Cover photographs:

Front: Mrs. M'Pia and son, Matamba-Solo.

Back: Mr. Bindanda M'Pia, preparing ointment for rheumatism from chillies, palm oil, elemi and white clay.

NATURAL MEDICINE

IN THE TROPICS I:

Foundation text

Dr. Hans-Martin Hirt

Bindanda M'Pia

Tropical plants as a source of health care

Production of medicines and cosmetics.

anamed

English Order number 105

Anamed aims to enable people in the Tropics to develop the greatest possible degree of self-reliance, particularly with regard to their health. To this end, anamed runs seminars and conducts research into medicinal plants and the preparation of medicines. Anamed seeks to work in complete harmony with the environment.

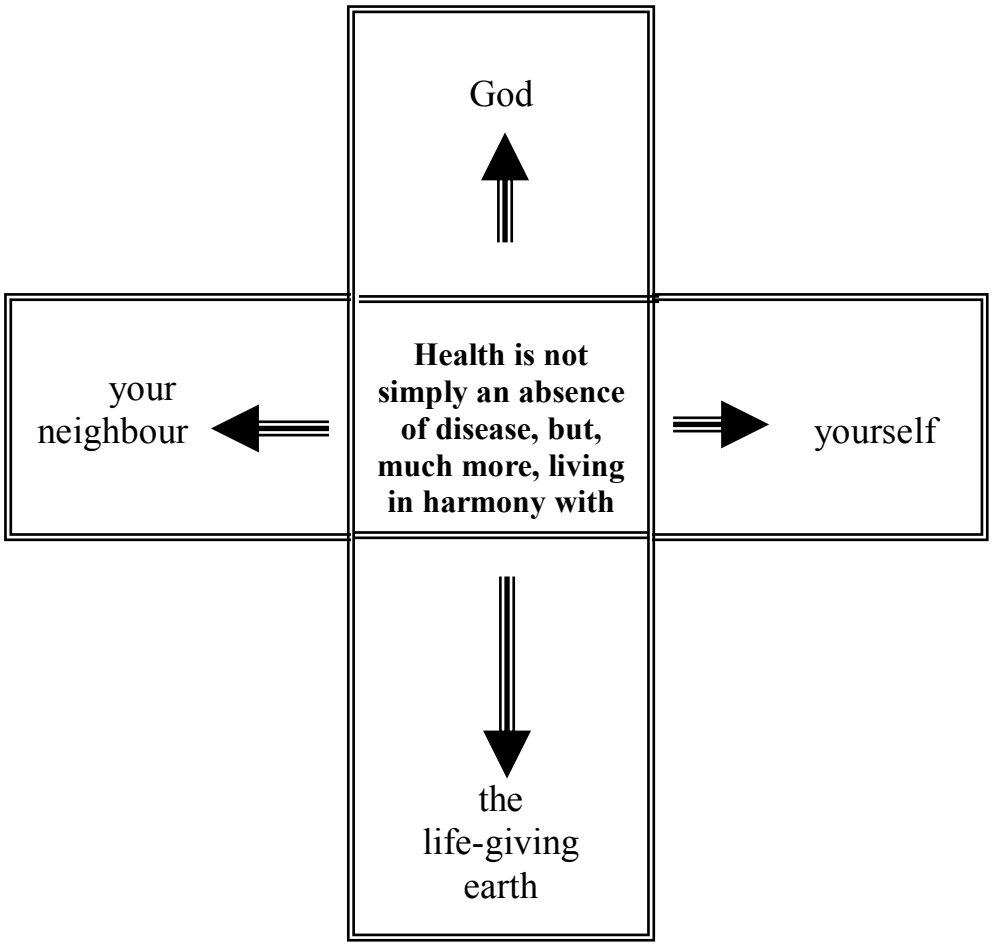
Hirt and M'Pia, *Natural Medicine in the Tropics*

5. Edition printed May 2017

This edition has been fully revised by Dr Hans-Martin Hirt and Dr. Keith Lindsey, with assistance from Prof. Dr. C. Schäfer. It has benefited greatly from feedback received from very many anamed partners worldwide. Some recipes have been changed – please therefore whenever possible use the most recent edition of our books.

This book is available also in French, German, Spanish, Portuguese and Swahili.
For details of other *anamed* publications, please see the last page.

anamed international (Action for Natural Medicine)
Email: info@ anamed-edition.com
Web-site: www.anamed-edition.com



This book is dedicated to all Blacks and Whites

who are working for peace, justice and health.

.

CONTENTS

Acknowledgements

We would like to thank all those who have contributed to writing this book: The healers, nurses and doctors in tropical countries; the Protestant and Catholic churches and missions that cooperate with us up to today; the Congolese artist Mr. Sugha and his friends, Gregor Müller, Bindanda Nkoshi and Dorothea Layer-Stahl for the illustrations; Mr M.D. Tauli of the organisation Chestcore, Philippines, for the pictures of the plants; the universities in Kinshasa, Montpellier, Basel, Tübingen, Antwerp, Gent and Brussels which allowed us to use the archives, libraries and data banks, Dr.K.Lindsey for translations and improvements.

The authors acknowledge the help of our collaborators in many countries who have given us feedback, only a few of whom can be mentioned below:

anamed Angola	Marianne Holzmann
anamed Burundi	Vital Kwizera
anamed Cameroon	Rev. Samuel Ngnitedem, Sister Ann
anamed Congo-Kinshasa:	Konda Ku Mbuta, Bindanda M'Pia, Annecy Maledi
anamed Congo South Kivu:	Innocent Balagizi
anamed Congo-Prov. Equ.:	Dieudonné, Flory Lechabo
anamed Eritrea	Nighisti Alazar, Micele Paliaro
anamed Ethiopia	Ralph Wiegand, Belay Bekele,
anamed Haiti	Ciliane Haselbach
anamed India	Sr. Rosita Kandathil, Rev.Kambala
anamed Kenya	Roger Sharland, Rebecca Nzuki
anamed Malawi	Nelson Moyo
anamed Mozambique	Pascoal Cumbane, Myriam Wahr, Joao Madeira
anamed Nigeria:	YMCA team in Nigeria ,
anamed South Africa	Margrit Hirt
anamed Sudan:	Dr Elijah
anamed Tanzania:	Philip Mateja, P. Feleshi, Maike Ettling
anamed Togo	Gbati Nikabou
anamed Uganda	Christopher Nyakuni
anamed Ukraine:	Andrij Kyrtchiv
anamed Zambia	Hedwig Mueller
and the research support of	Prof. Dr Christoph Schäfer.

As always, we very much appreciate your comments and feedback, but only on the plants and treatments described in this book. Please send them to: Dr Hans-Martin Hirt, *anamed* international, Schafweide 77 , D-71364 Winnenden, Germany.

Please do not write asking for financial support either for individuals or projects. We receive so many such letters that we even refuse to reply to them.

PREFACE

by Hans-Martin Hirt

During my six years of "apprenticeship" in the African bush in Zaire, Central Africa, I met thousands of people who never produced even a small bucket full of rubbish. Whatever survives them may serve as their gravestone, for example a tin mug. Twelve-year-olds construct their own houses using natural materials and pangas only, huts which remain waterproof for years. In 1950 women still carried sacks with salt on their heads all the way from the ocean to our village Matamba-Solo, a distance of 600 kilometres! Who among us would be able to build buffalo-traps, climb palm trees? Who among us has teeth free from caries without ever having seen a toothbrush or toothpaste?

The "Third World" has every reason to be proud. It provides the rest of the world with nature-oriented guidelines on how to cultivate this earth and protect it against destruction. It presents the means by which our globe could easily survive for another few million years. The creator of the expression "Third World", President Nehru, in fact wanted to describe the third way, the better way!

In reality, the "First", capitalist "World" has formed a coalition with the former communist "Second World" that exploits our earth mercilessly, as if there were no tomorrow. This coalition, located mainly in the North of our globe, is still controlling the "Third World", mainly located in the South, through economic colonisation. The North dictates prices, the rules of trade, the conditions for loans and the terms of debt repayments. The North stimulates the lust for consumption through satellite TV and the internet. Further, the North makes drastic impacts upon the environment of the South with acid rain, by logging and mining in the tropical forests, and by dumping toxic wastes and products. All cultures come and go, but when the worldwide Coca-Cola culture collapses, which one will survive?

Indigenous peoples were once proud of their cultures and abilities. But are they still proud today? Time and again people from Latin America, Asia, and Africa cry to the North for help. The countries of the Third World are sitting in the debt trap. Instead of using and benefiting from their own natural resources, and spending money on improving the quality of life, many of these countries prefer to buy weapons. So they become poorer and poorer.

In no sector are the consequences of such madness more severely felt than in health. Most hospitals in most African countries would not be able to keep going without a constant input of foreign medicines. One look at an African hospital pharmacy reveals that Africans are being treated the European way only. No cognizance is taken of the vast wealth of knowledge of health matters accumulated over centuries in Africa itself.

To soothe their consciences, people from the North send a few million dollars to Africa to help out, maybe sometimes a gift of some barrels of cough syrup, which just happens also to help safeguard some jobs in the North. A dramatically more helpful approach would be, however, to facilitate African people in:

valuing what they know, and relearning what they have known before!

This would mean spreading genuine local knowledge, instead of simply importing products from Europe or America. But if all people in the Tropics were to become well-informed, the handsome profits and jobs of some large firms in the North would be put at risk. I mean those firms that have redefined as "intellectual property" what, in the South, used to be regarded as common knowledge, and have taken out patents on it.

When we asked the people in African villages how they explain their daily experience of poverty, they answer, "We are poor because you whites don't tell us your secrets, but you take our secrets and pay us nothing for them."

Is this village talk only? Certainly not! The ambassador adviser of Zaire (today, the Democratic Republic of Congo) in Germany, Mr. Ziangba Begu, was beating the same drum when he said: "The West...is not ready to consider the interests of its partners. In order to safeguard its technical and financial superiority, it keeps the secret of its success to itself... Why else do development workers complete bridges at night when Africans are asleep?"

I don't think this accusation is true, but this impression remains. It is certainly the case that much development aid has caused African people to feel inferior.

I am not talking here about my anger and the anger of others at the delivery of three Cessna-loads full of mostly expired medicines, sent by a relief organization, nor about the foot ointment already started, nor about the slimming diet for hungry children, nor about second hand dentures, or silicon cushions for breast enlargement, or whatever the rich North sent us as charity during my six years in Zaire.

No, I am talking about the low self-esteem which is bound to affect everybody when, year after year, 100% of the medicines locally needed are imported, when planes filled with them come down from heaven, a heaven where "God lives who obviously loves whites more than us blacks".

Fortunately, many organisations have now changed their approach. Some of them are even saying, and I guess they are right: "Giving assistance in development means doing everything possible to stop people in the South from becoming like us in the North!" There are many examples. Many have recognised that our often joyless and cold Sunday services are not worth exporting, and have asked partners in Latin America to develop a "theology appropriate to their culture". Others recognise the danger of the soil in Africa becoming as poisoned by pesticides as it is in much of Europe and America. Some European missions, therefore, send those agricultural advisers to the South who are able to support efforts to develop ecologically sound ways of farming.

But who is talking of ecologically sound pharmaceuticals? In Africa, at least, I have not found any curriculum on this! Our pharmaceutical knowledge is in danger of remaining forever inaccessibly hidden in a book written in Latin for the benefit of industry and its shareholders only. In former times the Latin language functioned as a shield to protect the people in power: Martin Luther fought the Latin of the

theologians in the church and became a threat to the establishment. Paracelsus had a similar experience with the Latin of the physicians. He had the courage to teach his students in their own language! And contrary to the financial interests of his opponents, Paracelsus promoted the interdependence of medicine, religion and social policy. He was a committed representative of the science of natural healing, and he taught something scandalous: the self-healing powers of the body. He had to flee to escape imprisonment. The magistrate of Basel did not cancel the warrant for his arrest until June 11, 1993 - 500 years after the date of his birth!

Hiding behind "pharmacist Latin" makes it pretty easy to make a lot of money - whether in multinational companies or as the health worker in a bush hospital. And coming back to Paracelsus, on my travels through Peru, India, Nepal, Zaire, Romania and Ukraine, I never saw a single poster advertising the self-healing powers of the body! If industry is not prepared to give away its secrets, it becomes even more important that, together with the people of the Tropics, we discover and share the secrets of nature.

Religion cannot be separated from health.

In my lectures given in German universities, the students made some critical remarks; "Such a project on Natural Medicine is really great, but why on earth in connection with a church?" For me the answer is clear. In tropical countries the church is often the only institution still allowed to express an alternative opinion, to criticize, like Jeremiah dared to say "...you multiply remedies in vain, there is no healing for you..." (Jer. 46:11). If, as a representative of a pharmaceutical company, you were to dare to say this only once aloud in front of your shareholders or your customers, you would be dismissed from your job, and you would probably realise soon how similar, in the North and the South, patterns of authority and control really are!

The fact is that many governments have completely handed over the health system to churches and missions. But even in the worst cases of churches and missions having withdrawn from medical work, people do not rebel. This, at least, is what I saw in Zaire: The sick die silently of the most simple diseases. Let's face it, sickness does not cause people to become politically active, but sad, tired and desperate.

In many countries there is competition between hospitals. The STATE HOSPITAL is short of money, dirty, receives no foreign aid, but is cheap. The CHURCH HOSPITAL is clean and well-provided with foreign medicines, but because of the high price, it is not accessible for most people.

Our aim is that CHRISTIANS, whether in the state or church health system, create NATURAL MEDICINE HOSPITALS, which are cheap for the poor and expensive for the rich, clean, and well provided with Natural Medicine, where the limited supply of money is used to import only those medicines that cannot be replaced by medicinal plants, and in which spiritual care is also given.

That is why this book is presented, without any apology, in the context of the Christian faith. We try to present a holistic approach, caring for mind, body and spirit, caring for the land, respecting the people for who and what they are, as well as their medicinal plants and their knowledge and experience of them.

When I met the highest representative of Indian Traditional Medicine (ayurveda) in New Delhi for an afternoon, he first taught me religion for, would you believe it, two hours! He said this was the foundation of ayurveda, otherwise I would not understand the healing power of the plants either!

The Bible, peoples, health and nature form a unity.

The use of locally available resources is not only Biblically based, but is also central to the concerns of the World Health Organization (WHO). Since 1977, numerous declarations of the WHO have been demanding that traditional medicine should be studied and used. The practical realization of these demands is, however, still the exception. Thus even in the recent past, an African bishop has asked for a gift of 1000 litres of cough syrup from Europe, not knowing that the fever-tree next to his cathedral contains the very substance that pharmaceutical firms have extracted and used in their products. Or South Americans order tablets, ampoules and infusions from Europe or America, not knowing that many of the substances are extracted from "weeds" growing in front of their own houses.

This situation is too serious to leave things as they are.

How can the necessary knowledge be spread? In the D. R. Congo, most of the state universities have been closed for years. How could academic books on medicinal plants be made available? And even if they were, many villagers would not understand them, the health worker would not get a chance to buy them and the even the physician could not afford to buy them.

In the Tropics, because of war, poverty, rising prices and increasingly stringent patenting laws, about 80% of the population no longer have access to the imported, so-called "modern" medicine. But the knowledge of their own medicinal plants has been lost as well. In condemning over decades all manner of witchcraft and superstition, many whites have, at the same time, condemned also the best of local herbal medicine.

What is left is a catastrophic health vacuum!

Today there are many publications available on what plants can be used for what sicknesses and in which country - but just for mere information or scientific interest. They lack the most basic instructions for those wishing to use this information. My colleague, Mr. Bindanda M'Pia, and I have decided, therefore, to write this book rather differently. This is now a practical handbook to have with you at all times. It is not a simple recipe book or an expensive volume bound in gold. It will dare - with all the precautions we beg you to consider - to describe treatments which result from experience. These experiences are of people who are so poor that they cannot afford even an aspirin, (an aspirin is a symbol of "having made it" in many countries), and also those of "rich", modern people who choose as far as ever possible, to manage without tablets and injections, because they believe this is in the interest of their own good health.

This book has been very much read by highly educated people who have a critical attitude towards the pharmaceutical industries, and who want to support people in becoming self-reliant, rather than dependent upon products imported from the North. Those who want their own peoples in the Tropics to "hold their heads up high".

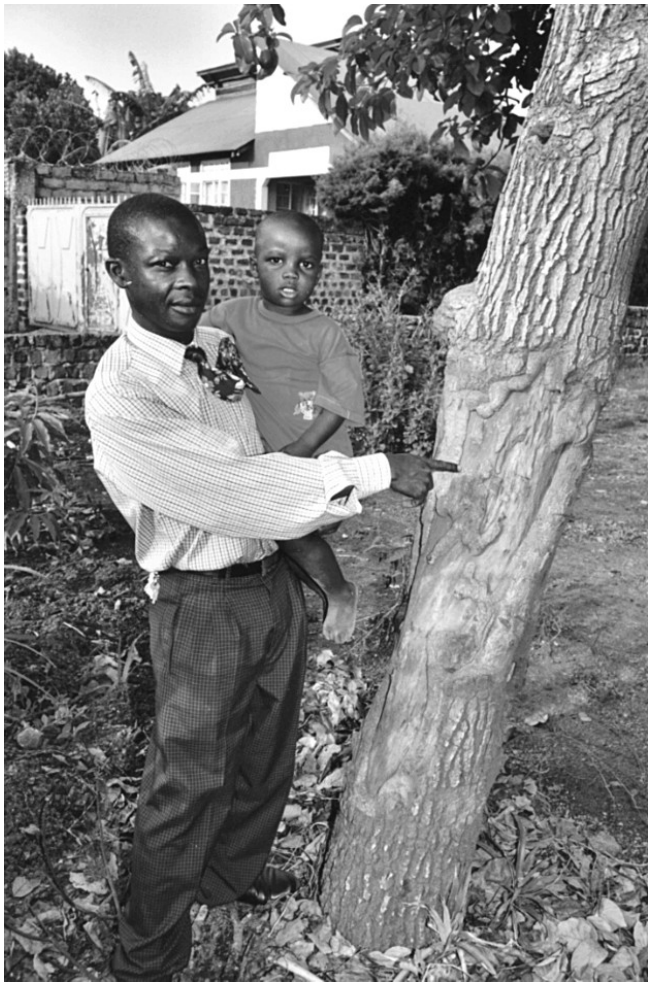
It is good that a lot of information is stored in internationally available data-bases and on the internet, and this book has benefited from it, but now the knowledge has to spread to where it is of practical use, i.e. to the grass-roots! Therefore, in this book we set out to describe

- some important medicinal plants,
- the diseases and complaints for which they can be used,
- some recipes for the production of medicines and information about dosages,
- cautionary notes about the side-effects of these treatments.

This third edition has once again been significantly revised in the light of what we have continued to learn as we have conducted our seminars in many countries in Africa. It benefits from the experiences and feedback of countless practitioners, herbalists, doctors and scientists, who often become active in their own *anamed* (Action for Natural Medicine) group in their own region.

Anamed was founded 22 years ago whilst sitting around the fire in the African bush. We never dreamed that, one day, anamed would become an international movement. In those days the situation was simple; there was just traditional medicine and modern medicine. Today in Africa there are many different types of clinics, for example "Asian clinics", "Natural clinics", "Ayurvedic clinics" and so on. To distinguish the anamed philosophy from all these, a seminar participant invented the term "anamedopathy"! Anamed really does have a very distinctive philosophy and approach. Simply to call it "Natural Medicine" is very confusing because many people associate this term with imported, expensive, ready-prepared herbal medicines.

Therefore, in summary, we dedicate this book to those in the Tropics who wish to roll up their sleeves, and use "anamedopathy" for the benefit of their families, friends, hospitals and communities.



A

B

C

People destroy the earth's natural pharmacy by;

A. using bark in traditional medicine.
B. making charcoal.
C. lighting bush-fires.

INTRODUCTION

by Bindanda M'Pia

If you were a primary teacher in the Tropics and you suffered from rheumatism, you would have to spend an entire month's wages (US$11) to buy an ointment for rheumatism (50g) in a pharmacy in the capital! This happened to me in Kinshasa, D. R. Congo. On the medicine packet you read that the active ingredient is *Capsicum frutescens*. Unfortunately you do not know - as I did not - that this is an extract of chillis, plants which, in tropical regions, grow right outside almost everybody's front door. With this same amount of money, we can now produce 3 kg of the ointment in our village.

