, 'eyes' of feathers (the distinctive circular pattern
near the tips of the tail feathers).
The peacock feather, in its natural state contains a toxic irritant. Peacock's
bile contains a deadly poison at all times. In Thailand in the mating season,
it is forbidden to eat the peafowl's meat because it is very poisonous then. (VJ)

no raet นอยedReader
Rhinoceros horn
see raet

nam khee khwaat น้ำขีขาวด
Liquid squeezed from the dung of a water buffalo (VJ)
see krabue

nam plaa raa น้ำปลากระทา
The supernatant liquid from the juices of decomposed fish to which
have been added salt and roasted paddy (unhusked rice) (VJ)

nam phueng น้ำฟูง
nam phueng ruang น้ำฟูงรัง
Honey

nam muat dek chaat น้ำหมู่ตะเคียน
Urine of a male child

bia tua phuu เบียทัวฟู
Cypraea eglantina (Duclos.) Cypraeidae
Eglantine cowrie
This shell measures 60-70 mm x 35-40 mm (VJ)
calcined shells
prot  ประกวด
see nok krot

plaa chon  ปลาช่อน
Channa striatus (Bloch.) Channidae  CS, p. 336
Serpent headed fish; Snake head fish (VJ)
scales

plaa taphian  ปลาตาพี่
Puntius gonionotus (Bleeker) Cyprinidae
A kind of Carp (VJ)

plaa phayuan  ปลาพญาวน
Halicore spp.
Sea cow  Mc, p. 580
Dugong
teeth

plaa maeck  ปลานม
tenid; cuttle fish (PT);  Mc, p. 912

nam maeck  น้ำมีด
ink

plaa thale  ปลาทะเล
Scylla serrata (Forskal) Portunidae  CS, p. 173
Sea-crab; Blue crab

plaa naa  ปลาน้ำ
Paratelphusa sexpunctatum (Lanchester) Gecarcinucinae  CS, p. 170
A very small crab
Field-crab (PT)
carapace or shell

phae  แพะ
goat
milk, horns

faan  ฟ้า
keng  เกี่ยน
Muntiacus feae (Thomas et Doria) Cervidae (VJ);  CS, p. 592
horn

muut maa  น้ำมูก
Urine of a horse (VJ)

muun kho  น้ำสกอ
Cow dung
see kho

muun malaeng saap  น้ำสกอแม่ลาป
faecal matter (VJ)

khee malaeng saap  ขันแม่ลาป
muun maeng saap  น้ำแม่ลาป
khee maeng saap  ขันแม่ลาป

Pariplaneta australasiae (Fabricus)
Common cockroach
faecal matter (VJ)

muun laik on  น้ำลูกเกิด
Faeces of a nursing baby (VJ)

muun wua khaang phom  น้ำสัตว์กินข้าว
Cow dung found near a granary (PT)
see kho
Porcupine quills (VJ)

małaeng mam taai saak และแมลงวันกระชาก
Carcass of a spider (VJ)

maeng dāa แมลงดา
Lethocerus indicus
The giant water-bug or the giant electric-light bug, an insect of blue and green colouring found in the fields during the rainy season. *Mc*, p. 324

māo dām ผมดำ
Black cat (VJ)

roasted head

raak dīn ราากิน
Earthworm (VJ); *Mc*, p. 706

raeng วาง
Sarogypṣ calvus (Scopoli) Accipitridae (VJ); *CS*, p. 611
Black vulture

Pseudogypṣ bengalensis (Gmelin) Accipitridae
Indian white backed vulture; Brown, white backed vulture (VJ); *CS*, p. 611
It is usually *Pseudogypṣ bengalensis* (VJ)

skull, bones

raet รัด
krasu กระสุน
kasuu กระสุน

Rhinoceros sondaicus (Desmarest)
One-horned rhinoceros

Didermoceros sumatrensis
(Rhinceros sumatrensis (Gairdner)) Rhinocerotidae

Asiatic two-horned rhinoceros (VJ); *CS*, p. 587
molar teeth, eye teeth, horn, blood, burnt hide
see also *lueat raet* (*ton*), a plant called rhinoceros' blood

rai ไร
rai nam ไร้น้ำ

Moina macrocopa (Strauss) (VJ); *CS*, p. 127
Daphnia
A very small, reddish brown, transparent aquatic animal about the size of a pinpoint.

lin thale ปีนเทา

Os sepiae (Latin name)

Sepia esculenta (Hoyle) Sepiidae (Zoological name)

Sepia officinalis (L.)