Today the countries of the "Third World" are independent. The former colonized peoples make their own decisions and find their own solutions to their problems. That's the theory - the reality is very different! Whoever visits the big towns and cities of these countries will find the following situation: Signs on the fronts of shops advertise "Imported goods" i.e. expensive, luxurious articles for upper class customers. Everything else is called "indigenous", meaning local, cheap and of low quality, even to the extent that in our village these articles are named "ndombe" - black!

The reasons for this discrimination against local products and therefore local knowledge (and, at the same time, local knowledge bearers, i.e. people) have their roots in the North as well as the South: From the North come seductive advertisements and gifts of tourists, and government development agencies that spend the major amount of the aid that they "give" on goods produced in their home countries. In the South it is the simple villager, whose understanding of development is to sell local produce in the nearest town to be able to buy manufactured products from there, or, better still, from abroad.

The following examples are taken from our village:

- High quality cattle are taken to the town and sold. Villagers then buy tins of corned beef, which contain meat of poorer quality.
- A mother has to sell nutritious cassava flour, because her secondary school child prefers commercially produced biscuits, although they damage the teeth.
- In order to buy milk powder, the father cuts down rare wood grown over thousands of years and burns it to make charcoal. But feeding babies with European milk powder endangers their health when unclean water is used to mix it, or when bottles are used that have not been properly sterilised.
- Precious beeswax is thrown away after the honey is harvested. Then shoe polish containing artificial wax of poor quality is imported and sold at a high price.
- Villagers are given little money for their precious palm oil. In the town it is sold again at a much higher price and is then exported from there to Dubai and Europe, where it is used to produce expensive oils and soaps. These are then transported

back to Africa and sold at a price one can hardly afford, because they contain "tropical oil"!

- Peanuts are exported to produce roasted peanuts, peanut oil, peanut butter and cosmetics, which are then re-imported.
- A malnourished child looks forward to eating three eggs found in the hens' nest, but the father has sold them to buy a Coke.
- While the children are playing football with an unripe orange, the mother is plundering the family's cash box to buy a "health tonic" for her baby, a syrup made from water, sugar, artificial food colouring and artificial orange flavouring.

And so the family, the village, the region and the country continue to fall deeper and deeper into poverty.

The most striking aspect of Africa is its wastefulness of naturally available resources

One of these resources is knowledge. In Europe, if a library were to be closed, there would be a public outcry. In Africa however, and everywhere in the South, a whole library is buried with every old person who dies.

For six years Dr. Hans-Martin Hirt and I worked together with the medical service of a church in Zaire, West Africa, in the village of Matamba-Solo in Kwango district. In this region there is just one physician for 100,000 people, even today in the year 2008. Children die of hunger, diarrhoea and worms. As a result of the bad road conditions, only one trader a month manages to get through to our village to buy agricultural products. How can people make enough money to be able to afford medicines?

We have discussed our situation in seminars with hundreds of local healers, nurses, pastors and others. They encouraged us to research African knowledge in Europe, knowledge we have managed to rediscover in books and archives in European universities in Gent, Antwerp, Brussels, Basel, Tübingen, Heidelberg and Montpellier. A lot of information on African and other tropical medicinal plants is available in Europe - with this book we are bringing it back to Africa!

This book does not reveal private secrets. It is the presentation of ancient knowledge. Many recipes have been confirmed in thousands of recent scientific tests and research programmes, which are unknown to local populations.

Which treatment would you choose, "natural" or "chemical"? There are some sicknesses for which the chemical drug is the better cure. In such a case it comes down to the question as to whether a customer in the Tropics can afford the price. There are, however, some sicknesses for which medicinal plants are, by far, the better solution. Some of these plants are so rare, like elemi (*Canarium schweinfurthii*), or difficult to produce in large quantities, like asthma weed (*Euphorbia hirta*), or can be harvested only 100 years after planting in regions hard to reach, like rare, hard tropical woods, that the pharmaceutical industry is not interested, even though the cure is better.

Unfortunately, some medicinal plants are not being investigated at all. The sicknesses they might cure, e.g. river blindness, predominantly affect only those population groups who are too poor to be able to pay the market price for the drugs.

We first wrote this book in French for the francophone regions of Africa only. Soon we received requests for this book from English, Swahili, Portuguese etc speaking countries. So we translated it. We then received far more feedback from all over the world, which has been integrated into this edition. As a result one could say that the authors of this book should be numbered in hundreds!

Our first wish is that this book encourages those who live in the Tropics not only to value but also to be enthusiastic about the botanical wealth of their environment. Secondly, we wish that those who visit the Tropics see not simply sun, sand and suffering, but much more that they appreciate the richness of these countries and their peoples.

"He who reveres tropical plants,
honours with them the inhabitants of the Tropics!"
Dr. J. Courtejoie, a famous author of medicinal books in Congo.

Wherever possible we have written this book in simple language. The main purpose of this book is to help in the on-going training of local people - no, with local people! Questions that might be discussed, for example, are: Do we know this plant? What is it called? Which name shall we use in the future? Do we utilize it in the ways and for the diseases described in this book? What side effects do we expect? How can we grow, prepare and preserve this plant?

Our understanding of "Natural Medicine" is distinct from traditional western and traditional southern medicine, as an example may explain. An African mother wants to treat her child for diarrhoea. In the dispensary a chemical drug (Loperamide) is recommended, to slow down the peristalsis. The traditional local healer however might put a herbal plug into the baby's bottom. Both "solutions" are wrong. The correct procedure would be to mix the natural substances water, salt and sugar to make oral rehydration solution.

If your hospital needs sugar and salt for this, do not buy commercial packets, some of which contain a lot of unnecessary colourings and aromas. Rather prepare this mixture yourselves by using as many local products as possible.

Natural Medicine enables people to hold their heads up high, because they are more in charge of their own lives

The experience of using the information of this book in our village in Zaire taught us that Natural Medicine allows people to lead healthier, more dignified and more prosperous lives without forcing them to earn more money than before.

If you are a European visiting a country in the Tropics, this book may also help you with your own diseases. Or are you working in the Tropics? If so, we ask you for your support in your locality so that Natural Medicine will be introduced into schools and universities. In this way, **"anamed" will, quite naturally, become "school medicine."**

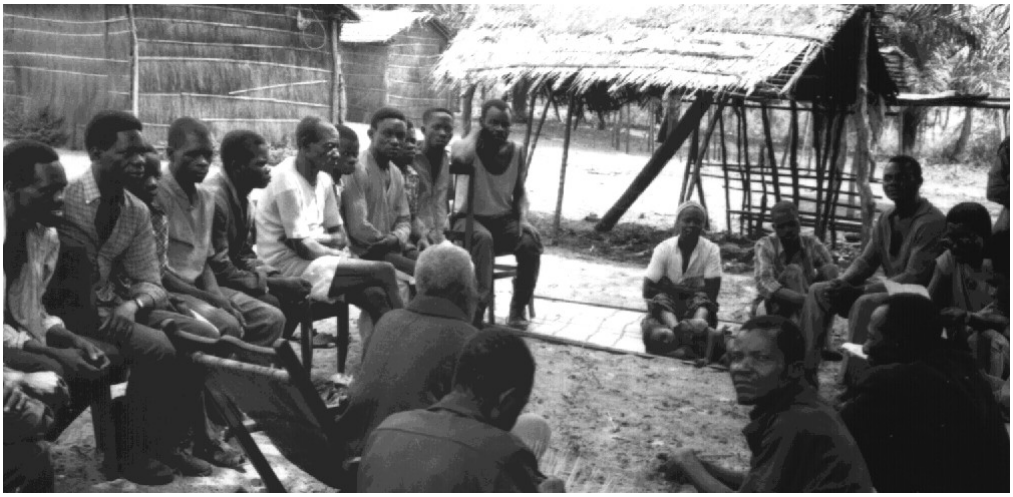
Or are you a European nurse, physician or pharmacist? Make yourself an expert, or even better, give local people the chance, time and financial means to study local medicine and the relevant literature, and then to organise and run seminars.

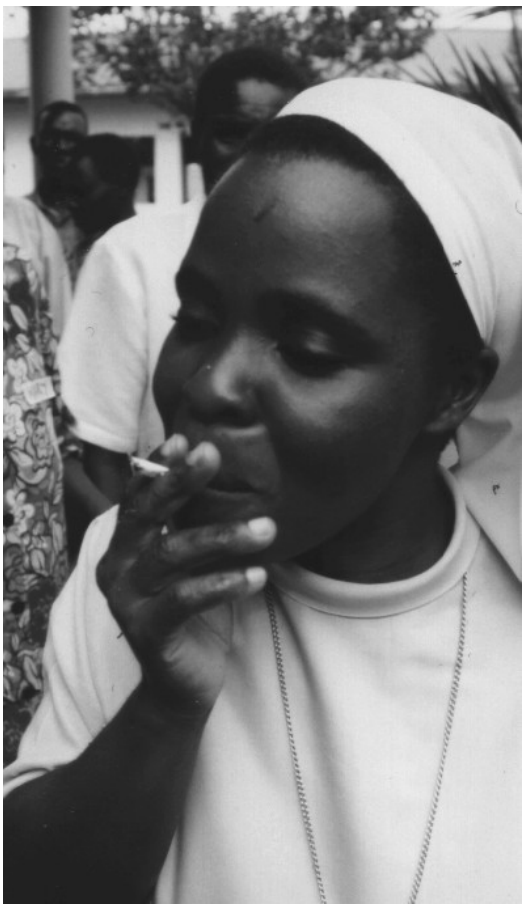
The work to be done is enormous. Having been working with Natural Medicine for 20 years, we are still coming across useful and important medicinal plants on which not even a single investigation has been documented in 350 data banks all-over the world.

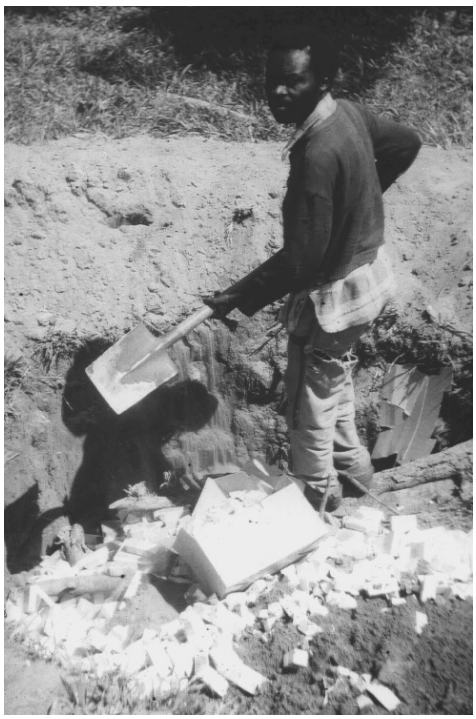
We place Natural Medicine and a natural way of living at the centre

One might ask whether "Natural Medicine" could be integrated into our system of "modern, industrial medicine". We would not want this. Rather, we insist that the opposite is the correct approach. We place Natural Medicine and a natural way of living at the centre – an orientation that has already become "modern" in parts of Europe, and is now increasingly the case in the Tropics as well. Then we look to imported, commercial drugs and modern diagnostic equipment to help out on those occasions on which Natural Medicine on its own is insufficient.

Natural Medicine begins to work!







Top: A village committee discuss how to implement Natural Medicine.
Centre left: A "modern" doctor discusses medicinal plants with a traditional midwife.
Centre right: A nun tries a cigarette of *Carica papaya* (see chapter 5.7).
Left: Expired medicines are better buried!

CHAPTER 1

NATURAL MEDICINE: A SYNTHESIS OF TRADITIONAL MEDICINE AND MODERN SCIENCE

1.1 THE HISTORY OF MEDICINE IN TROPICAL AFRICA

In Africa traditional medicine has always existed and was practised more than we might think. The African people knew how to cure and care for themselves using plants even before the white colonialists arrived and introduced their "modern" medicine. Even certain surgery techniques like suturing blood vessels were carried out. Preventive medical procedures also existed. African people survived for at least four million years in an extremely hostile climate. We have to acknowledge that pre-modern medicine was highly developed.

Just imagine, today China has about 20,000 physicians in 597 hospitals who practise traditional medicine. Asian medical practice remained stable in this area because information was handed down from generation to generation in written form. But in Africa and some South American cultures knowledge has always been passed on by word of mouth only. Because of migrations, regional conflicts and urbanization, old knowledge is being slowly lost, and what elderly people knew and practised is not valued anymore.

Traditional treatments include phytotherapy (treatment with plants), practised by herbalists (in D. R. Congo called "Kimbuki"); psychotherapy, carried out by medicine priests and wise men/women ("Kinganga"); and spiritopsychotherapy, practised by seers ("Kingunza") and based on visions and dreams.

How did this knowledge develop? Some healers, including those who heal with plants (herbalists), insist that they received their "power of knowledge" through magical contacts with dead ancestors, through inspiration and dreams. Others learn from older generations, and by observing animal behaviour. For example, a sick zebra can cover distances of hundreds of kilometres in order to find a certain plant! And a monkey injured by a poisoned arrow is able to survive by eating certain leaves.

All over the world our ancestors discovered medicinal truths by applying the "hypothesis of similarity", claiming "A SIMILAR THING CURES A SIMILAR THING". Our European ancestors believed that as a spinach leaf looks like an arrow blade it must thus contain iron and work in treating anaemia. Our African ancestors believed that a root that is red must be effective in treating anaemia, and that because beans look like kidneys they must cure kidney diseases.

Most of the effects of plants were discovered by trial and error. For example, many South Americans lost their lives before it became generally known that the thorn apple (*Datura stramonium*) is very poisonous. But how many Africans will have to

die before they also learn how dangerous this plant is? Professor Kabangu of Kinshasa, however, has rightly said: "Nobody today should be expected to risk their life when testing the effect of a plant!"

We sincerely hope that this book will help to avoid further similar deaths.

1.2 TRADITIONAL AND MODERN MEDICINE

The early colonisers called the medicine of the native people "traditional", and even now Africans still call the imported medicines "modern". **But every people lives, produces and acts according to its traditions!** This means for example that aspirin as well as penicillin have become traditional medicines for the European.

Germany's climate is too cold for the pawpaw tree. But throughout Germany, every pharmacy stocks tablets for worms or indigestion which have been simply made by mixing pounded pawpaw leaves with the basic materials for tablets. But if an African doctor recommends the direct use of this African plant to an African patient, the patient thinks the doctor is crazy. Few Africans realise how many European medicines contain tropical plants!

What is traditional medicine?

In a publication in 1978, the World Health Organisation (WHO) defined traditional medicine as follows: **"Traditional medicine is the entirety of all knowledge, of all explicable and inexplicable methods of diagnosis, prevention and removal of physical, mental and social imbalances, based only on personal experience and on observations passed on from generation to generation."**

This definition indicates the confusion that exists: Through experience, African people have learned to use the juice of unripe pineapples to stimulate digestion. By definition, therefore, this is "traditional". In Europe, however, following scientific tests, this same procedure is recommended, and is therefore "modern".

Millions of Africans are only alive today because of quinine, which is effective in treating malaria. Quinine is available in all forms: tablets, shots, syrups etc. But quinine is simply an extract of the bark of the cinchona tree. Cinchona trees grow in the Tropics. Quinine thus is a "traditional" medicine. A Spanish missionary learned the secret of its working from an Indian healer.

Another interesting example is belladonna tincture, a European product used in all "modern" hospitals in Africa. It contains an extract of the wild flower deadly nightshade, which, as its name suggests, was used generations ago in Europe in magic!

Therefore, we must describe every herbal product with a proved effectiveness as "modern". But all medicine made of natural substances is at the same time a traditional, local, native product of the country of its origin!

Traditional medicine, therefore, is better defined as follows:

"The sum total of all practices, methods, treatments, supplementary materials and attempts of any kind (material, spiritual or other) which, for generations, have enabled people to protect themselves from sickness, to relieve suffering and to bring about healing."

1.3 THE FEAR OF COOPERATION

Terms that are used to describe medicine like "traditional" or "local", and "imported" or "modern", do not necessarily have to be opposed to each other. The irrational fear of certain people towards the local medicine nurtures something one could call "the fear of cooperation".

An anecdote tells of a high-ranking general who fell sick. As he did not believe in the "local" medicine, he went to a mission hospital to make sure he got "modern" treatment. The physician announced: "Sir, we will have to give you a local anaesthetic." "My God, you too!" gasped the patient and escaped from the hospital!

Stories like this, describing the fears and misunderstandings of the adherents of the different approaches to medicine, could fill a whole book. Following his "modern" medical training, a Congolese nurse knew many European herbs, but not a single one that grew in his village! And how can a European doctor be opposed to traditional medicine when he can only live and work in the Tropics thanks to the "traditional" quinine and its chemical derivatives?

Perhaps the main reason why some European physicians and nurses reject foreign local medicine is the fact that accepting it would require them to become students again, and even to have to learn from their patients, the very people to whom they have come to show their "modern" expertise!

We will speak of the "Medicine of the South" when describing the traditional, local system in the Tropics. In the whole of the southern hemisphere, the methods of treatment and plants used are astonishingly similar: Some healers in the D. R. Congo who had never read a book described methods to us which are very well-known in Brazil and the Philippines. Similarly, we will call the industrial medical system developed in Europe and North America as the "Medicine of the North".

1.4 THE DIFFERENCES

There are major differences between the Medicine of the North and the Medicine of the South in the way the patient is treated. The Medicine of the North views the patient as rather an isolated individual. The sick person is seen by well-trained professional physicians in the hospital. Success in the health system is measured in figures, like how many doctors, how much money, how many hospital beds etc. are available for 100,000 inhabitants.

Sicknesses in the North are seen to be caused by factors such as chemicals, inhaled as pollution or eaten as additives or preservatives, a high consumption of sugar, stress or the misuse or side-effects of medicines.

In contrast, the Medicine of the South puts the emphasis on seeing the patient as a social being. The sick person stays in the care of the family and village community. More than one healer can be consulted. Those with healing knowledge often have little academic education, but have remarkable human understanding. The improvement in someone's health is measured by an increased harmony within the community. The causes for sickness are seen as being a lack of food, lack of hygiene, disregard of taboos, fear of ghosts and suchlike.

1.5 SHOULD SECRETS BE REVEALED? DANGERS FOR THE MEDICINE OF THE SOUTH

In many seminars one question has often been asked by the healers at the very beginning: "Do you expect us to reveal our secrets? How much are you willing to pay for one secret?" They have good reason to ask. In Europe and America more than 7,000 pharmaceutical products based on medicinal plants are on the market. They are sold for more than 3,000,000,000 US dollars per year!

For many years we have come together in our seminars without any money being exchanged for secrets. In Natural Medicine, we believe that scientific knowledge should belong to everybody, and be just as available as love for the sick, and should not be paid for with money. In this age intellectual property rights are a hotly debated issue. The worldwide exchange of information about God's pharmacy costs nothing, and helps us all, of whatever rank or status, to become more knowledgeable, and therefore more self-reliant and inter-dependent. The priority of the pharmaceutical industry is more to make profits than to save lives.

We are only justified in making this criticism, however, if our priority is the reverse. Then our reward is not profit, but the experience of delight as people, communities and the environment are healed and made whole.

There are, however, three significant dangers to the medicine of the South:

1. The healers are slowly dying out and with them their knowledge. Industry takes advantage of this by developing and selling their own drugs, including those based on traditional knowledge for which they have paid nothing.

2. The governments of tropical countries allow themselves to be manipulated by joining the World Trade Organisation (WTO). Then multinational concerns are allowed to patent the production of medicines from their indigenous plants, and have the exclusive right to produce medicines and sell them back to those same tropical countries.

3. The third danger is caused by local people themselves. During the dry season much of Africa is in flames. Many bush fires are started deliberately. In the long term the soil becomes degraded, because many nutrients are lost in the smoke forever! Then, of course, the diversity of plant life is also diminished.

1.6 DISADVANTAGES OF THE MEDICINE OF THE SOUTH

At the village level, the utensils necessary for producing medicines are usually available. Often, however, the following problems exist:

- There is no water and soap to wash one's hands or the utensils thoroughly.
- Neither the substances nor the methods are standardized - in many cases envy and quarrels among the healers are the reason.
- The dosages are seldom standardized, which, in the case of poisonous plants, means a threat to life, particularly for young people.
- Often the patient knows neither the plant used nor its side effects.
- Some local names differ from village to village, other plants are simply called "flower".
- The combination of commercial products and traditional medicine can be fatal.
- Sometimes imported medicines are used without observing the expiry date.
- Some healers even mix methods taken from modern medicine (like injections) with magic.

1.7 DISADVANTAGES OF THE MEDICINE OF THE NORTH

In September 1991, 25,000 whites fled the then Zaire. Such a migration reduced instantly the amount of "modern" medicine available, with fatal consequences for thousands of sick people dependent on imported drugs. In such a situation, those who know at least a few recipes to treat some sicknesses are very fortunate - they are in a position to save many lives.

If you know the medicinal value of the plants growing around your house, never again will you have to walk for 10, 50, or even 100 kilometres to reach the health centre or hospital when you are suffering from a common illness! Also, in times of political instability, there is always the danger that hospitals receive no medical supplies. On the other hand, nature is the God-given pharmacy which, provided we protect, is always there for us to use.

In comparison to imported medicine, herbal remedies cost almost nothing! One is no longer dependent on money, and distant suppliers. If you produce teas and ointments etc. in your village yourselves, people will be healed, jobs will be created for local people, and money will circulate in the local economy instead of draining away to wealthy people in your country and abroad. In short, everybody benefits.

If you are a doctor or a nurse in a hospital and you are prepared to make some of the medicines yourself according to the recipes in this book, you can save precious foreign currency otherwise spent on the purchase, transport and storage of medicines. In addition, you avoid the troublesome and expensive customs formalities!

Take for example the D. R. Congo: Each time a patient comes to the pharmacy (s)he is startled to see how prices have risen again: An unbelievable inflation rate (at the end of 1993 it was 100% per week) makes sicknesses "incurable". The sick person does not only pay for the medicine he buys, but also the national debts - debts

for money that he has never seen, sometimes for money spent on weapons, and debts that the World Bank wants him to pay back. Southern medicine, however, more often works by barter: A circumcision, for example, is always worth a chicken!

The healer treats the whole person and his circumstances. He does not treat the symptoms or illness in isolation (measles, worms, tuberculosis...) but, together with the patient, also looks at other problems like unemployment, crop failure, lovesickness, childlessness.

1.8 OUR GOAL: "NATURAL MEDICINE"

Africans are astonished at the "green wave" that is now flooding pharmacies in Europe. In every chemist's shop in Germany you can find medicines from 400 plants, and countless herbal teas.

God has freely given us 500,000 flowering plants. About 50,000 are used in traditional medicine. According to the World Health Organisation (WHO) about 10,000 have already been scientifically examined and described. That leaves an incredible 40,000 waiting to be researched! We have plenty of scope!

After long discussions about how to describe our approach to medicine, we chose the term “Natural Medicine”, which we now define as follows:

"Natural Medicine" is the combination of the advantages of the medicine of the South with those of the medicine of the North.

Natural Medicine is natural because, firstly, it is orientated towards nature, and secondly, it is just the obvious (and natural) thing to do, to use locally available resources. This means that, to practise Natural Medicine, traditional healers from the South, and nurses, doctors and development workers who are trained in the medicine of the North, must be open to learning from the practises and experience of each other. In this way, effective health care can be established that can withstand economic and political instabilities.

This book is written for that purpose. Through its use, we have seen already that individuals and communities have become much more self-reliant in preventing and treating illness. Hundreds have found employment through growing these medicinal plants and producing these medicines. Thousands of people have been treated successfully for malaria, diarrhoea and other illnesses. May this continue, and on different levels! Because, in every country, health care takes place on the following levels:

1. **Home medicine**: Medicine within the family system, in the North, for example, the use of mint tea, in the South, of pawpaw seeds.
2. **Hospital or “district” medicine**: Doctors and alternative therapists in the North, and doctors and traditional healers in the South, with their special knowledge.
3. **University medicine**: Research and teaching in diseases and their treatment.

“Natural Medicine" should be practised at all the three levels described above. **Home medicine** is the first priority, because the most important and most efficient health-care centre is one's own home. In times of civil war and famine in the Tropics, the most crucial contribution towards maintaining good health in the community is to be made by an increased knowledge and greater skills at the family level.

The ongoing development of **hospital and district medicine** is the second important step, because there too the patient should benefit from the healing properties of medicinal plants.

Natural Medicine must also reach the third level, the **universities**, in order to find its way back from there to the people. Today even in African Universities African doctors are trained to become experts in western medicine. The result is simply that, after they have completed their studies, they leave for Europe and North America to work in well-equipped hospitals and to receive European salaries. Our aim is firstly that universities in the Tropics produce experts in tropical herbal medicine! Secondly, that such doctors go into the interior of their countries, where they are most needed. "The bush is for missionaries, not for us professionals", I was told by a young smartly dressed Peruvian doctor in his capital. As soon as Natural Medicine, or “anamedopathy”, becomes a credible medical concept, however, medical work in the bush will be an attractive proposition, because the pharmacies will then be certainly better stocked than those in the towns!

We have very deliberately excluded "magic" recipes from this book. Some plants are used by so-called healers to find the guilty party when a crime has been committed. An unscrupulous healer or magician would give one person tea from a toxic plant to drink, and another person tea from a similar, but non-toxic plant. When the first person dies, it would be announced that the ancestors have passed judgement upon him, so he must be the thief. Such practices instil fear and are rightly perceived by young people as being old fashioned and out-dated, and are one reason why they leave their villages for the modern life in the towns. Natural Medicine brings together science, herbal remedies and love, but not witchcraft or superstition!

You are the scientist!
You are the development worker!

In Germany, TV commercials advertising drugs are always followed by the monotonous but important sentence: "For risks and side effects read the information enclosed and seek advice from your physician or pharmacist." Of course, such risks and side effects cannot be avoided in the case of medicinal plants either. Every herb, as well as every chemical substance, has a whole range of effects; the main effect may be positive for one patient, negative for another and even dangerous for another, e.g. a plant that is good for low blood pressure (hypotension) may kill a person with high blood pressure (hypertension). For this reason we cannot be held responsible for any results of using herbs.

In other words: You are in charge, and you are yourself the scientist! This involves constantly learning from your own experience, and being in close contact with other practitioners, so that you learn also from their knowledge and experiences.

Healers in South America are called "curiosa", "the curious ones".
This is what "development" means: Being curious, being open to change!

A key question then is: How can doctors and nurses, usually trained 100% in northern medicine, work together with traditional healers and midwives for the benefit of the poor and poorest people? How can they become “curiosa”, having open minds in a mutual learning situation?

Since 1985 we have been running seminars which have involved practitioners from both groups. The results are:

- The population benefits: Local health committees choose representatives to attend the seminars, who report back to the people, so that they all learn new things.
- Medical staff gain from it: They get to know the value and effects of medicinal plants, and they begin to practise new treatments.
- The healers profit from it: They learn how to give precise dosages, how to preserve their products better, and they realise how important hygiene really is. The open exchange enables healers to treat more sicknesses than before.
- Traditional midwives gain from it: They are no longer forced to practise illegally, but are allowed to carry out prenatal examinations in a more competent way and give better maternity and baby care. Furthermore they are enabled to teach the family members how to support pregnant mothers. Not only this. A main source of AIDS infection in the D. R. Congo is from some 40,000 itinerant would-be (and completely untrained) healers who give shots to anybody asking for it, with syringes half or not at all sterilized. Trained healers and traditional midwives can provide better treatment without spreading AIDS.
- Tropical cultures profit from upgrading the traditional aspects of health-care.
- Individuals gain: Producing one’s own medicine not only creates a job, but a certain (justified!) pride as well.
- Even nature gains: Planting trees (reafforestation) of medicinal value not only provides medicines but also shade and rain, the soil is improved, and food and shelter for insects, birds and animals are provided.
- The churches gain: In our experience, not only during but also after the seminars, some churches are well-attended again, because good health is clearly beneficial for the body, mind and spirit. Some pastors now include the efficacy of medicinal plants as “good news” in their sermons.

1.9 NATURAL MEDICINE - A CHANCE FOR THE CHURCH

Natural Medicine presents the churches with an opportunity and a task. But there are some problems. Firstly, in Africa the majority of hospitals are run mainly by churches, under the direction of a bishop who was influenced by Europe, and perhaps trained, and at times spoiled, there. Sorry to say, some of the church leaders - not all

of them - have turned into enemies of their own culture, having even become afraid of their own medical tradition!

Secondly, because of the lack of plants, many healers in big African cities, e.g. in Kinshasa, are now turning to such practices as occultism, witchcraft or the "magic of words". Because of this, traditional medicine is developing a bad reputation. Natural Medicine, however, is nothing whatsoever to do with the resurgence of witchcraft, which is also becoming more widespread in Europe and North America.

In 1993 in Kalemie, East D. R. Congo, 40 women were about to be burnt as witches, accused of being responsible for a cholera epidemic. It was due to the effort of Christian churches that this killing was stopped, by teaching people how hygiene measures can prevent cholera. Reports from Kenya described how people were killed ritually and their organs used to produce medicines. This is a challenge for the churches! Medical experiments carried out on American and Russian soldiers during atomic weapon tests, however, were no less cruel! The challenge, therefore, is not how to replace the southern culture with that of the north, but how to develop a code of conduct throughout the world that cherishes people, communities and nature.

We shall overcome.....but how? We are blacks and whites, doctors and healers, Christians and non-Christians. Our experience from hundreds of seminars is: If we all draw nearer to the CROSS, suddenly we stand side by side. If we all stand around a pawpaw tree to learn how to treat our wounds, we all use our hands and we forget even the colour of our skin! And pawpaw seeds chase intestinal worms from the belly of the doctor just as they do from the belly of the healer, regardless as to whether the belly is Catholic, Protestant or of a traditional believer!

As a result, a seminar on "Action for Natural Medicine", (*ANAMED*), about healing plants, organised by the churches, will dissolve many obstacles! Many churches in Africa have asked *ANAMED* to organise conferences with healers and doctors, regardless of their belief! And even magicians were surprised to learn of the calming effect of the passion flower, and of the dramatic success of the asthma weed in combating amoebas. At least for these illnesses they need no magic - surely that is good news for the church!

The Christian faith and healing are both children of the same mother, called love. Jesus said: "Love your neighbour like yourself." Paracelsus, the father of medical science, said: **"The most important foundation of medicine is love!"**

In treating patients, we know that the medicine is often less important than the relationship between healer and patient. The purchase of whatever drug does not necessarily lead to an improvement of the health condition. There are other more significant factors which have an impact on the well-being of a person, e.g. justice (2 Peter 1:1) and love (1 Cor. 13).

If you ask an African to give a definition of his own culture you might hear: "We are the ones who invented neither TV nor the car. We don’t have enough computers, we lack cement..." Why do Africans not rather thank God and put it positively: "Our culture has survived for thousands of years in spite of numerous threats. People have resisted countless parasites. Our air, our soil, our water are still clean. We do not abandon the sick among us but treat them with solidarity and joy according to the

Bible: "**A joyful heart is the best medicine".** Let's not forget that thousands of Europeans come to "Third World" countries every year, to seek recreation and therapy, and countless commercial concerns come to exploit the natural wealth of timber, minerals and plants.

The Church has the role of preaching and demonstrating love that includes not only love of one's neighbour, but also love of oneself, one's culture and one's environment. The church has the opportunity to help people feel proud. Such an approach forms a sound basis on which one can develop skills and structures that are imbued with love and justice.

The health system of the industrialized North, based on making profits for shareholders, has fallen ill itself. Love is not found so much as greed with no mercy! How otherwise is it possible that about 500,000 people every year ruin their health by the use of pesticides like DDT produced mainly by agrochemical industries? How is it possible that medicines for AIDS and some other diseases are sold at prices that most African patients cannot afford?

As Christians we have to condemn these practices, but we also have to keep in mind that a traditional healer can be equally cruel if the patient is so poor that he cannot even afford to pay for his treatment with a goat.

Both systems, however, have great strengths. Let's take advantage of the best of both and start working together. Let's call it NATURAL MEDICINE and become active together with religious and local communities.

1.10 NATURAL MEDICINE MEANS ENGAGING IN POLITICS!

The scourge of soaps that contain mercury.

Many Africans, South Americans and others are more and more turning their bodies into a pharmacy, into a sort of chemical depot. People accumulate unhealthy preservatives, pesticides, colourings etc. in the body, to the extent that, today, many inhabitants of tropical cities have more DDT in their blood than Europeans!

In time, this may well lead to new-born babies in the Tropics suffering from allergies as much as European babies. Today, 4 out of 10 babies born in Europe suffer some allergy! Natural Medicine, therefore, also includes involvement in politics. A very good example is the issue of skin-bleaching soaps and creams.

The drug markets in the Tropics are flooded with products used to bleach the skin: creams containing hydroquinone, or betamethason, which is even more dangerous. By far the worst are soaps containing up to 3% of mercury salts. All these substances impede the synthesis of melanin. Melanins are brown or black pigments which cause a tanning of the skin and act as a radiation filter.

As a result of pollution, we all suffer from the depletion of the ozone layer. Now the radiation of the sun is getting more and more aggressive - in the southern hemisphere even more than in the North. Formerly dark skinned people could work nearly naked the whole day long in full sunshine without any problem. Their grandchildren today suffer increasingly from sunburn.

With the support of many churches in the Tropics, therefore, we appeal to African women no longer to regard their black skin as a sign of poverty, as an illness that needs medical treatment. What a paradox: African women risk their health to get rid of the black pigmentation of their skin whereas Europeans do what they can to get a suntan! Why do we not simply take the colour of our skin as a gift of creation? Is not a bunch of flowers beautiful because of the range of different colours? Why should it be different with people?

For 15 years anamed groups campaigned for a ban on the export from Europe of all soaps and cosmetics that contain mercury. Since 2003 this ban is in place! But these same soaps continue to be manufactured in cities such as Kinshasa or Dubai under the same names. So they are still available in Africa. Since 1977 the WHO has been appealing to governments all over the world not to permit the import and sale of mercury soaps. But what is the use of such an institution if it does not have the power to take industrial companies to court?

These soaps do not produce an even, aesthetic bleaching of the skin. The result is very patchy, and sometimes even darker areas and spots occur, which doctors call the "confetti syndrome". This is because mercury penetrates the skin very unequally. However, the whole body is chronically poisoned. A woman who regularly uses such a soap (which unfortunately happens very often in the D. R. Congo, Tanzania, Uganda, Madagascar etc.) has 400 times more mercury in her blood than someone not using it. Even worse, mercury penetrates the brain and can thus affect the intelligence. Mercury penetrates the uterus as well, oxidises and is deposited in the brain of the embryo. The urine of a three-month-old baby was tested and 140 times the normal amount of mercury was found. The child had never been washed with such soap, it was only the mother who had used it!

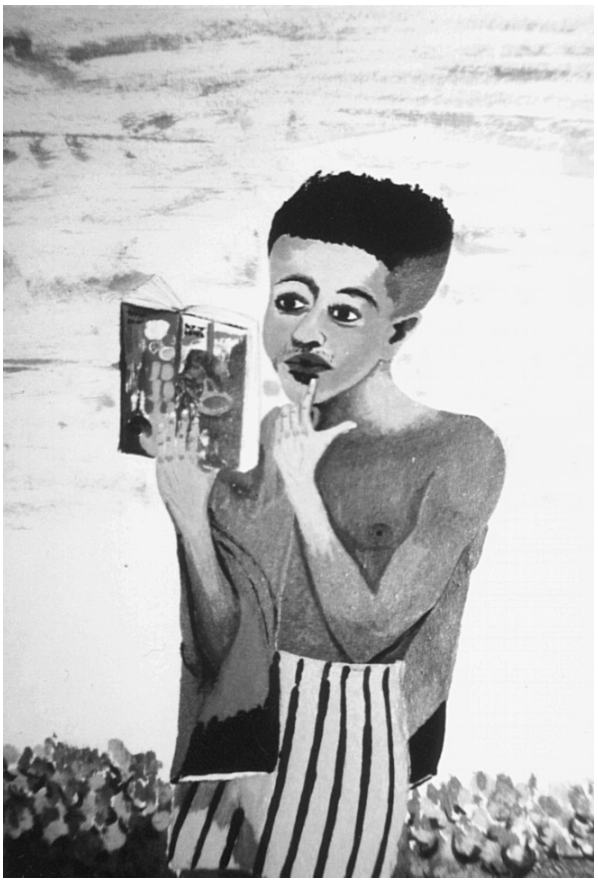
Further side effects of mercury are psychotic reactions (delirium, hallucinations, suicidal tendency), trembling of the limbs, kidney syndromes and contact dermatitis.

Some recent investigations make us suspect a fatal correlation between the use of these soaps and AIDS (a disease which affects in Africa a far higher percentage of women than men):

a) Mercury acts as an immunotoxin on human T-lymphocytes: it reduces the body's natural reactions against infections, including AIDS.
b) As a result of the lighter skin, more ultraviolet-B rays intrude the body, also weakening the body's defences.

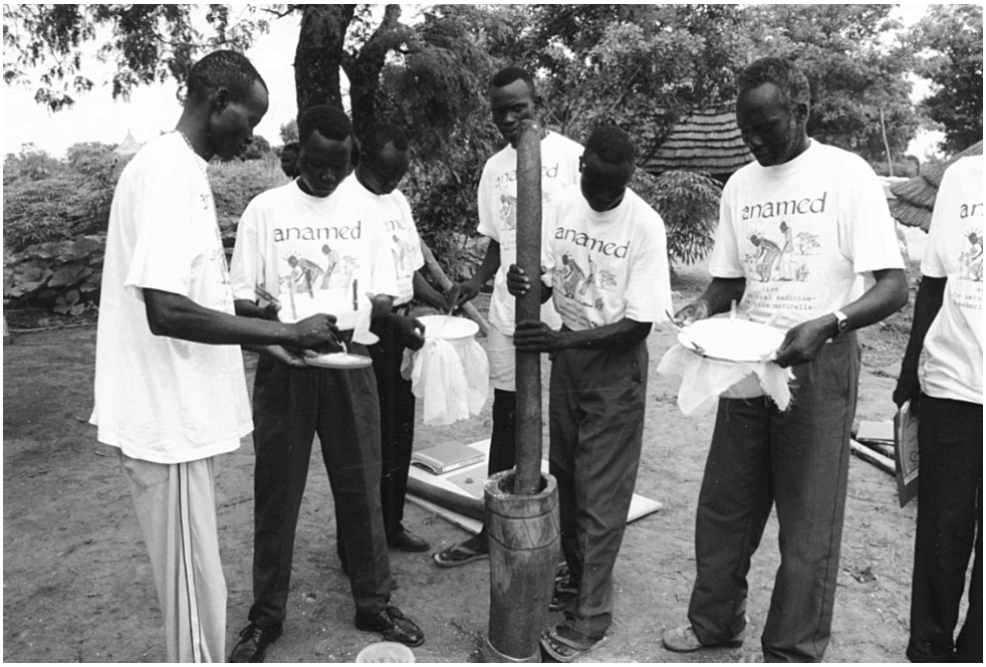
An important part of Natural Medicine is to teach local people to appreciate and to care for their dark skin. How can a black woman make her skin look more beautiful? Dr. Yetunde Mercy from the university in Lagos, Nigeria recommends the use of a simple curd soap made of palm oil, which is used in practically every African household (see chapter 4.1.6). This kind of soap has even bactericidal qualities and irritates sensitive skin less than some industrial products which contain triethanolamine! Any African woman can make herself a neutral, re-greasing soap by melting a commercial curd soap with some additional vegetable oil (chapter 4.1.9).

Skin care



A

B



C

A. Using mercury soaps makes you “Upside Fanta, Downside Cola”
B. A display of attractive but dangerous products in a shop.
C. As an alternative, men in Sudan prepare products for skin care!

The underlying message of many advertisements in Africa is "White is beautiful and wealthy". We appeal to pastors and bishops to warn against this interpretation of "development" and "progress". Physicians, nurses and development workers, please integrate the slogan "Black is beautiful!" into your health education work!

1.11 NATURAL MEDICINE: A PASSIONATE APPEAL

Nature, with its trees and shrubs, is a unique pharmacy. But its survival depends on our knowledge of what is good for it and what does harm to it. Of all the plants now growing on our earth one out of five will be exterminated in ten years' time. Why? Because every year a rain forest the size of Switzerland is being destroyed by commercial exploitation, from acid rains from the North, from imported garbage from industrial countries, and from bush fires started on purpose for hunting and agriculture.