Sepia spp. common to Thai waters
Bone of the cuttle-fish, mainly crude calcium carbonate (VJ)

khee mua sot มันวัวสด
fresh cow dung
see kho

waeo nok yuung วัวมูกน้้อง
The eyes of the feathers of a peacock's tail, usually scorched brittle
see nok yuung

sappakhulikaa สัปพลิค้า
khulikaa คิลิก้า
An ancient remedy made from enlarged glands of monkeys or baboons. *Mc*, p. 206
300

sang สังซ์
hoi sang หอยสังซ์
sang naam สังซ์ทะเล
Strombus canarium (L.) Strombidae (VJ); CS, p. 63
Conch shell
calcined shell

sing สิงห์
Lion Ma, p. 864
horn

suea เสือ
Felis tigris (L.) Felidae
Tiger (VJ); Ma, p. 889
Teeth, bones, milk

muu thean หูปีน
Rattus spp. Muridae
Wild rat (VJ)
droppings

muu ring หูเริ่ง
Crocidura murina Ma, p. 917
Rattus spp. Muridae (VJ)
Species of rat
droppings

maaraa (ร่าง) หมากรุ่น (รก)
Ishnemon
Hornet (nest)
The Thais use earth or mud from seven places for medicine. For example,
a graveyard, river bank, etc. In this case, it might be the earth or
mud used to make the nest, which is useful. The earthen nest is burnt,
thus producing a mineral or mineral compound (VJ)

mee เมี
1. mee khon เมีหู
   mee khwaai เมีเข่า
   mee dam เมีก้า
2. mee maa เมีหาง
   mee muu เมีปุย
1. Arcticonus thibetanus
   Himalayan black bear
2. Helarctos malayanus
   Malay bear (VJ)
eye tooth

muu เมุ
Sus scrofa (L.) var. domesticus (Gray) Suidae (VJ)
Pig
tusks

muu thean หูปีน
muu paa หูป่า
c. Sus spp. (VJ)
Sus cristatus (Wagner) Suidae CS, p. 588
Wild boar
bile

hoi khom หอยขม
Vivipara spp. Viviparidae CS, p. 52
Freshwater shell (VJ)
Pachylabra celebensis (Quoy et Gaimard)
(Ampullaria celebensis (Fischer et Dautzenberg)) Ampullariidae (VJ), CS, p. 54
burnt operculum of the shell; fresh shellfish, including the shell

gaan ห่าน
Goose; Swan (PT); MC, p. 934
bone

amphan khee pla ขั้ปนกี้ปลา
Ambergris (PT)
Minerals and Mineral Products

kammathan  กําเนิดหิน
kammathan mueang  กําเนิดหินเหลือง
Sulphur
Brimstone (VJ)
kammathan daeng  กําเนิดแดง
suphan dan daeng  ลูกพระดินแดง
Arsenic disulphide
Red orpiment (VJ)
kammathan thang 2  กําเนิดหินทัง 2
1. kammathan
2. kammathan daeng
1. Sulphur
2. Arsenic disulphide (VJ)

kluea  เกลือ
Sodium chloride
Common salt (VJ); Mc, p. 122

kluea khua  เกลือเค้า
Common salt, baked or dry roasted by tossing in a pan over a fire to purify it (in the sense of to 'cleanse' it)
Table salt (VJ)

kluea sinthao  เกลือดินขาว
Crude sodium chloride (VJ). A form of medicinal salt found in salt-licks Mc, p. 12
Rock salt crystals