If today a healer were to claim that he had found a plant to combat AIDS, he would be ridiculed. On the other hand, even the scientists in North America have not given up hope yet: Every year the American National Cancer Institute chooses 1,500 plants, mainly from tropical countries, to test their efficacy against AIDS.

Imagine that our ancestors had exterminated the fungus *Penicillium*! Mr Fleming would not have been so fortunate in 1928 as to discover penicillin. And now imagine: Scientists find in a tropical tree a medicine for AIDS, but unfortunately the last tree of this species has made into wardrobes or burnt down to make room for planting cassava! The extermination of a single plant like this could mean the death-warrant for millions of people...

Together, plants make up the world's most ingenious chemical factory. *Artemisia annua anamed,* for example, contains at least 245 medicinally efficacious substances.

One single palm tree that we plant today will give our children wood to build walls, roofs and fences. They will get material for baskets, shoes, ropes, brushes and brooms. The tree will provide oil, caterpillars, palm wine, sugar and vitamins for them. And it will improve the climate worldwide with the production of oxygen through its leaves.

Without trees there is no rain
Without rain there are no medicinal plants

Without medicinal plants our lives are dependent on industry, which sells its products to us at the highest prices possible. Industry has little choice: Its raison d'être is to maximise its profits, even if this means the destruction of its own foundations, the environment. But we do have a choice! We can choose whether we want to continue destroying the rain forest, or rather whether we want to work together in a joint project, **Action for Natural Medicine!**

CHAPTER 2

STARTING A NATURAL MEDICINE: PROJECT

This chapter gives some advice on how to organise seminars, information about some basic techniques and instructions on how to produce some important equipment.

The programme of "Natural Medicine" can only be successful:

- if the population wants it.
- if it is part of a general and comprehensive programme of development.

The local health committee should work out its own programme of development. A key question to ask is: "What are we able to do ourselves, without foreign aid?" The committee then lists the 10 most important points.

In our experience, the following 10 points were those most often identified:

1. We need a Christian (and humanitarian) conviction.
2. We must avoid the roaming of goats, sheep and pigs.
3. We must begin reforestation, and only cut down those trees that we have planted ourselves.
4. We should try agriculture in the bush rather than agriculture in the forest.
5. Family planning is necessary for us to have healthy, well-educated children.
6. The same work for men and women – this is development!
7. Let us be proud of Natural Medicine.
8. Hygiene prevents infections – so we must use toilets and a dish-rack.
9. We should be careful, and faithful to our partner, and thus avoid AIDS.
10. Let us all work together in the village, on a voluntary basis, to undertake community projects.

2.1 TEACHING AND LEARNING

MEETINGS: The purpose of the meeting should be stated very clearly, e.g. to learn from each other about Natural Medicine. One person is chosen to be the chairman, in order to stop everybody all talking at once and in order to allow each person opportunity to share their experience. Another participant should write the minutes, to record the important information that is shared and any decisions made in their own language. It is good to include a short presentation on a particular topic of interest, which has been publicised to the group in advance. It is inevitable that all sorts of problems concerning health and development will be raised. Items of particular interest or concern should be noted for discussion on a future occasion, and maybe introduced as the central topic at the next meeting.

IDENTIFICATION OF PLANTS: It is very important that each person is able to accurately identify the medicinal plants that they wish to use. Go for walks where the plants grow. Look carefully at their appearance, the shape and colour of their flowers, leaves and seeds, test their smell and, perhaps, their taste. Never eat parts of unknown plants, and never swallow the white sap of a plant you are not familiar with; it might be poisonous.

HERBARIUM: From every plant you know, collect leaves, flowers and seeds. Press these parts for one week in a book, and glue them on a sheet of paper. Name the plant. Make drawings of it, explain how to use and prepare it, indicate its risks.

PHOTOGRAPHS: If possible take photos of each important plant. If you have a digital camera and lap-top computer, you can show your pictures very easily in the villages in remote, rural areas. If you have a conventional camera, take slides and use a 12 volt portable projector powered from a battery that you charge up during the day with a solar panel. The battery should be 12 volt and between 3 and 6 Ah, and the solar panel should be 12 volt and around 6 watt. The projector can be obtained from: Radmar, 1263-B Rand Road, Des Plaines, IL 60016, USA.

2.2 A POSSIBLE PROGRAMME FOR A SERIES OF SEMINARS

The first seminars run by *anamed* were in Zaire, where we ran two to four one day seminars a year in every part of our health zone. Today *anamed* trainers travel to various tropical countries to run seminars that are one to two weeks long. We run seminars in the same district each year for three years. After the first, participants are expected to run seminars themselves in their own localities, and put into practice much of what they have learnt. Seminars in the second and third years have the purpose of allowing participants to report back on their successes and failures, and to deepen their knowledge of Natural Medicine still further.

Whatever the form of your seminar, participants should be invited who represent the full range of people who practice medicine or who work in administrative posts, i.e. traditional healers, nurses, doctors, pharmacists and representatives of church and government etc. It is not helpful to have other people there, particularly if they have no commitment to put into practice what they have learnt.

It is a good policy to invite the highest-ranking medical official of the region to formally open each seminar. This is an excellent way of winning the support and cooperation of those in positions of influence.

If you are the seminar leader, bear in mind that the more you treat your own diseases with medicinal plants, the more seriously will people take Natural Medicine.

In planning a seminar, remember that good teaching and learning needs to be full of variety. And in Natural Medicine there is plenty opportunity for that! Here are some of the possibilities for activities:

- singing songs, and writing your own songs about Natural Medicine.

- inputs about diseases and plants, from both teachers and participants.
- groupwork around aspects of development.
- walking around to identify and collect plants.
- preparing and planting a medicinal garden.
- preparing medicines, e.g. teas, oils, ointments, tinctures, black stones.
- constructing an "A" frame, solar oven and/or balance.
- showing slides and films.
- inputs from participants: Where do we find references to Natural Medicine in the Bible, and where in African proverbs?

Here are some suggestions for a programme for a series of three day meetings:

FIRST MEETING

First day

8 a.m.	Devotions: Proverbs 17:22 (local evangelist or priest).
9 a.m.	Discussion: Which are the most common diseases in our area (e.g. worms, malaria, rheumatism)? (all participants)
10 a.m.	How to prevent a sickness - modern and traditional ways (nurse).
11 a.m.	What is Natural Medicine? - Part I (see chapters 1.1 and 1.2) (doctor or nurse).
2 p.m.	The pawpaw - an important medicinal plant (chapter 5.7) (doctor or nurse).
3 p.m.	Discussion: How do we use pawpaw in our area? (healer).
4 p.m.	Production of one medicine for preventing worms, one for killing worms and of a "leaves soap" (according to the recipes in chapter 5.7)
7 p.m.	Lecture on family planning with slides

Second day

8 a.m.	Devotions: 1 Chron. 16:33, Psalms 96:12 and Isaiah 10:18-19.
9 a.m.	Repeat the pawpaw. Go for a walk together and count the pawpaw trees in the village.
10 a.m.	Look at plants of *Artemisia annua*.
11 a.m.	Plants used to treat malaria (see chapter 8).
2 p.m.	Production of medicinal oils (chapter 4.3) (all participants).
4 p.m.	Discussion: What trees can we use for reafforestation?
7 p.m.	Slides of medicinal plants: no comments from the instructor. The participants react to each picture and give their comments.

Third day

8 a.m.	Devotions: Acts 3:16.
9 a.m.	Song on Health (self-composed).
9.30 a.m.	What is Natural Medicine? - Part II (see chapter 1).
10.30 a.m.	Discussion (men): What can we do to stop the rural exodus?

Discussion (women): How can we feed our children more nutritiously with what we have? What advertisements have we seen on this topic?
11 a.m. Election of the persons responsible for organizing the next seminar.
11.30 a.m. Prayer and good byes.

SECOND MEETING

First day
8 a.m. Song on Health.
9 a.m. Devotions: Exodus 15:26, Job 13:4.
10 a.m. Repeat: Preventive and curative medicine (all participants share their experiences).
11 a.m. Amoebas: Using a microscope to make them visible and to identify them (nurse).
2 p.m. Asthma weed (chapter 5.12): A plant effective in fighting amoebas. Making tea out of this plant.
3.30 p.m. Soap-making (chapter 4) – a practical session.
7 p.m. Slide presentation on AIDS.

Second day
8 a.m. Devotions: Faithfulness, tradition and AIDS (Psalm 40:11, 1 Cor. 13, Rom. 13:10).
8.30 a.m. Song on AIDS (composed by participants).
9 a.m. Repeat: Amoebas, Asthma weed
10 a.m. Malaria: Prophylaxis, classical treatment (nurse) and traditional treatment (healer). Sharing experiences.
11.30 a.m. What to do if someone has fever (chapter 7.3). Discussion between nurses and healers.
2 p.m. Visit the village herbal garden or start a garden for medicinal plants.
3 p.m. Women: The role of a traditional midwife.
Men: How to plant and utilise eucalyptus (chapter 5.11).
4 p.m. Making beauty soap and hard soap (chapter 4.1).
7 p.m. Sexually transmitted diseases - classical and traditional prevention: Talks around the camp fire (men and women separately, and then together)
9 p.m. Slide show: Pictures taken at the first seminar.

Third day
8 a.m. Devotions: How to protect our natural environment (Gen. 2:15, Deut. 20:19, Psalm 96:12).
9 a.m. Diarrhoea: How to produce different types of O.R.S. (see chapter 4.6).
11 a.m. Election of the persons responsible for organizing the next seminar.
11.30 a.m. Prayer and good byes.

THIRD MEETING

The third meeting should be planned by the members of each group themselves. Of course, they can invite you or other people to make an input or another contribution. Church people, for example, might meet together to discuss the topic "The church and Natural Medicine"; and traditional midwives, traditional healers, or nurses and doctors may each meet to discuss issues of importance that are specific to their group.

Seminars may also be offered to specific groups, e.g. "modern" health-care personnel from a wider region, or the pharmaceutical staff of church hospitals.

2.3 MEDICINAL GARDENS

We establish separate medicinal gardens for two distinct purposes, the first for demonstration, and the second for production.

1. DEMONSTRATION GARDEN.

This garden is small and serves the purpose of enabling people to learn about the different plants. This garden is open to the public! In the hospital, for example, establish it near the entrance along the fence so that everyone who passes by can see it. Plant only one or two plants of each species that are known to be used in traditional medicine. Place a little sign next to each plant, using, for example, pieces of plastic waste or sheet iron. On the signs write both the scientific and local names of the plants, and their uses - use waterproof paint. Organise "guided tours", whenever you have opportunity. Show it to your visitors, invite classes from local schools for presentations, and invite people on Sundays after the morning service.

2. PRODUCTION GARDEN

This second garden is for production. Here, you grow only those plants you need for your programme in Natural Medicine. Such a garden should, of course, also include fruits and vegetables. This garden may be fenced, and the public may only enter it by invitation.

Begin with "anti-erosion hedges" or "fertilising hedges": Plant the hedges in rows, 3 metres apart on slopes, 5 metres apart on the level, but always along the contour lines. Make the hedge out of at least 3 different species: You may mix lemon grass, moringa, leucaena, calliandra, *Cassia spectabilis*, *Tephrosia vogelii*, *Cajanus cajan* etc. Sow the seeds of trees at intervals of only 10 cm (e.g. calliandra, leucaena), or plant branches (e.g. of *Cassia spectabilis*) very close to each other, say every 50 cm.

As soon these hedges are established, plant your medicinal plants between these young hedges.

Avoid organised seed-beds, it is better to sow in alternate lines or even to mix up all the various medicinal plants, as they would in the jungle. In this way the plants provide shade for each other, and it is possible to reap a harvest in the dry season as well.

Find out by trial and error the conditions preferred by each plants: the direct sunshine of the savannah; semi-shade like in the bush; shade like in the forest... sandy or loamy soil... a lot of or little water...

Cut the hedges back to a height of 1 metre at the beginning of the rainy season, and work the trimmings into the soil, so that the ground becomes more fertile each year and can nourish the medicinal plants.

STORING SEEDS: Some seeds (e.g. mango, orange, lemon, pawpaw) need planting as soon as possible. Others, such as vegetables, flowers and grains need to be dried first for 2-3 weeks.

Put each species in an envelope. Write on it the name of the plant and the date it was harvested. Store these envelopes in a firmly closed glass jar to protect them from the hungry mouths of insects and animals. In order to keep the contents really dry, place some freshly made pieces of charcoal which have just cooled down into the jar. Alternatively, fill the jar 10% full with highly dried rice, or 0.5% with silica gel (available at the chemist's). Silica gel contains an orange indicator that turns from being orange when dry to colourless when it becomes moist. Silica gel and rice can be dried over and over again by means of the solar oven or gently over the fire. Keep poisonous seeds out of the reach of children!

TREE NURSERIES: For many trees the seeds need to be planted into good soil or compost in a small container (e.g. a plastic bag, or banana fibre folded into a little cup). This tree-nursery can easily be protected against too much sunshine, rain and insects. When the young plants are strong enough, plant them outdoors. Remember how much space the plant will need once it is fully mature.

Some plants can be propagated very simply by taking cuttings, e.g. *Cassia spectabilis,* (see chapter 6.11), as well as all those trees which have grown out of your neighbours' fence posts!

PREPARING HOLES FOR PLANTING A TREE:

Very fertile soil (forest): Just turn the soil with the spade, and plant the seedling or cutting (branch).

Close to the house: Do not dig the pit for your toilet too deep (but always place a cover over the hole!) Then, every 3 months or so, dig another hole about 5 metres further on. Fill in the old toilet-pit with organic waste, such as banana skins, leaves and branches, and some soil. Plant a fruit tree into it without waiting.

Less fertile savannah:

a) For **reafforestation**: Plant at intervals of 1 m, and dig 1-2 spades deep. Choose a type of tree which is less demanding, such as *Cassia spectabilis* (chapter 6.11) or neem (*Azadirachta indica*, chapter 5.5). With cassia, stick a half metre long cutting into the soil and water it well. Using this method, a single cassia tree cut into pieces will become the "father" of a whole forest! Neem is best grown from seed. Cut the grass regularly around the plants, up to 3 metres from the trunk. At

the beginning of the dry season, start small fires to protect the very small planted trees from bush fires.

b) For **fruit trees or medicinal trees**: Dig a hole about 70x70x70 cm. Fill with manure, leaves, twigs, organic waste from the kitchen, ashes etc. Cover with the top layer of the original soil. In our experience seedlings and cuttings can be planted straight into it. Water well and protect it from too much sunshine and against roaming animals.

2.4 COLLECTING MEDICINAL PLANTS

PLACE: Collect herbs from clean places, never from the roadside. Do not collect any dead leaves, or leaves attacked by insects, fungi, or any other disease.

TIME: Collect your plant material at the time that it contains the highest concentration of medicinal substances. That is in the middle of the day, after all the dew has gone, and well before the sun begins to set. For this reason also, collect flowers and leaves when the plant just starts to flower. If possible, for infusions and decoctions, use fresh leaves and flowers. If this is impossible you have to dry and preserve them. Roots and vegetables growing under the surface (e.g. carrots) are best collected at the end of the rainy season. Fruits contain most vitamins when they are ripe. For specific medicinal purposes, some fruits are used before they are ripe, e.g. the pawpaw for suppurating wounds (see chapter 5.7).

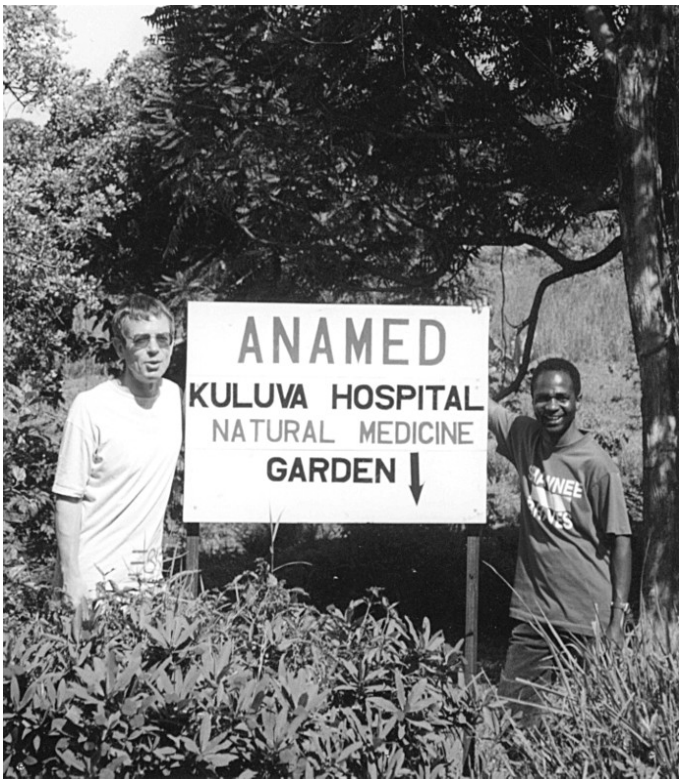
PREPARATION: Roots must be washed and brushed well. Leaves usually do not need to be washed. Where there is a lot of sand or dust, however, the plant material must be washed and the excess water removed with a clean towel.

PROTECTION OF PLANTS: When you need the whole plant, take the old plants, and spare the young ones. When you need the roots, take only a few subsidiary ones, and leave the others and the main root unhurt! If you do not need the roots of the plant, leave the roots in the ground, so that the plant can grow again. When you need bark, take pieces only from the branches! Never cut the bark from the trunk. This is a bad habit in traditional medicine, and the tree will die if you do so. When you need leaves, take only a few leaves from any one branch. Take leaves from branches that grow towards the centre of the tree, because they seldom produce fruit. Grow and cultivate new plants - you and your children will need them!

2.5 DRYING AND PRESERVING MEDICINAL PLANTS

In many cases, **fresh plants** are more effective than dried plants. Therefore make sure you always have strong and healthy plants in your herbal garden!

To safeguard and use medicinal plants and trees,
establish a medicinal garden!



Sometimes it is necessary to dry your plants, e.g. if you want to produce oils, ointments or medicinal cigarettes from medicinal plants.

Sometimes you need to preserve the medicinal plants. Asthma weed, for example, cannot be found during the dry season and must therefore be harvested and preserved during the rainy season.

DRYING: As this book is used in widely varying climates, e.g. cold and hot, wet and dry, it is not easy to give a simple recommendation. However, as a rule of thumb, dry your plants in such a way that they are totally dry after three days.

1. Prepare your plants: Roots must always be washed thoroughly; wash seeds and leaves only if they are dirty, e.g. in towns. Flowers cannot be washed.
2. If only the leaves are required, remove all the stems and, if necessary, also all leaf-strings (e.g. with pawpaw leaves). Cut the material like you cut vegetables in Africa. The pieces should not be bigger than 1 cm.
3. Always dry flowers in the shade. Dry roots and fruits in the sunshine. For leaves, first cut them finely, and dry them in full sun for two hours. This kills the enzymes that cause the leaves to wilt. Then dry the leaves in such a way that they are completely dry within three days. This may be in the full sun, or in the shade, depending on your climate. A good place for drying is on the ceiling, under the roof, provided this place is clean.

During the rainy season, even after 3 days of drying, the leaves may still be damp. In this case, place them in a solar box (solar oven), but leave the lid slightly open so that the temperature does not exceed 50°C.

PRESERVATION: If you want to preserve your medicinal plants, you have to control the dryness. This can best be done by means of a hygrometer. Together with a handful of your dried medicinal plants, place it in an airtight container for 15 minutes. The following table indicates how long your plant material will keep in an airtight container in a hot climate:

humidity recorded by hygrometer	moisture content of plant material	the material will keep for
60%	ca 6%	4 months
50%	ca 5%	6 months
40%	ca 4%	1 year

Using this technique you can also check how long your dried foods, such as cassava powder, maize or beans can be stored, or how long your seeds can be kept before they lose their ability to germinate.

STORAGE: You cannot store plant material in paper bags because insects can attack them and they can become damp. If the material is very dry, well-fastened plastic bags will keep them dry for a short time (up to 1 month). Airtight containers of glass, plastic or metal are more suitable for storage for longer periods of time.

2.6 PRESERVATION OF MEDICINES

Microbes are waiting everywhere impatiently to attack and destroy your medicines. Microbes are to be found on hands, on utensils, in bottles, on leaves, in the air, in the water (especially if not boiled enough)... simply everywhere! How can we protect the perfect quality of our home-made medicines?

In order to preserve the purity and efficacy of a medicine, use only clean instruments and clean utensils when preparing the medicine; make them clean by boiling them.

The product will last best if

it is very dry (e.g. powder)
it is very sugary (e.g. syrup)
it is very salty (e.g. salted fish)
it is very alcoholic (e.g. tincture)
it does not turn rancid (e.g. oils)

Decide yourself how you want to preserve your medicines. For oils, we recommend home-made palm oil, shea butter or commercial oils. Some home-made oils (such as peanut oil) do not keep well.

Humidity is a threat to powders and dried plants. Industry uses chemical preservatives, but all of these substances can cause allergies. Therefore, we prefer locally available resources to dry our medicine; why not use the sunshine!

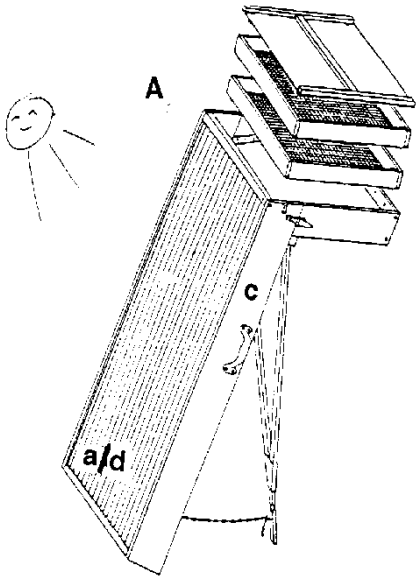
2.7 THE SUN - A HELPER FOR YOUR PHARMACY

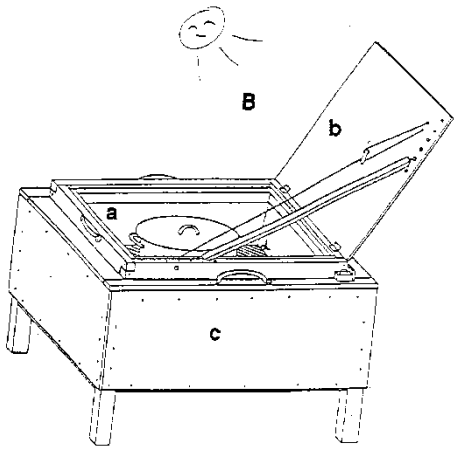
In giving light and energy, the sun is essential to all life. Let's present an alternative to the short-sighted, self destructive custom of burning wood and oil. Let's utilise solar energy in appropriate technologies! And in doing so we will contribute, in the long run, to the protection of the natural resources that are so important to us! We can take advantage of this wonderful, freely available resource by constructing and using a SOLAR OVEN or SOLAR DRYER (see pictures on p. 41);

- in cooking and baking.
- in drying food, in order to preserve it, e.g. maize, peanuts, cassava pieces and, in some regions, ants and caterpillars.
- in melting honeycombs to separate honey from wax.
- in drying laundry
- in getting rid of lice in clothes.
- in killing vermin in infested food.
- in the production of ointments, when melting substances (using the water bath in the solar oven).
- in hospitals, in the use of solar sterilizers.

The solar oven is simpler to build than you might think. Its main part is a box. This can be of different materials: wood, tin, plastic, wicker or clay. The box is insulated from the inside with glass wool (but fillings such as straw, paper, cotton, rags or

Solar Dryers



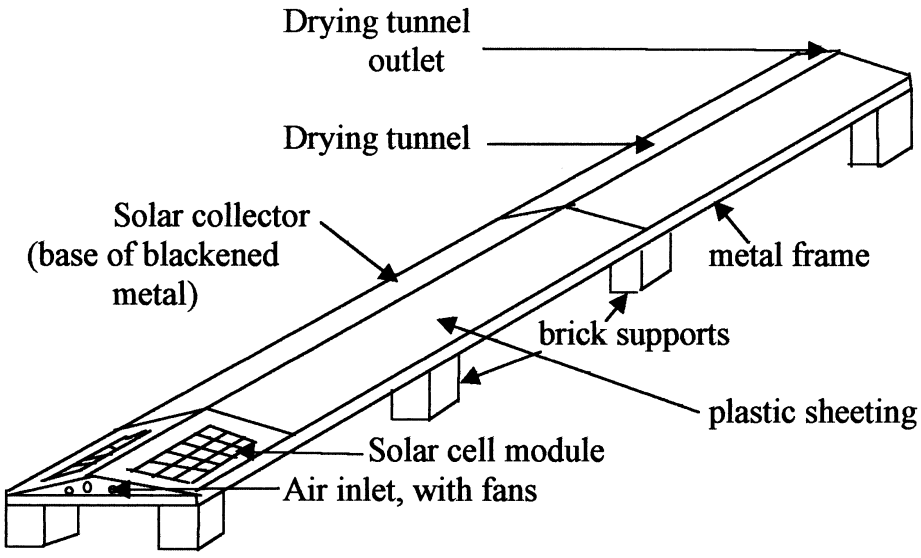


a = glass
b = aluminium foil
c = wood, d = black tin

A. **Solar dryer**: Air flows in from below, is heated and dries e.g. leaves or mangoes which lie on the grids.

B. **Solar oven**: Insulated wooden box covered with glass. The lid (covered with aluminium foil) is adjusted according to the position of the sun.

Solar Tunnel Dryer



C. **Tunnel Dryer**, designed at Hohenheim University, Germany. It is 18 metres long, 2 metres wide and has a drying area of 20 m². It is ideal for the commercial production of dried leaves or fruits.

wood shavings will do as well). The inner lining of the box is made of an iron sheet (e.g. corrugated tin), hammered flat and painted black. The box is covered with a pane of glass from a window (best if double-glazed). The sunlight is absorbed by the black surface inside the oven and the black cooking utensils. The rays of the sunlight are transformed into heat. The temperature can reach 100-180°C, depending on the intensity of the sunshine and how well sealed and insulated the oven is. A reflector (this means simply the lid of the box covered with aluminium foil) helps to mirror additional light into the box. You can make ovens of different sizes according to your personal needs. If there is no glass available, you can provisionally use plastic foil. Detailed plans for its construction can be found in the *anamed* publications.

If you have no good dryer available, use a new transparent plastic bag, and a carton that just fits into it. Put your medicinal plants into the carton, and the carton into the plastic bag. Put this package in the sunshine: In this way the temperature in the bag may easily reach 80°C, far higher than you need to dry medicinal plants, which should be dried at no more than 50°C. Be sure, therefore, to leave the plastic bag more or less open.

THE SOLAR DRYER (see picture p 41)
This is ideal for a gentle and quick dehydration of medicinal plants without harming the useful substances of the plants through ultraviolet rays or overheating.

Air flows into the space between a sloping board painted black and a pane of glass covering it. The air is warmed, moves upwards and is led into a kind of chimney. Medicinal plants that are to be dried are put on nets or grids fixed inside the chimney.

For more information, see www.ulog.ch.

HOW TO PRODUCE THE BLACK PAINT FOR SOLAR EQUIPMENT
If you want to make sure that the black paint does not contain any toxic heavy metals, you can make the paint yourself. Buy black ferric oxide (available at a good chemist's shop - 5 g will do for one solar oven). Mix it with a colourless varnish for metal or wood. You can easily make varnish yourself out of local oils or resins (see chapter 6.8, elemi). Or, to make a piece of metal black, put oily seeds (groundnuts or castor seeds) into a saucepan, cover the saucepan with a metal cover and heat until the contents turn to charcoal, when the metal cover will have also turned black.

2.8 QUANTITIES AND DOSAGES

a) Quantities in producing medicine

Professor Kabangu says, "Dosage is the point mostly questioned by people who despise traditional medicine." In our experience not only those sceptics but "ordinary people" as well are afraid of being poisoned by a dubious dose given by healers.

When preparing medicines, it is possible even in villages to measure exactly enough.

Few villages have scales, but for many recipes volumes can be measured accurately enough:

1 bottle (wine, beer)	700 ml or 0,7 litres
1 mug	500 ml
1 small tin of tomatoes	75 ml
20 drops of water	1 ml or 1 gram

To talk about a tablespoon (10-20 ml) or a teaspoon (3-10 ml) is not accurate enough, mainly because the sizes of these spoons vary. In the production of medicines, therefore, it is much better to work in "units", e.g. 3 spoonfuls (units) of substance A plus 3 spoonfuls (units) of substance B will make an exact ratio of 1 to 1 if the same spoon is used for A and B.

b) Dosages in prescribing medicine

Leaves: If we recommend one handful of leaves per day for an adult, how much do we give a child? Answer: By one handful, we understand the quantity that the patient can hide in the fist. For a child also therefore, use the quantity that the child can hide in its fist.

Liquids: If we recommend one litre per day of a particular tea, how much do we prescribe for a child? Answer: Follow this guide:

Weight of patient (kg)	Age	Dosage
5-6	2-3 months	100 ml
7-10	4-11 months	200 ml
11-14	1-2 years	300 ml
15-18	3-4	400 ml
19-29	5-9	600 ml
30-39	10-11	700 ml
40-49	12-13	800 ml
50+	adults	1000 ml

Be careful: not every tea that is suitable for adults is also suitable for children!

2.9 PRODUCTION OF A VERY SIMPLE BALANCE

Exact dosages can only be prepared and given with the help of a balance or weighing scales. Not only healers, but also many dispensaries have no accurate means of weighing amounts between 1 and 50 grams. This balance is very simple; it is designed to hang on a wall. Although simple, it is quite accurate.

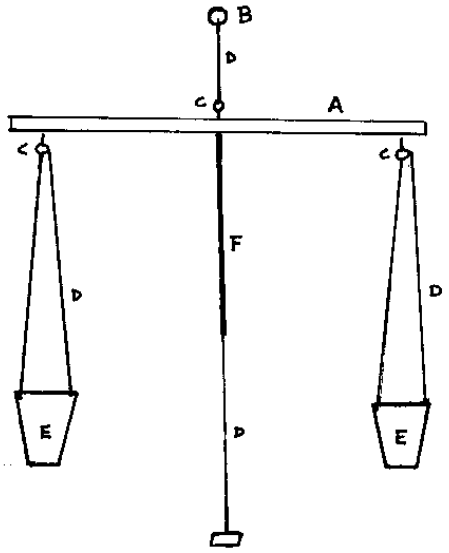
Materials:

A. 1 piece of good quality wood, 30 cm long and 1 cm square.
B. 1 large hook, about 6 cm long.

C. 3 small "eye" screws, about 2 cm long.
D. Fine string – about 300cm (90 plus 90 plus 90 plus 30).
E. 2 plastic dishes or cups from the local market with a volume of 250 to 500ml, and ideally with rounded bottoms, to make the weighing pans.
F. 1 bicycle spoke

Construction

1. Screw the large hook into the wall where you wish to hang the balance.
2. Screw one of the eye hooks into the exact middle of the piece of wood A. Then connect this hook to the hook in the wall with the 30cm piece of string. Check that the wood balances.
3. Screw the other two eye hooks into the piece of wood, on the opposite side from the one in the middle, and exactly 1 cm from each end.
4. Prepare the plastic weighing pans E. If you are using cups, remove the handles. Make two holes 1 centimetre below the top edge of these containers, opposite to each other.
   For each pan, cut one piece of string, 90cm long. Tie it to one hole in the pan, pass it through the eye at one end of the piece of wood, and tie the other end to the other hole.



5. Into the middle of the piece of wood, opposite the eye hook, screw a bicycle spoke.
6. Make a plumb line: Fix ¼ of a candle to the end of a 90cm piece of string. Tie the other end to the hook on the wall. This gives a line that is exactly vertical.
7. Hang the scale from the large hook in the wall. Check that it is exactly balanced, i.e. that the bicycle spoke is exactly in front of the plumb line. If not, file a little wood away from the heavier side. The balance is now ready for use.

Production of the weights

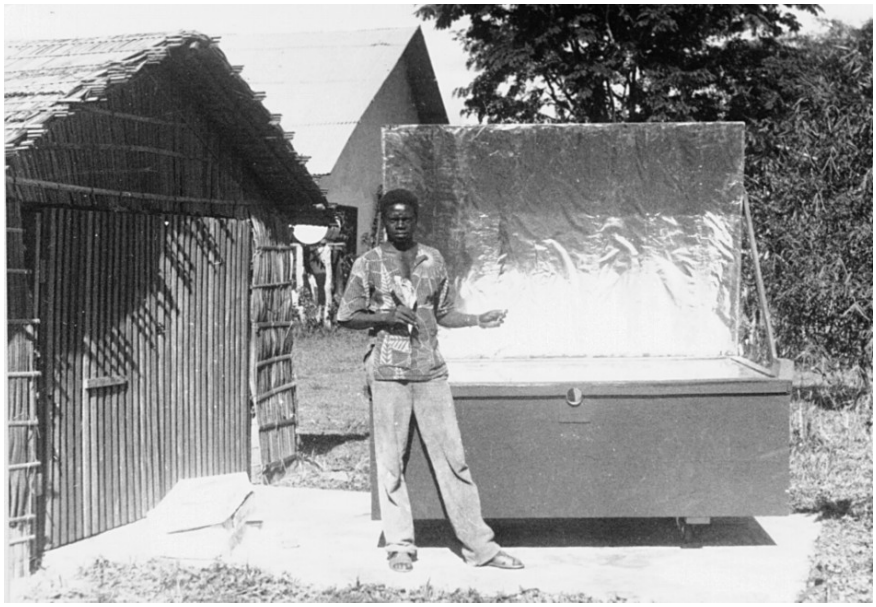
Standard photocopy paper weighs 80 grams per square metre. This is written on the packet. Since there are 16 sheets of A4 paper in 1 square metre, that means that each sheet of paper weighs 5 grams. Knowing this, one can easily make weights of 1, 2, 5 10 and 20 grams. Keep these pieces and sheets of paper clean and dry in a plastic bag.

Use of the scales

The scales must be used in a room free of draughts. Before use, always check that the scales are exactly balanced, and adjust them if necessary. If one pan is higher than the other, make sure that the higher pan is on the left hand side, and put small pieces of paper in this pan until the scale is balanced.

Weighing process: Always put the weights in the left pan, and the (plant) material to be weighed in the right pan, until the scales balance once again.

Home made tools for Natural Medicine



A

B

C

A. Solar oven
B. Weighing scales
C. Water bath

CHAPTER 3

DIFFERENT TYPES OF MEDICINES

Medicinal plants often have a specific taste (bitter, sweet, sour, aromatic) according to the substances the plant contains.

To produce a medicine, these substances are extracted from the plant and dissolved in a liquid. The most basic and common process for producing medicines, therefore, is:

PLANT + LIQUID + HEAT = MEDICINE

Medicines made this way are of three categories:

- for internal use only (i.e. to be taken orally).
- for external use only (i.e. to be applied on the skin).
- for internal or external use (i.e. can be taken orally and / or applied on the skin)

3.1 MEDICINES FOR INTERNAL USE

Note: All comments regarding preservation refer to rural conditions in the Tropics, and assume that there is no refrigerator available. If possible use a pot made of clay, enamel or stainless steel. This is better than a pot or saucepan made of aluminium or iron. Prepare cold water extracts, teas and lemonades fresh every day. Adding sugar to teas does more harm than good.

COLD WATER EXTRACT: Used to extract ingredients that are destroyed by heat, e.g. tephrosia. For the best extraction:

a) leaves; cut them small.
b) roots; pound them in a mortar.
c) soak these plant parts in water overnight.

Then filter. This simple extract should be freshly prepared every day.

INFUSION (BREW OR TEA): Boil water and pour 1 litre over a handful of herbs. Leave to stand for about 15-20 minutes, and then pour through a sieve or filter through a clean cloth. Use within 1 day.

DECOCTION (ALSO CALLED TEA): If you want to extract substances out of thick leaves, roots or bark, always use this method. Boil 1 handful of plant material together with 1 litre of water for about 20 minutes, and then sieve. Use within 1 day.

LEMONADES: Lemonades are drinks with refreshing and medicinal effects. Example: Squeeze 2 lemons, add 1 litre of cooled, boiled water to the juice and sweeten it with honey (or sugar of no honey is available). Use within 1 day.

SYRUP: Some medicinal plants do not have a good taste. In order to make the medicine taste better or keep longer, you can make a syrup. First prepare an infusion or decoction from the plant. Filter, then add 1 cup of sugar to 1 cup of the liquid. To dissolve the sugar, bring the mixture to the boil and stir constantly. The syrup is poured into bottles while still boiling hot. If you have a scale, take 1650 g sugar to 1000 g of liquid. You will get 2 litres of syrup, which can be kept for three days.

Syrup that has started to ferment must be thrown away. Please do note that sugar does not have any medicinal value, except in cases of malnutrition. In fact the opposite is true, sugar is a danger to your general health, especially your teeth. Sugar is added to syrup only to conserve the medicine and improve the taste.

TINCTURE: In addition to the plant extract a tincture contains varying quantities of alcohol and water. For both internal and external use, we never use denatured alcohol, but either medicinal alcohol from the pharmacy, from the sugar cane factory or spirits such as gin or whiskey from the shops.

Tincture of medicinal plants: Normally, 100g herbal material is mixed with 1 litre of the alcohol and water mixture (mostly 45% or 70% alcohol). Do not heat, but pour into a bottle and allow to stand in a warm place for 1 week. Shake regularly, then filter. The more alcohol the tincture contains, the longer you can keep it. Under tropical conditions, provided that the bottle is closed tight, we reckon:

20% alcohol:	1 year
30% alcohol:	3 years
40% and more:	5 years

Adding sugar makes an **ELIXIR**, which can be kept even longer. Add 100g sugar to one litre of tincture.

Chemical tincture: Chemicals are dissolved in a mixture of alcohol and water (example: iodine tincture).

MEDICINAL WINE: This also takes advantage of the fact that many medicinal substances dissolve well in alcohol. Good wine contains alcohol (about 12%), sugar and colouring essences. Add the dried medicinal plant (e.g. pounded cola nut) to honey wine (see chapter 4.8) or a wine made from grapes, and close the bottle tightly. Allow it to stand for 1 week. Use after filtering. Depending on the amount of alcohol (which acts as a preservative) you can keep it for 1-6 months.

ENEMA: Enemas are inserted into the intestines through the anus by means of a small rubber ball. There are enemas for constipation and diarrhoea. If a child is unable to drink oral rehydration solution (see chapter 4.6), this ORS can be given through the anus. Before attempting to give an enema, take instruction from an experienced practitioner.

In general, we are against the use of traditional enemas, especially for diarrhoea for children. We have seen enemas being made from poisonous plants. In this case the poison is absorbed by the mucous membrane. In Africa, many children die after being treated with such enemas.

3.2 MEDICINES FOR EXTERNAL USE

LOCAL BATH: Preparations used for only one part of the body, and which contain herbal extracts (mostly in the form of decoctions), are called local baths. Examples: foot bath, hip bath, eye bath, ear bath.

COMPRESS (WOUND DRESSING): Of all the medicines used externally, compresses are the most simple. In case of an abscess or inflammation, the plant is applied directly onto the skin, and secured with a bandage, string or fibre. The plant may be applied as a whole leaf, or as the paste produced by pounding. Contrary to the advice given in many books on traditional medicine, we recommend that you never apply fresh or unboiled leaves to open wounds or burns. On their surface there are millions of microbes (staphylococci, tetanus, viruses, funguses etc.) which may infect the wound. Therefore, always boil leaves for 20 minutes before using them externally. Change the dressing three times daily.

GARGLE: Gargles are medical preparations for washing and treating the mouth and throat (they are not to be swallowed!). Home-made gargles should be kept for 1 day only.

OINTMENT: Ointments are preparations of a soft consistency which are applied to the skin. They are used either to cover the skin (as a cosmetic), to treat the skin, e.g. in the case of a fungal infection, or to help a substance penetrate to layers located deeper in the tissue, e.g. to treat rheumatism. In order to prepare an ointment, heat the plant material with vegetable oil on a water bath, filter, add hot wax (e.g. beeswax) and leave it to cool. For more detail, see chapter 4.4.

A preparation containing water is called **CREAM**; if it contains powder it is called **PASTE**.

SOAP: Soap is the product of the chemical reaction between an "alkali" (e.g. sodium hydroxide, NaOH) and a "fat", either vegetable oil or animal fat. If the soap contains more NaOH than oil, it cleans well but irritates the skin. If there is more oil than NaOH, the soap is less efficient in cleaning but better for the skin (see chapter 4.1).