khee takran lek  ฆีทากรนเหล็ก
The scum precipitated in the bottom of an iron boiler, (usually resulting from hard water) (VJ)

khamao fai  เขม่าไฟ
Carbon black (VJ)
Soot

khamao lek  เขม่าเหล็ก
1. Mineral: Iron oxide
2. Plant: Desmodium cephalotoides Craib Papilionaceae (VJ)

kham  คว้า
1. Mineral: Gold
2. Plant: Safflower
(kham foi  คว้าโท) (VJ)

chunsee  ชุนซี
Copper sulphate (VJ); Mc, p. 254
Verdigris

chunsee sat  ชุนซีเต้า
Anhydrous copper sulphate (VJ)

chaat  ซ้าต
chaat kon  ซ้าตค่อน
chaat cho sae  ซ้าตสองสี
chaat horakhun cheen  ซ้าตหอรักขุนเขanine
Mercuric sulphide
Cinnabar ; Chinese Red; Vermilion

nam chaat  น้ำซ้าต
Vermilion-coloured paint
Chinese pigment (VJ)

Iron pyrites

Three different grades of the same drug

Mercuric sulphide

Cinnabar; Chinese Red; Vermilion

A golden-coloured clay

Potassium nitrate;
Nitre; Salt petre (VJ); Me, p. 329

Potassium nitrate, purified;
Purified nitre; Salt petre (VJ); Me, p. 329

Mud; soil from a swamp (PT)

A soft prepared chalk Me, p. 329

Marl (VJ)

Clay (PT)

Sodium sulphate (PT). Epsom salts, Magnesium sulphate Me, p. 330

Magnesium sulphate (PT)

Tin

Ashes from a cremation (PT)

Gold leaf (VJ)

Salt water

Polluted water under native kitchens (VJ)
nam thaa น้ำท่า
River water (VJ)

nam prasaan thong น้ำประสารทอง
Borax; Sodium borate

nam prasaan thong sat น้ำประสารทองแดง
Anhydrous sodium borate (VJ)

nam man din น้ำขันเงิน
Coal tar Mc, p. 435

nam raem khuen น้ำแรมเงิน nam khaang น้ำดำ
dew

banlangsila บำลสิลำศิลา
Agate (VJ)

puun ปูน
puun khao ปูนขาว
Calcium hydroxide
Slaked lime

nam puun sai น้ำปูนใส
Clear lime water (VJ)

puun daeng ปูนแดง
Calcium hydroxide tinted with a minute amount of turmeric; Red calx; Pink calcium hydrate
The Indians use a paste of slaked lime with no turmeric (VJ)

fun ผิน
fun cheen ผินเชิน
Talcum powder, Chinese (PT)

maat lueang ม้าตีเหนือง
Gold (PT)

muk นก
Pearl (PT)

saan som สารส้ม
Alum Mc, p. 858

saan som sat สารส้มแดง
Anhydrous alum

saan nuu สารนูน
suphan than สารฟ้า
Arsenic (PT)

suphan than daeng สารฟ้าแดง
see kammathan daeng

yaa yong fa หย่างผา
A kitchen cobweb. Cobweb-like filaments of carbon found above a wood burning stove. (VJ)

muek hom หมักหอม
Carbon particles, with the addition of some aroma and glue; Indian ink. The bark of the coconut fruit, i.e. coir, is burnt, and the resulting soot is held together with glue to form a block. Since the glue will ferment in plain water, liquor is added to prevent this, and some fragrance is added - the more the better, and the more expensive. Indian ink is Chinese. The Chinese knew that carbon absorbs toxins, they may not have known that it also absorbs colours. (VJ)
horadaan สารสนง
horidaan สารสนง
Yellow orpiment Mc, p. 917
Arsenic trisulphide
horadaan thong สารสนง
probably kammathan thang 2
amphan อำพัน
Amber; a fossil resin Mc, p. 997.
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Following the Thai custom of referring to people by their first names, the names of Thai authors are not reversed.

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