If, after bathing, you like to look after the skin, use oil (see below) in order to nourish the natural, protective properties of the skin. After bathing some people rub soap onto their skin again; do not do this.

MEDICINAL SOAP: It is only the doctors and nurses in the hospitals who need to wash their hands with soap that contains a disinfectant. Melt pounded soap and a little water in a saucepan, add the active medicinal substance (e.g. sulphur or a disinfectant) and leave the mixture to cool. Soaps containing disinfectants are not needed at home. Soaps that are helpful with a range of skin problems may be produced by mixing neem oil with soap as described above.

Never use the so-called antiseptic soaps that contain mercury for bleaching the skin. They are very dangerous for your skin and health.

TINCTURE: Alcohol may be bought in large quantities from sugar cane factories. For small quantities, you may buy whiskey or gin from the shop. Gin produced in the village is normally much cheaper. Traditionally alcohol is produced by distillation as follows: Wine made from such as bananas, rice or corn is heated up, and its vapour cooled over a 10 metre long pipe of bamboo canes. Continue the distillation process until you have the alcohol content required, measured by using an alcohol gauge.

For reasons of safety, use this alcohol only:

1. As a disinfectant. To prevent misuse, add 1 drop of shampoo or washing-up liquid to one litre of alcohol. This gives so-called denatured spirit.
2. For making tinctures for external use (e.g. *Cassia alata* tincture, see chapter 5.8).

3.3 MEDICINES FOR INTERNAL AND EXTERNAL USE

POWDER: Powders can be used internally as well as externally. Bark, root, leaves, seeds, sometimes entire plants are cut and left to dry, if possible in the shade. It is important that the material is very dry before you pound it in the mortar. Fasten a piece of nylon cloth over a normal strainer (sieve) with some clips. Sieve the powder through the nylon by rubbing it with a piece of wood or plastic with a straight edge. Example: Medicinal charcoal powder for diarrhoea.

MEDICINAL OILS: Produce **seed oil** out of peanuts, sesame, cocoa, coconuts, palm fruits, neem, shea and suchlike. Some vegetable oils are not only nutritious but of medicinal value even without further processing:

a) Internal use: Many oils contain vitamins A, D and E (see chapter 4.10). Also used is castor oil for constipation.
b) External use: Most oils have medicinal properties, e.g. for skin care, to prevent infections, or for haemorrhoids.

Animal fats and oils are seldom used in the villages as they are rare and expensive (we advise against using boa oil in order to protect the boa species). In our recipes we often use palm oil, which is found in abundance in many African villages; if it isn't, sow oil palms! Instead of the red palm oil (made from the fruit) you can also use the colourless oil from the palm fruit kernel.

If you use home-made palm oil, it is important that it is processed (pressed) on the very day the fruits are harvested, so that the palm fruits are not stored until they start to go mouldy (which unfortunately happens much too often).

When preparing oils for external use according to our recipes, try and use oil which is locally available at a relatively cheap price.

In order to make a **medicinal leaf oil**, 3 units by volume of dried, powdered leaves or flowers are mixed with 10 units of good quality vegetable oil and heated on a water-bath. For the method, see Chapter 4.3.

Oils processed in this way are used to treat scabies, rheumatism and skin diseases. For cosmetic use, such an oil is better than the beauty milk you can buy in the shops, because the latter contains colourings and preservatives.

CHAPTER 4

SAVE MONEY AND MAKE IT YOURSELF!

4.1 SOAP PRODUCTION AT THE VILLAGE LEVEL

According to a Roman legend, soap was discovered on Mount Sapo. On this mountain sacrifices were made to the gods. After a heavy rainfall, the water mixed with the ashes and the fat of the sacrificial animals and formed a mysterious substance which flowed down the mountain. There the people who were washing their clothes in the Tiber river noticed that the new substance made washing much easier: the mixture of water, ashes and fat had turned into soap! The word "saponification" comes from this legend.

Cleanliness and good hygiene is important and cheaper than many medicines. So one needs soap. But what if even the most simple curd soap is too expensive to buy?

Solution A: Collect money in Europe, buy soap and send it to Africa. In this case, a product will be imported, of which more than 90% of the ingredients are in plentiful supply in Africa: palm oil and water! And local people suffer a loss of dignity.

Solution B: Organise seminars so that people will be able to produce their own soap in their own villages, without any special equipment, such as weighing scales. (I was once arrested on the grounds that spreading these recipes would cause the government loss of tax revenue!)

We have developed simple **recipes for different types of soaps**. These soaps are in no way inferior to commercial soaps, neither in appearance nor in effectiveness. On the contrary, they even irritate the skin less because they do not need any colouring and preservatives.

Our soap is a chemical product of three components: water, palm oil and sodium hydroxide (NaOH). The latter is to be found in any tropical capital. Available in packets of 1 kg, it is sold in the form of small pastilles for cleaning (e.g. toilets). You can get it cheaper in sacks of 50 kg from chemical factories - you can find out their addresses at your local brewery (breweries use NaOH for cleaning bottles).

To produce soap you need the following utensils and materials:

- 1 saucepan or pot (clay or enamel)
- 1 plastic container (5 litres)
- 1 big bowl (plastic or clay)
- 1 plastic spoon (or something similar made from plastic)
- 1 mug (plastic, enamel or clay)
- 1 knife
- empty tins (see below)
- water

- oil. Whenever in these recipes we speak of "palm oil", you may use: red palm oil, palm kernel oil, self-bleached palm oil (see chapter 6.21), industrially bleached palm oil or good quality vegetable oil, especially shea butter.

Further helpful utensils are:

- nylon cloth or plastic foil
- 1 square wooden box

Measuring units (always level):
As measuring units take for example a tomato tin (of tomato pulp, 70 g), a small fish tin (155g), a big fish tin (425g) or any other tin. All units are measured by volume.

Caution: Sodium hydroxide is dangerous. In the village seminars you must discuss how to keep it out of children's reach. If a child swallows NaOH, it must drink a lot of milk or a mixture of 1 cup of lemon juice/vinegar and 20 cups of water; in any case large quantities of water.

NaOH attacks the skin, always wash hands well! As the humidity in the air turns NaOH into a liquid, it must be stored in airtight containers.

NaOH attacks all metal. It is best to use clay pots produced in the village (this will at the same time help to support local employment!). If clay pots are not available use enamel or plastic ones.

Several different soaps can be produced:

1. Ordinary curd soap - for hygiene

a) Heat 7 units of palm oil or shea butter until it is a runny liquid, and filter it into a clay pot or plastic bowl.
b) Pour 5 units of cold water into a plastic container. Add 1 unit of NaOH WITH GREAT CARE: The mixture will become very hot! Therefore do not close the container. Be sure all NaOH has dissolved.
c) THE NEXT DAY: Very slowly, add the warm NaOH solution to the warm palm oil, stirring quickly and continuously with a plastic spoon.
d) When all the NaOH solution has been added, stir as hard as you can! The soap slowly turns pulpy.
e) Just before the soap's texture becomes too solid to pour, pour the soap into a wooden box lined with plastic foil. After 3 hours, if necessary, smooth the surface with a ruler or something similar with a straight edge, then, pressing firmly, wipe it completely smooth with a damp cloth.
f) On the same day, cut the soap into pieces. If you want to sell it, cut it into pieces that are commercial size, so that people can compare prices.
g) Leave it to mature in a shady place for 2 months (e.g. in a cardboard box under the roof). This is because the chemical reaction which is producing the soap still continues for so long. Resist the temptation to use it sooner, because the soap will be too aggressive. If you wish to use the soap immediately, you can place it in a solar oven for one day at a temperature of 60 to 80°C.

2. Yellow - white - red soap

Palm oil is given its yellow-red colour by its carotene content. For this reason, with the recipe above, you obtain a yellow soap. This is a pure, natural colour that is totally harmless. Only if you want to use the soap for washing white clothes do you need to destroy the carotene. Do this by carefully heating the palm oil in a covered pot on the fire, until a piece of paper dipped into the oil remains colourless. This process produces extremely unpleasant smoke and the oil may easily catch fire – therefore wear glasses and be sure that there are no children around!

You can produce red soap by adding 1 unit *Bixa orellana* seed (see chapter 6.5) to the palm oil. Heat in the water bath for 30 minutes, filter and continue the process as for untreated oil above. *Bixa orellana* colouring consists of carotene and is harmless.

3. First attempt

When you first try making soap, use only a small unit, e.g. a spoon (made out of wood or plastic).

- palm oil 7 teaspoons
- water 5 teaspoons
- NaOH 1 teaspoon

4. Beauty soaps

These soaps are completely neutral. They still contain free oil, and are ideal for body care because of their re-greasing properties. Just before the soap gets too hard to stir, shapes can be cut out (heat a pastry-cutter or dip it into some paraffin), or a pattern can be pressed onto the soap as a decoration.

a) Take, and proceed as for curd soap (1) above:
   - palm oil 8 units
   - water 5 units
   - NaOH 1 unit

b) Alternatively, use:
   - curd soap (commercial or home-made) 4 units
   - vegetable oil (palm oil, peanut oil, salad oil) 1 unit
   - water 1 unit

Pound the soap, and mix in the oil and water. Heat up slowly until the soap dissolves. Stir the mixture until cool, then pour into a mould.

5. Cream or honey soap

Use recipe (a) for beauty soap above, but as soon as the three substances are mixed, add 1 unit of honey.

6. Perfumed soap

Make beauty soap as described above. After 8 weeks, put each piece of soap into a plastic bag and add some drops of perfume such as lemon grass oil. The perfume is quickly absorbed by the soap. Resist the temptation to add the perfume earlier, because the remaining NaOH would destroy the perfume.

7. Shaving / moisturising cream

- fresh aromatic leaves (e.g. eucalyptus, lavender, lemon tree) 2 units
- water 2 units

Boil together for two minutes, leave top steep for 30 minutes, and then filter and add curd soap (that is at least 2 months old), pounded 2 units

Gently heat the mixture till it becomes homogeneous. This is best done in the solar oven to minimise evaporation. Now you may add one unit of honey, and even one quarter of a unit of finely sieved (through a nylon cloth) clay or kaolin, and maybe some drops of perfume. Store the cream in an airtight container to prevent the product from drying out. The container may be of glass, plastic or ceramic.

8. Hard Soap (used for removing rough dirt)

- palm oil 6 units
- water 5 units
- NaOH 1 unit

Before the soap gets too hard, add 2 units of finely sieved kaolin (white "clay", found in rivers, in Africa used for painting walls). If kaolin is not available, you can also use finely sieved wood ashes. Store the soap for 3 months before use.

9. Washing powder

Compared to curd soap, washing powder contains less palm oil;

- palm oil 5 units
- water 4 units
- NaOH 1 unit

Leave to dry for 2-3 months, then pound the soap and use a grater or sieve with a large mesh to obtain flakes of equal size.

10. In case you have problems.....

If the soap does not turn out as expected (e.g. if it shows different colourings or if it has a semolina-like texture), cut the soap into small pieces one day after preparation, and heat 1 unit of soap with 1 unit of water in a saucepan until the mixture melts. Allow it to cool down without stirring. Pour into moulds and leave to dry.

11. Soap that costs nothing - or what to do if no NaOH is available

This method, however, requires a great deal of work, a lot of firewood and a lot of effort. Use the following "waste materials", which are rich in potassium, for example:

- banana peels (plantain, the vegetable banana called matoke in Uganda, is best), or
- pawpaw stems (trunks), or
- pods of cocoa beans.

Dry these items in the sun, or in the solar oven, and burn them.

It is less bother to collect the dry ashes from your fireplace once a week, but the ashes must only come from burning wood and unprinted paper, not from plastic or other synthetic materials! Fill a 20 litre plastic bucket with 10 litres of these ashes,

and add 15 litres of boiling water. Stir well. After 10 minutes, filter through a cloth into a plastic bucket (this may take 12 hours). To the remaining ashes, add again 5 litres of boiling water, stir for 10 minutes and filter. Combine the filtrates in a clay pot (if you use a metal pot it will be destroyed!) Bring the filtrate to the boil and boil until there is only 200ml (1 cup) left. Add 1 cup of palm oil and very briefly bring to the boil again (be careful, it foams a lot). Pour into a mould and leave to dry.

12. Soap made out of other oils

The advantage of palm oil and shea butter is that, at room temperature, they become hard. This makes soap production much easier: the glycerine that is a by-product of the soap does not have to be separated, but remains within the soap.

If you want to use other oils or fats (e.g. groundnut oil or sunflower oil), then the production is far more complicated: Dissolve 36g NaOH in 200 ml of water (be careful!); add 200g hot fat (from pigs/cattle) or vegetable oil; stir. Add 600ml hot water and maintain the mixture at a temperature of 70-80°C for at least 6 hours (e.g. by means of the solar oven); stir every 15 minutes. Then add a mixture of 120g table salt and 200ml water. Allow to cool: The soap settles above the water. Pour off the water, pour the soap into moulds and leave to dry for 1-3 months.

Note: For more information about the use of other oils and natural perfumes see www.thesage.com.

Home-made soap is vastly superior to commercial soaps!

4.2 INFUSIONS AND DECOCTIONS

For instructions on how to make infusions and decoctions, see chapter 3.

Tea for:	Plants and chapter:
Amoeba dysentery	Asthma weed 5.12; guava 5.15; mango 5.13; pawpaw 5. 4.
Asthma	Asthma weed 5.12; eucalyptus 5.11.
Bronchitis	Lemon 5. 8; eucalyptus 5.11.
Constipation	Coffee senna 6.10; ringworm bush 5. 6.
Cough	Eucalyptus 5.11; lemon 5. 8; orange 6.14; avocado 6.37.
Cramp	Asthma weed 5.12; passion flower 6.36.
Diabetes	Moringa 5.14; bean 6.38; maize 6.49; onion 6.2.
Diarrhoea	Asthma weed and ORS 5.12; guava and ORS 5.15; mango and ORS 5.13.
Flatulence	Eucalyptus 5.11.
Fever	Lemon grass 5. 9; sweet basil 6.34.
Haemorrhoids	Coffee senna 6.10; mango 5.13; artemisia 5.4.
Hepatitis	Pawpaw 5.7.
High blood pressure	Maize 6.49; onion 6.2; vinca 6.48.
Indigestion	Pepper 6.39; turmeric 6.19.
Kidney infection	Asthma weed 5.12; maize 6.49.
Low blood pressure	Coffee 6.16.
Malaria	Artemisia 5.4; cinchona 6.12; bitter leaf 6.47; pawpaw 5.7; lemon grass 5.9.
Oedema	Maize 6.49; mango 5.13.
Oral mucous membrane infection	Mango 5.13.
Scurvy (vitamin C deficiency)	Lemon 6.13; guava 5.15.
Sleeplessness	Passion flower 6.36; peanut 6.4.
Sore throat	Mango 5.13.
Stomach irritation	Guava 5.15.

4.3 MEDICINAL OILS

Recipe: PLANT + OIL + HEAT = MEDICINAL OIL

First prepare a water bath: Put a pot one quarter filled with water on the stove. Another slightly smaller pot is placed in this pot. The ingredients are heated in this smaller pot. Place a lid on the smaller pot. This water bath ensures that the temperature of the oil never rises above 100°C. Above 100°C many of the medicinal properties of the plant material would be destroyed. Be sure that no water can go into the smaller pot even when it boils - if the oil in the inner pot is contaminated with water, the oil goes rancid much more quickly.

The leaves must be absolutely dry, so that no water enters your oil from the leaves. For optimum extraction of the medicinal component, pound the leaves very finely. Use the best locally available vegetable oil possible for haemorrhoids or cosmetics, such as palm kernel oil, shea butter or olive oil. Palm oil, sunflower oil or peanut oil may also be used. For massage or rheumatism, these less expensive oils are adequate.

Put the mixture into the water-bath and let the water simmer for 60 minutes, stirring every 15 minutes. Filter and leave to cool without stirring. Put the residue in the filter on the compost heap. This medicinal oil needs protection from sun, heat and air. Therefore store your oils and ointments in tightly closed containers in a cool place. Fill them almost up to the top to minimise the amount of air. Never mix old products with new ones! When oils smell rancid throw them away straightaway.

Do not let yourself be attracted by commercial products because of their colour or perfume. Colourings and preservatives can cause allergies. Your home-made oils and ointments are certainly better for your health!

The ingredients for these recipes are given in volumetric units (e.g. mug, tin, cup). The amounts for plants refer always to the dried, pulverised state.

A. Baby oil

No plant material is required, simply use good vegetable oil.

B. Beauty oil

- leaves from lemon tree or orange tree 3 units
- vegetable oil 15 units

C. Massage oil or insect repellent oil

- eucalyptus leaves 4 units
- vegetable oil 15 units

D. Oil for rheumatism

- chilli fruits, dried, pounded 4 units
- (if available): elemi resin (chapter 6.8) 1 unit
- vegetable oil 15 units

Dried and pounded leaves of *Eucalyptus globulus* (1 unit) may also be added.

Avoid contact with the eyes! Do not use for treating small children.

When you massage an area where the skin is very thick, add some kaolin to give a more intense warming effect (see back cover).

E. Oil for haemorrhoids

Depending on their availability, use plant material from some or all of the following;

- *Aloe vera* leaves (must be very well dried, 5.2), guava leaves (5.15), chamomile flowers (6.28), basil leaves (6.34), artemisia leaves (5.4), in total 2 units
- good vegetable oil, e.g. shea butter, palm kernel oil, or olive oil 15 units

F. Oil for scabies (whole body treatment)

- leaves of *Cassia alata, Azadirachta indica,* or *Melia azedarach* 3 units
- vegetable oil 15 units

G. Oil for scabies (treatment for limited areas): Anamed scabies oil

Here we do not heat, but we simply mix:

- kerosene (as used in kerosene lamps) 1 unit
- vegetable oil 1 unit

Use three times daily for several days. If your hospital knew this recipe, it would no longer need to buy the expensive benzyl benzoate or the toxic Lindan solution!

For **head-lice**, rub a teaspoonful of this oil into your hair twice a day, but for not more than 2 to 3 days. This oil is also very well regarded for its soothing effect in cases of itching by **filaria**; rub it into the inflamed skin.

H. Oil to repel mosquitoes and other insects

Make from eucalyptus leaves and vegetable oil as described in Chapter 5.11.

4.4 OINTMENTS

Recipe: PLANT + OIL + HEAT + WAX = OINTMENT

To produce ointments, first produce the appropriate medicinal oil (see the previous section, 4.3). Filter the oil while it is still hot. Melt the wax and filter it. Mix the filtered oil (still hot) with the filtered wax (still hot), and stir slowly until completely mixed. Pour into labelled containers while still hot. Store ointments in a cool place.

The advantage of palm oil is that ointments prepared with it do not turn rank even after five years. If, however, they are stored at a high temperature, the ointments may become gritty. Warming them up briefly makes them easy to spread again.

Wax: To produce cosmetics or ointments for sensitive skin, use only beeswax, see chapter 6.29. If you keep bees, you can produce your own beeswax and have a plentiful supply of honey. If beeswax is too expensive, use commercial wax. For small amounts, white (wax) candles are quite adequate. In general, to 10 units of oil add 1 unit of wax. In very hot climates add 3 units of wax to 20 units of oil.

The oil/wax mixture is far superior to Vaseline, because Vaseline does not penetrate the skin. Contrary to common belief, Vaseline, called also "petroleum jelly", is not good for your skin! It is like putting a plastic bag around your skin; so it is good to use it before doing a dirty job, e.g. repairing a bicycle or car. Never use it as a cosmetic for your face!

A. Ointment for babies

- good quality vegetable oil 10 units
- beeswax 1 unit

B. Ointment for rheumatism

- rheumatism oil (see chapter 4.3) 10 units
- beeswax 1 unit

C. Ointment for haemorrhoids

- oil for haemorrhoids (see chapter 4.3) 10 units
- beeswax 1 unit

This ointment is very good for external haemorrhoids. For internal haemorrhoids, you may produce suppositories. Melt 10 units of beeswax and also 6 units of this ointment and mix. Pour into suppository moulds. If you have no such moulds, pour into a normal plastic container, and, when hard, cut into small suppository sized pieces (about 2g). Store in the coolest possible place so that the suppositories remain hard. Funnily enough, this product is exactly the same as that used for lipstick!

D. Ointment for wounds and burns

- chopped onions, dried for one day in the shade 1 unit
- good vegetable oil 10 units
- good quality honey 5 units

Fry the onion in the oil until golden brown, do not use the water bath. Sieve, add the melted beeswax and the warm honey, stir and pour into clean containers.

E. Beauty mask

- flesh of a very ripe avocado fruit 6 units
- juice of a lemon 1 unit

One unit may be 1 teaspoonful. Mix in the evening, put it on your face or damaged skin, and wash off in the morning without using soap.

F. Ointment for scabies and fungal infections

Produce 10 units of *Cassia alata* scabies oil as described under 4.3F. Add 1 unit of beeswax. *Cassia alata* ointment is also used as an anti-aging agent – cheap to produce but sold at a high price!

G. Alternative ointment for scabies

Mix 1 unit of pulverised sulphur in 20 units of Vaseline or lard to produce a 5 per cent sulphur ointment.

H. Protective grease or shoe polish

- the cheapest vegetable oil 7 units
- colourless candle-wax, 3 units

Heat up together, leave to cool. This can be used in place of Vaseline.
For black shoe polish, add one unit of finely pounded charcoal powder.

4.5 POWDERS

A. Baby powder

Use only cassava roots that are well dried and therefore totally white. Dry them again for one day in the solar oven. Pound them and sieve through a nylon cloth. If you have no solar oven, dry 1 cup of cassava (manioc) flour very slowly in a saucepan

until very dry and slightly brownish. Sieve straight after heating through a nylon cloth. If you wish, you may add 1 drop of perfume to one cup of this powder.

Store in an airtight container.

B. Medicinal charcoal powder

Method A: To make small quantities, use groundnut shells, coffee bean shells, or even coffee beans. Dry the material, pound to a powder and heat in a covered saucepan until it turns into charcoal. Be careful, because the powder may suddenly burn. Keep children well away.

Method B: For larger quantities, use wood that is neither poisonous nor resinous (i.e. with no sticky sap), e.g. from the eucalyptus tree or the inner (non-fruiting) branches of the mango tree. Make charcoal in the way that is well-known in the Tropics.

For both methods, then pound the charcoal and sieve it through a nylon cloth. To sterilise your charcoal, heat the powder again in a covered saucepan until you see red sparks. This kills all the germs. Store medicinal charcoal in airtight containers.

This pulverised charcoal absorbs poison and gas. For wind, bad breath and diarrhoea, adults should take 1 tablespoon 3 times daily. However, if children have diarrhoea, the most important thing is to replace the loss of liquid with ORS, see chapter 4.6. Use externally for smelling and suppurating wounds, but only if they are fairly superficial.

For plant poisoning: If a person has swallowed a poisonous plant and the hospital/ health centre is too far away, try to make the poisoned person vomit (by sticking a finger down his throat). In addition you have to give him several spoonfuls, i.e. 50 - 100g (!) of powdered charcoal together with a laxative tea (see coffee senna, chapter 6.10). In case of poisoning with paraffin, petrol or diesel, do not make the person vomit because of the high risk of pneumonia, but take the patient to the nearest health centre as soon as possible (see also castor oil plant, chapter 6.41).

C. Mineral Powder (*Bolus rubra*)

In the D. R. Congo, red earth - commonly called "itsama" by local people - is found close to rivers. Traditionally pregnant women eat this earth to satisfy their need for minerals.

An analysis of such earth was as follows:

calcium	2450 mg / kg
magnesium	1400 mg / kg
iron	14000 mg / kg
manganese	152 mg / kg
copper	16 mg / kg
zinc	18 mg / kg
cobalt	3 mg / kg

A real abundance of minerals! The majority of local people would not be able to afford mineral tablets with the equivalent contents sold in pharmacies. We recommend that you dry the earth, sieve it and then heat it in a pan to kill all possible germs.

Dosage: Anaemic children 1 teaspoon per day
Pregnant women 1 tablespoon per day

If possible, to help the process of absorbing the minerals into the body, take with lemon juice, one hour before meals.

D. Iodized Salt

Thoroughly dry 1kg salt and pulverize it. Mix it slowly with 30mg of potassium iodide (to prevent goitre).

E. Baby food, as powder

From the age of 6 months your baby needs food to supplement the mother's milk. Resist the enticements of advertisements and do not buy any baby food in the shop! Fresh food is always better! In case no fresh food is available (e.g. on journeys), here is a suggestion for home-made baby food that is both delicious and nutritious:

- grain (sorghum, rice, maize, wheat, or millet), all very dry (use the sun-box, otherwise roast for 20 minutes), then grind 650g or 3 cups
- legumes (soybeans, beans, peas, lentils) boil for about 20 minutes, dry thoroughly and pound 350g or 2 cups
- oil fruits (peanuts without skin, sesame) 100g or 1 cup
- dried green leaves of *Moringa oleifera* if available 25g or 1/4 cup
- IN CASE OF MALNUTRITION ONLY (it may damage your teeth!) sugar 50g or 1/2 cup

Mix in the given order and store in an airtight container. Depending on the degree of dryness, (see chapter 2.7) it keeps between 1 week and 1 year. If the powder is not dry enough, dangerous fungi may grow and endanger the health of your baby.

For one meal, boil 2 heaped tablespoons of this mixture together with 350 ml water (half a 0.7 litre bottle), or mix the powder with pre-boiled cold water.

F. Tooth powders

1. For daily use: This toothpowder is better than commercial toothpaste. Dry and pound to a fine powder either the leaves of *Eucalyptus globulus* or the bark (from a branch) of the neem tree (*Azadirachta indica*). Look for trees in a clean environment (e.g. a forest) and, for eucalyptus, harvest good leaves more than two metres above the ground.

   Heat one unit of table salt very strongly in a sauce-pan. While still hot, pour it into an extremely clean mortar, and add three units by volume of eucalyptus leaf powder or neem bark powder. Pound together, and sieve through a nylon cloth. Store in an airtight container. Put a small amount on your toothbrush.

2. **Powder for dental caries**: Mix one unit of salt with one unit of clean wood-ash. Place a neem-twig (or eucalyptus twig) in this mixture and rub it carefully over the brown spots on your teeth. Do this 3 times daily. This is helpful only when the spots of decay are still very superficial.

4.6 ORS REHYDRATION SOLUTION)

In **all** cases of diarrhoea (whether accompanying malaria, bacillary infection, typhoid fever etc.) **always** give ORS! Continue to give the normal food, to avoid vitamin deficiency. You can make ORS yourself, there is no need to buy expensive packages; even free packages make people dependent!

A. The ingredients

With diarrhoea, the most important thing is to replace the loss of water. For children or adults, always give enough ORS.

ORS has three components: water, sugar, salt.

- WATER: Use good water, if no clean spring water is available, use boiled water. Or make tea out of guava leaves.
- SUGAR: Ideally use honey. Otherwise use household sugar (in hospitals glucose). If you have no sugar, or the patient is diabetic, you can replace the 30g (see B below) household sugar with:
  a) about 100g mashed sweet bananas (do not boil).
  b) about 100g sweet potato - boil for 5 minutes.
  c) about 30g (3 heaped teaspoonfuls) wheat flour, pounded rice or sorghum. Boil these in water for 5 minutes.
- SALT: Ideally, use so-called "indigenous salt" (made locally from the ashes obtained from burning branches). This is particularly good, because it also contains potassium. Otherwise use household salt (sodium chloride).
- POTASSIUM - an additional ingredient which should be added if the diarrhoea persists for several days. This should only be added, however, if the patient is able to urinate. Potassium helps the muscles of the intestine and bowels to function normally. Good sources of potassium include avocado, banana, pumpkin, coconut water, carrots, cooked soya, peanuts and steamed dark green leafy vegetables, especially spinach and amaranth.

  In case small children need potassium, a) give some of these foods, or b) give some indigenous salt, or c) add one teaspoon fresh, clean ash (from non-toxic wood or grasses, or from dried water hyacinth, *Eichhornia crassipes*, which is rich in potassium) to the one litre of water used to make ORS (see below). After some minutes, filter the water.

If any of your materials (salt, sugar, water) is not completely clean, bring the mixture briefly to boiling point to kill bacteria.

Colorants and aromas serve no purpose whatsoever!

B. Production of ORS at the household level:

a) To one litre of water, add 4 tablespoons of honey or 2 heaped tablespoons of sugar (30g), and half a level teaspoon of salt, or
b) To one big mug (500 ml) of water, add 2 tablespoons of honey or 1 heaped tablespoon of sugar, and a pinch of salt (the amount of fine salt you can hold between thumb and index finger).

C. ORS: The dosage

Give per day: 200 ml (one glass) for every kg bodyweight of your child.

If you don't know the weight of your child, and cannot measure ml, but you do have empty, clean bottles of a particular size from fizzy drinks, the following table will help:

Table 4.1 Dosages of ORS

Age	ml per day	Size of bottle			
		0.33 litres	0.5 litres	0.7 litres	1 litre
Under 6 months	700	2 btl.	1½ btl.	1 btl.	¾ btl.
6 months to 2 years	1400	4 btl.	3 btl.	2 btl.	1½ btl.
3 to 6 years	2100	6 btl.	4 btl.	3 btl.	2 btl.
7 years and older	2800	8 btl.	6 btl.	4 btl.	3 btl.
Adults	3500	10 btl.	7 btl.	5 btl.	3½ btl.

D. Production of ORS in hospitals:

It is stupid to import packages containing 1 dose of ORS; any pharmacy can make it. Amounts necessary for 1 litre of water:

- sodium chloride (table salt) NaCl 3.50g
- potassium chloride KCl 1.50g
- glucose (i.e. dextrose), anhydrous 20.00g
- sodium bicarbonate NaHCO3 2.50g

The 2.5g of sodium bicarbonate can be replaced with 3.0g of trisodium citrate dihydrate.

Dry the table salt and potassium chloride very thoroughly (e.g. in the sun-box), pound and sieve. Mix the table salt, potassium chloride and bicarbonate, then add the glucose (all powder grains should be about the same size). Store in airtight boxes containing 30 doses each. If no glucose is available, use 30g sugar (cane sugar) instead of 20g glucose. This will not impair the efficacy of the ORS.

E. ORS: The Problem of Preservation

As airtight containers are rare in tropical countries and the salts soon turn lumpy or become moist, we developed the following recipe in our pharmacy:

- potassium chloride 33g
- table salt 100g
- commercial cane sugar 600g
- water 400ml

Dissolve potassium chloride, then table salt, then sugar (stick to the order indicated!) in hot water; bring to the boil and filter. This has even the hygienic advantage that sugar and salt, which at times get dirty during preparation or during the transport on lorries, are disinfected.
Dosage: Take 4 teaspoons in 0.7 litres of water.

4.7 THE BLACK STONE

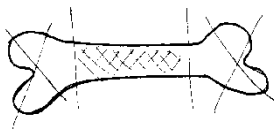
The black stone is a good example of where traditional and modern meet. In Congo, if you know how to make a black stone, you are already called “doctor”!

The stone is applied after snakebites and bites of poisonous insects, e.g. scorpions. Its effectiveness lies in its quality of absorbing an amazing volume of liquid. It contains a myriad of tiny passages; through the process of capillary action, a pressure below atmospheric pressure is created on the wound, as a result of which the black stone sticks firmly to the affected area until it has absorbed its maximum capacity of liquid.

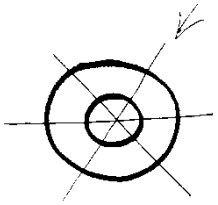
As a test, put a black stone on your tongue: It sucks itself tight and, if not removed immediately, will even make your tongue bleed when you do pull it off.

The composition of the black stone is still kept a secret, which causes some Christians to suspect magic. In fact its ability to absorb much of the poisons and other dangerous substances which result from bites is scientifically proven. It must be applied as soon as possible after the bite. (Of course snake serum is more effective, but in most health centres it is either not available or extremely expensive.)

Preparation of the "white stones"



1. Make friends with your butcher! Ask him to cut the middle third of the cow’s thigh bone into pieces (size approx. 4cm x 1.5cm). Or use a hacksaw (saw for metal) and saw it yourself.
2. Remove the bone marrow.
3. Bring the pieces of bone to the boil in water and boil for 10 minutes.
4. Remove the remaining flesh and boil again for 10 minutes using fresh water containing soap, e.g. Omo. This is to remove the grease.
5. Repeat step 4.
6. Boil once again in fresh water to remove the soap.
7. Dry in the sun for 5 days or in the solar oven for 1 day.
8. Use a file to remove any rough edges.



The "stones" should now look like ivory

Preparation of the "black stones"

1. Wrap each piece in 2 or 3 layers of aluminium foil.
2. Place the pieces in the red, glowing centre of a charcoal fire, and cover with a little pounded charcoal. Depending on the heat of the fire and the size of the stones, this process may take as little as ten minutes or as long as two hours.

3. It takes some skill and experience to be able to judge when they are ready. A good rule of thumb is to wait until the (very unpleasant) smell disappears. Then check one piece, taking great care not to burn your fingers. The stone should be black and firm. If it is very brown, it is not yet ready, if on the other hand there is white dust, it has already been heated for too long and has started to oxidise and disintegrate.
4. Take all the stones from the fire and place them in a closed container to prevent them from oxidising as they cool.

Care of the "black stone"
Handle the “black stone” with great care. Protect it from dust, and keep it completely dry. Store it in an air-tight container such as those used for films.

Regeneration of "black stones"
Many say that black stones are so expensive that they should be regenerated by boiling them in milk. As you are now an expert in producing your own black stones, at almost no cost, we recommend that you discard used stones and make new ones.

Uses of the "black stone"
1. **Boils, small abscesses and infected wounds:** Break the black stone to the size of the boil. Press it onto the boil/abscess to make contact with the liquid. The black stone empties the boil, thus mechanically removing most of the of germs. To make your black stone smaller, place it in a plastic bag, cover it with a cloth and strike it with a hammer.
2. **Snakebites and bites of poisonous insects, e.g. scorpions:** Press onto the wound to make contact with the liquid. As soon as the stone contacts the blood, it sucks itself tight to the wound and does not let go until all the poison and secretion has been absorbed. This may take as long as a day.

A black stone is, therefore, an essential component of every tropical first aid kit!

How does the black stone work?
It contains a myriad of tiny passages. Through the process of capillary action, a pressure below atmospheric pressure is created on the wound, as a result of which the black stone sticks firmly to the affected area until it has absorbed its maximum capacity of liquid. Just like a sponge in water!

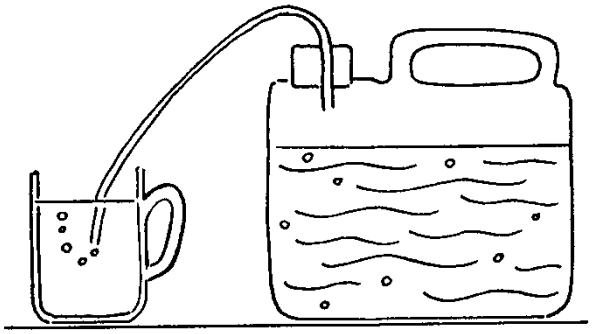
4.8 HONEY WINE

Honey wine is used as a basic liquid for medicinal wines and syrups. If prepared well it contains 12-14% alcohol.

honey	2.5 litres	i.e. 2½ one-litre bottles
water	2.25 litres	i.e. 2¼ one-litre bottles
fruit juice	0.25 litres	i.e. ¼ bottle or 1 cup
yeast	½ teaspoonful (brewer’s yeast or normal baking yeast)	

If no honey is available:

sugar	2 kg
water	2.75 litres
fruit juice	0.25 litres
yeast	½ teaspoonful



You can use the juice from any fruit, e.g. mango, orange, lemon. The juice is necessary to supply the yeast with the minerals needed.

Boil the honey or sugar, water and fruit juice mixture for 15 minutes. Filter and pour into a 5 litre container (preferably glass, otherwise plastic). Leave to cool. Add the yeast.

Drill a little hole in the lid of the container and insert a thin tube (e.g. a tube used for medical infusions). The other end of the tube is inserted into a mug filled with water. This has the effect that the surplus carbon dioxide can escape but no atmospheric oxygen can enter the container and spoil the wine.

Keep the container in a warm place and shake it gently every day. After 2-3 weeks the fermenting process is finished. Filter the wine through a clean cloth. Store the wine in an airtight bottle in a cool, dark place.

4.9 COUGH ELIXIR

honey wine	5 litres
eucalyptus, leaves dried and pounded	250g

Mix and keep in a warm place, covered but not tightly closed, for 5 days. Filter, and store in airtight bottles in a cool, dark place.

Dosage:

Adults	1 teaspoon, 3 times daily.
Children (1 year and older)	20-40 drops, 3 times daily.

4.10 VITAMINS AND MINERALS

It is bad enough that, because of a lack of money, many people in tropical countries suffer from starvation or fall ill. But it is even worse when this suffering is a result of advertisements that prompt you to buy products described as "appetizers", "vitamin juices" etc. These products are worthless and unnecessary. Meat is cheaper and gives you more strength than any ampoules of “Sana-vita-liver extract”. Cassava leaves or grain amaranth are richer in vitamin E than “Paradiso-impotex” capsules.

A lady from our village in D. R. Congo spent the wages of a whole week on a single bottle of artificial red syrup, believing it would strengthen her daughter's

blood. Was this lady just a simple villager? Let us have a closer look at some state and church hospitals, even in capital cities. Budgets there are wasted on such items as "Vitamin shots", "Vitamin B tablets", "Vitamin E forte", "haemo-vit-orange" and other products with fancy names. The people responsible would have done better to put oranges and peanuts on the shelves of their pharmacies!

a) **Vitamin A**: Important for eyesight, and for healthy mucous membranes and epidermis (skin). It is found in all red and orange coloured fruits and vegetables; pawpaw, carrots, tomatoes, mangoes; in eggs and in palm fruits. Palm oil is very rich in vitamin A. In West Africa, where there is an abundance of palm oil, few people suffer blindness. Prepare your daily food with red palm oil and you never need vitamin A capsules! In eastern and southern Africa, where oil palms are rare, we recommend eating orange sweet potatoes and other red fruits and vegetables.

b) **Vitamin B complex**: Important in cases of nervous irritation and weak condition. These vitamins are necessary for digesting and absorbing carbohydrates, e.g. sugar and flour. Locally available products such as peanuts, soybeans, beans, nuts, meat, fish, yeast, green-leafed vegetables, rice bran or mother's milk contain large amounts of these vitamins. It is a big mistake, therefore, to sell peanuts in order to buy "vitamin B" biscuits.

c) **Vitamin C**: The natural defence system of our bodies, which protects it from infection, is provided by vitamin C. Babies aged up to 6 months receive sufficient quantities through their mothers' milk. Beyond this age one must eat all kinds of fruit (mainly oranges, passion fruits and lemons) and vegetables (green leaves, onions, potatoes etc.). Fresh, uncooked fruits and vegetables are best by far - the longer they are cooked the less vitamin C they contain. Unlike vitamin A, vitamin C cannot be stored in the body, so fruit and vegetables must be eaten every day.

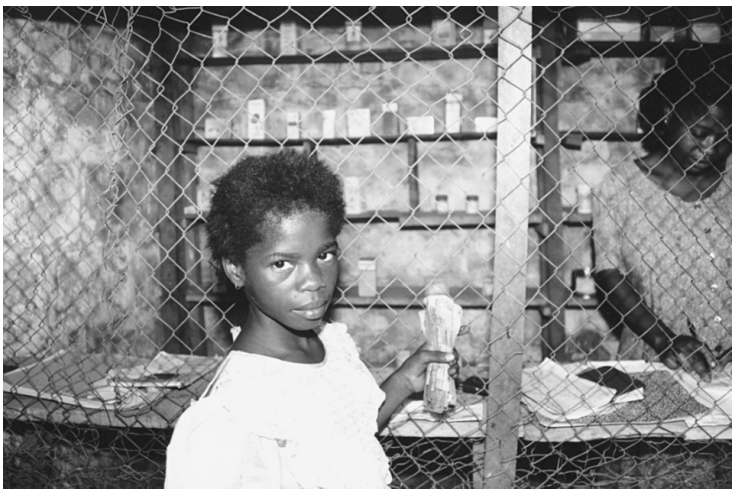
d) **Vitamin D**: Supports the growth of bones. The body itself produces it from sunlight. Eggs and animal fat are also good sources of vitamin D.

e) **Vitamin E**: Found in green leaves, vegetable oils, nuts and seeds. Its function for health is not yet completely understood, but it is generally thought to give protection against various diseases. In advertisements it is called the "vitamin of fertility"; but, so far, no barren person has had children thanks to vitamin E medicine!

f) **Vitamin K:** Supports the blood clotting process. It is found in all green leaves and produced as well by the intestinal microbes. There is a useless custom practised by some maternity wards of giving a vitamin K shot to each mother after the delivery. This is appropriate only in the case of vitamin K deficiency.

Vitamins – we have a choice!

A



B

C

A. First you are given free samples of vitamins,
B. then you have to buy them with a fistful of notes in the pharmacy,
C. whereas nature gives them freely.

g) **Folic Acid**: Necessary in case of anaemia. It is found in high quantities in liver and green vegetable leaves.

h) **Calcium**: Calcium plays an important role in the function of the body cells, especially in muscles and bones. A calcium tablet bought in the pharmacy contains the same amount of calcium (200 mg) as 10g dried fish, 30g milk powder, 100g green vegetables, or 200g beans.

i) **Iron**: Iron enables our bodies to produce haemoglobin, the red colouring substance of the blood. To attempt to treat anaemia with red lemonades is useless! It is much better to eat all kinds of green leaves. Do your best to prevent the causes of anaemia, such as malaria, chronic diarrhoea and hookworms!

The use of frying-pans and saucepans of pure iron can also be recommended - but not those made locally out of scrap metal from old cars, as they contain some other, toxic metals.

In order to enrich the food with iron, each day you can put some rusty (but clean!) nails into the saucepan during cooking. By this a tiny amount of iron enters the food and thus the body (our body absorbs very little iron in one day). Or you can push a long rusty nail into an orange or lemon. After 3 days take it out and eat the fruit, or squeeze the juice out. The juice has turned into an iron-containing medicine (the acid in the fruit turns the iron into soluble iron salts which dissolve in the fruit).

j) **Iodine**: In regions distant from the sea many people develop goitres for lack of iodine, which is found mainly in seafood. In this case we suggest that you daily use iodised salt (see Chapter 4.5). For more acute conditions, add 1-10 drops per day per person of "Lugol 0.1% solution" to your food, according to the severity of the problem.

This Lugol solution may be bought from the pharmacy. Production in the pharmacy: Mix 100mg iodine with 200mg potassium iodide, and dissolve this mixture in 100ml boiled and filtered water. Store, and dispense in glass containers, not plastic or metal.

4.11 PRODUCTS FOR VETERINARY AND AGRICULTURAL USE

A. Licking blocks for cattle:

cement	2 sacks (50kg each)	copper sulphate	1kg
red earth	2 wheelbarrows	magnesium sulphate	100g
table salt	35kg	manganese sulphate	100g
iron sulphate	2kg		

The licking blocks are made with a block press. If the different sulphates are not available, take cement, red earth and salt only. If there is neither cement nor a block press, prepare at least a mixture of red earth, wood ash and salt. When even this is not available, give wood ashes to the cattle.

B. Scabies and ticks:
When ticks or louse have attached themselves firmly to the skin, either use scabies oil, see chapter 4.3.F, or pound old tephrosia leaves and (wearing gloves) rub together with a little water or oil into the hide.

C. Rheumatism: see chapter 4.3.D.

D. Charcoal for diarrhoea in animals: see chapter 4.5.B.
Give 0.1 to 0.5g per kg body weight daily. Commercial charcoal is quite adequate.

E. Medicine for fleas on poultry:
In tropical countries, especially during the rainy season, rearing chicks is very difficult. As soon as the little chick hatches out, thousands of fleas from the hen start to attack it. The fleas cling to the area around the eyes of hens and chicks. As a consequence the hens lay fewer eggs and the chicks lose blood, becoming weak and finally dying . Chemical insecticides like DDT and Lindane are very dangerous and will finally poison us when we eat the poisoned eggs.

To avoid this,

- the hens should be able to take an ash-bath any time.
- the nests should be padded with eucalyptus leaves, lemon grass or tobacco leaves as well as ashes.
- the chickens should be allowed to move around freely on grassy ground.
- put palm oil on the chicks' heads 1-3 times a week during the first 3 weeks of their lives. Alternatively use pure neem seed oil, or neem leaf oil made from 1 part of powdered neem leaves to 4 of vegetable oil (for the method, see chapter 4.3). For older chicks and hens, you may also use a mixture of 1 unit of vegetable oil and 1 unit of kerosene. By way of thanks, your hens will lay more eggs!

F. Medicine for worms in animals:
See chapter 5.7, pawpaw: Give the juice of an unripe pawpaw (3 ml per 10 kg body weight). Feed them regularly with pawpaw seeds. Our own dog (10 kg) ate a whole pawpaw at times! Dogs also like to eat lemon grass to combat worms. A pig should eat unripe pawpaws every day.

G. Treatment of wounds (for animals only)

1. Antiseptic treatment

cheap vegetable oil	140g	(1 small tin)
wax	20g	(1/2 candle)
commercial creosote	5g	(1 teaspoon)

Heat the palm oil and wax, leave to cool a little, add the teaspoon of creosote and stir until the mixture turns into an ointment. Alternatively, pound fresh tobacco and/or eucalyptus leaves, and make a compress on the wound.

2. **Antiseptic treatment for small animals**. Use “pawpaw sugar” as described for humans. A mixture of one unit of vegetable oil and one unit of powdered eucalyptus leaves helps to keep flies away, e.g. from bleeding ears.

3. **Antiseptic treatment for cattle**. To disinfect wounds, use pounded and sieved charcoal, powder made from eucalyptus and tobacco leaves, some salt, or a mixture of all of these. A very small quantity of motor oil can also be used.

H. Lack of vitamins and minerals in poultry

If improved breeds of poultry are available in your area, that is good. But you may be advised to buy only commercial chicken feed, with the assurance that it contains all the vitamins and minerals needed by your "extremely demanding" chickens. Do not fall for such stories - you have all the nutrients you need in your own village:

Proteins: Your hens and chicks need "meat" (but no milk powder, even though this might be written in the textbooks). In the afternoons allow your hens to move around freely so that they can look for insects. Give them the greens they prefer. Make your compost heap in the chicken pen. This will attract many flies and worms, both good protein which will be eaten with relish by the chickens!

Vitamins: Regularly give them all kinds of fruit and vegetables: pawpaws, mangoes, coconuts, onions, cayenne pepper etc. Fruit lying under the trees which starts to go rotten should be thrown into the chicken pen.

When you feed maize, do not grind it but soak the daily ration in water overnight. Next morning, pour the water out and leave the maize to sprout in a damp, shady place for another 2 or 3 days (wash them twice a day) until the sprouts are about 3 cm long. Feed this sprouted maize to your chickens - it contains plenty vitamins!

Minerals: Give hens free access to the ashes from the fireplaces and provide them with a mixture of 1kg of red earth, 100g of salt and, if available, 100g of slaked lime, which they can always get at. Give the eggshells back to the hens, but well pounded and boiled, or heated in the solar oven, to prevent spreading diseases.

I. Insecticides for agricultural use

Avoid chemical insecticides whenever possible. The danger is that, if insects are poisoned, that their predators will be poisoned also. Not only are the birds then killed, which keep insects and mosquitoes under control, but the chemicals may also kill people, e.g. E605, and stay in the environment for many years, e.g. DDT.

Insecticides can be produced from neem (*Azadirachta indica*, see chapter 5.5), tobacco (*Nicotiana tabacum,* 6.33) and tephrosia (*Tephrosia vogelii*, 6.45). The disadvantage of tobacco and tephrosia is that all insects are killed immediately, and the plant sprayed cannot be eaten for two weeks. Neem is less toxic, one can eat vegetables that have been sprayed with neem almost straight away, and useful insects such as bees that come to the plants later are not killed.

CHAPTER 5

15 PARTICULARLY IMPORTANT PLANTS: THEIR USES AND SIDE EFFECTS

Introduction

We strongly recommend the recipes in this chapter. Establish a medicinal garden, and grow and use these 15 medicinal plants; they are very effective and have many uses. Nearly all of them are used by the European pharmaceutical industry to make their commercial products, which are sometimes then sold in Africa at a high price.

The maxim *Let your food be your medicine and your medicine your food* is extremely important. People who drink a lot of good water, and who eat, for example, moringa, grain amaranth, garlic and fresh fruits, will develop a very strong immune system and suffer many fewer health problems.

To choose the best treatment for a particular disease or complaint, please refer to chapter 8. There we present the plants and recipes, according to our experience, in the order of their effectiveness.

Using these plants, even poor families can produce medicines and treat certain diseases themselves, at very little cost.

In this chapter we list the plants in alphabetical order, according to their scientific names. This is immediately followed by the common English name. Underneath are the common names in French (F), German (D), Spanish (Sp) and Swahili (Sw).

For each plant we give:

- the botanical description.
- some hints on cultivation.
- the parts of the plant that are used.
- some uses from other countries of which we have heard but have no experience of our own. Thus we are unable to positively recommend them.
- details of preparations for medical complaints or diseases of which we do have knowledge and experience. These we recommend with confidence.
- details of possible side-effects.

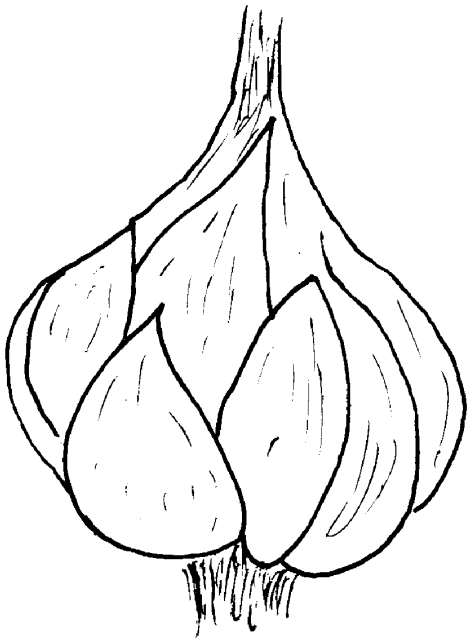
Health workers and teachers are urged to make it quite clear that these recipes are not meant to replace microscopes or other technical instruments used in health centres to diagnose diseases. Also, these recipes will never be able to replace vaccination.

Used well, these recipes will encourage good relationships between patients and medical staff, and between doctors, nurses and healers. They will also increase enormously the range of treatments available in the hospital, the health centre and the home. But please be careful. Some of the plants described in this book are also toxic, and may cause serious reactions if you change the recipe, or use the plants inappropriately.

5.1 *Allium sativum*: garlic

Ail (F), Knoblauch (D), ajo (Sp), kitunguu sum (Sw).

BOTANICAL DESCRIPTION: Family: Alliaceae.
Garlic is a hardy perennial. It grows to a height of 30 to 90cm, and the bulb develops between 5 and 15 bulblets or cloves. It is native to the northern hemisphere and southern Africa, and is now increasingly common also in many tropical countries.



CULTIVATION
Garlic likes fertile, well-drained soil. Separate the cloves carefully from a garlic bulb, and plant in a shady place about 5 cm deep, 15 cm apart in rows 30 cm apart. In the early stages of growth, garlic needs plenty water. If the plant starts to flower, cut it off so that the strength of the plant goes into the bulb. Harvest when the leaves turn brown and start to wither. Allow the bulbs to dry in the shade where there is a good current of air, and then carefully rub off the earth and outer leaves (if that is done wet, the cloves will be damaged). Store in an earthenware pot (to prevent dampness).

PARTS USED: Cloves.

USE IN DIFFERENT COUNTRIES
Garlic is an essential ingredient of regional dishes in many parts of the world. In ancient Egypt, it was raised to the status of the Gods!

PREPARATION OF GARLIC MEDICINES
Garlic honey. Fill a glass jar with peeled and chopped garlic cloves. Slowly pour in honey so that it fills all the crevices between the cloves. Place the jar in a warm place of about 20°C. In two to four weeks, the honey will absorb the garlic juice, and the garlic will become limp and opaque. Do not filter. Use within 3 months.
Garlic cough mixture. Pound one teaspoonful of garlic cloves and mix with the same amount of sugar or honey. Use immediately, e.g. for coughs.
Garlic oil. Take one part of crushed garlic and mix with two parts of vegetable oil. Mix thoroughly. If you have no reliable refrigerator, use it within one day. If you do have a good refrigerator, use within one week. We no longer recommend keeping garlic oil for one month because of the danger that bacteria may produce the botulism toxin. Botulism intoxication causes paralysis.
Garlic tincture. Soak 200g peeled and chopped garlic cloves in one litre of brandy or good quality 40 - 50% alcohol for 14 days at about 20°C in a bottle with an air-tight seal. Shake the bottle several times a day. Strain out the pieces of garlic. The tincture keeps for about a year.

RECOMMENDATIONS FOR USE

- Eat **raw garlic** - this is the best!
- Use **in cooking**.

Eat a lot of garlic prophylactically. Garlic is an excellent example of the axiom that your food should be your medicine, and your medicine your food. This is only true, however, for raw garlic, as most of the vital ingredients are destroyed in cooking. Raw garlic strengthens the immune system. The regular consumption of garlic has been shown to reduce the incidence of heart attacks, strokes, cancer, high blood pressure and influenza (flu).

We strongly recommend that HIV positive people include raw garlic in their daily diet to reduce the incidence of other diseases. If, however, they take ARV drugs they should consult their doctor, because there is some evidence that garlic reduces the efficacy of certain ARV drugs.

Because it acts both externally and internally as a disinfectant, raw garlic is helpful in the treatment of all infectious diseases; typhoid, worms, bilharzia, malaria, septic blood poisoning etc. Moreover, raw garlic improves the memory, reduces high blood pressure and fever, and is effective against arteriosclerosis (hardening of the arteries).

Garlic also has anti-viral and anti-fungal properties.

1. Abscesses or blind boils and warts

Crush fresh garlic, and secure this mash onto the abscess, blind boil or wart twice a day as a compress. Begin this treatment as early as possible.

2. Bites and stings of insects, mosquitoes and scorpions

As quickly as ever possible place a slice of garlic on the bite and secure in place. This should also be done if the wound becomes inflamed. Garlic disinfects the wound and also relieves the pain and itching.

3. Amoebas

Chop garlic into very small pieces and take 1 big spoonful together with some tea 3 times daily (don't chew, to help to avoid bad breath). Continue for 7 days.

4. Light malaria

Chop garlic finely. Swallow one full tablespoon of this chopped garlic three times a day, and drink 2 litres of lemon grass tea a day. Continue the treatment for 7 days. For other malaria treatments, see chapter 8.

5. Diabetes, high blood pressure, prevention of arteriosclerosis (hardening of the arteries)

Eat a lot of garlic - garlic and onion reduce blood sugar levels, blood cholesterol levels and high blood pressure. Alternatively, take 20 drops of garlic tincture three times a day, but this is less effective.

6. Coughs, colds, sinusitis and sore throats

a) Eat a clove of garlic three times a day.
b) Take a teaspoonful of garlic honey every few hours.
c) Children can take a teaspoonful of garlic cough mixture every few hours.
d) Take a teaspoon of garlic oil 6 times a day.

7. Candida
Take a teaspoon of garlic or garlic honey every few hours. Keep in the mouth as long as possible.

8. Fungal infections including athlete's foot
Cover the affected area with either the juice of crushed fresh garlic or garlic oil.

9. Typhoid fever and other infections
In cases of typhoid fever, bacillary dysentery, tuberculosis, cholera, trypanosomiasis (sleeping sickness), always add garlic to the usual treatment.

10. Prevention of thrombosis
Garlic makes the blood a little thinner and prevents the formation of blood clots which cause thrombosis. This is particularly important for patients who are confined to bed for a long time.

11. Teething in babies
Rub the gums with a garlic clove.

12. Toothache
At the first sign of toothache place a slice of garlic on the affected spot. Place it between the cheek and tooth, or hold it on top of the tooth with the teeth of the other jaw, or hold it in place on the inside of the tooth with the tongue. Keep it there overnight if possible. The burning effect on the cheek or tongue will diminish after a few minutes. Garlic kills the bacteria which causes the tooth decay because it is able to penetrate both flesh and the enamel and dentine of the tooth.

SIDE EFFECTS
Garlic may irritate the skin, particularly after prolonged use. Avoid contact with the eyes. Direct contact with the skin may cause changes in the skin colour.

5.2 *Aloe vera (syn. Aloe barbadensis), Aloe ferox and Aloe arborescens*: aloe

Aloe (F, D); sábila babosa (Sp), msubili (Sw).

BOTANICAL DESCRIPTION: Family: Liliaceae.

Aloe vera (illustrated) is a sessile, i.e. it is stemless or very short-stemmed, succulent plant growing to 80-100 cm tall, spreading by offsets and root sprouts. The leaves are lanceolate, thick and fleshy, green to grey-green, with a serrated edge. The flowers are produced on a spike up to 90 cm tall, each flower pendulous, with a yellow tubular corolla 2-3 cm long.

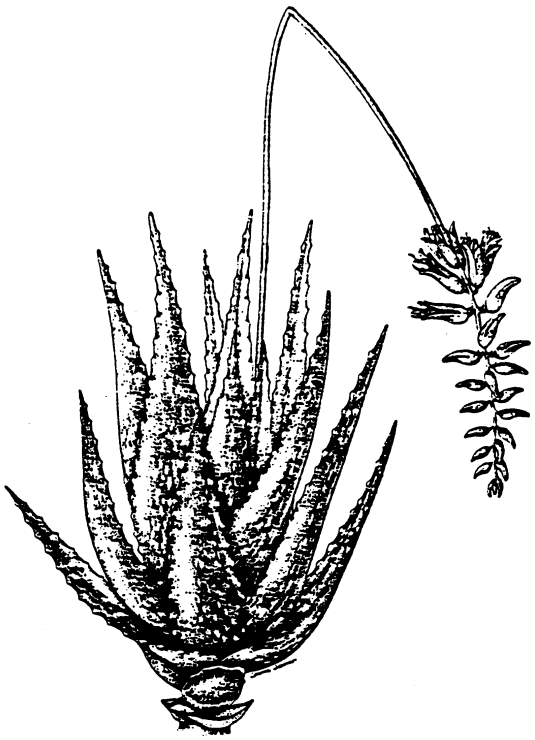
Aloe ferox (bitter aloe) in contrast is a shrub with a single stem, it can grow to a height of more than 3 metres and its flowers range from yellowy orange to bright red. The leaves are blueish green, edged with red thorns.

Aloe arborescens has a tall stem from which leaves grow throughout its height.

CULTIVATION
Aloe species thrive on well-drained sandy soils that are rich in minerals, even on hot rocky areas. They are propagated by transplanting the small plants (suckers) that grow from the base of mature plants.

PARTS USED: big old leaves

USE IN DIFFERENT COUNTRIES
Worldwide the yellow sap obtained from a shallow cut of the leaf is used as a laxative, and the colourless gel for burns and wounds.



CONSTITUENTS
The green outer skin is rich in minerals.

The yellow sap contains 12 different anthraquinones, which have laxative and anti-microbial properties.

The colourless gel of the inner part of the leaf contains many valuable substances, including the polysaccharide acemannan, vitamins and essential amino acids. It has two very important qualities:

A. it is an immuno-modulator. That means that it strengthens the immune system when it is weak, and brings it back into balance when it is over-active, for example in allergic reactions, rheumatism, cancer. A tablespoonful of gel taken every day can protect one against a wide range of infections and diseases.
B. it disinfects and promotes healing both externally on the skin, for example burns, wounds and even chronic wounds, and internally on the mucous membranes throughout the entire length of the gastro-intestinal tract.

RECOMMENDATIONS FOR USE

1. As a laxative.
Wash the leaf with hot water while still on the plant, dry and cut it off. Put in a cup, with the cut to the bottom. After 15 minutes weigh the yellow leaf sap and mix with 3 times the amount of sugar. Dry this "aloe sugar" in the sun, under a mosquito net. Adults take 3 g in the evening as a laxative, but not during pregnancy, nor for prolonged use.

2. Gastritis.
Make a decoction with one handful of leaves, finely cut, in one litre of water and drink slowly in the course of the day for several days.

3. Burns, infected gums, rashes, and for dressing wounds and diabetic ulcers. Herpes zoster (shingles) and insect bites.
Cut and thoroughly wash a leaf of the plant. Clean a sharp knife putting it in boiling water. Cut the ends and sides of the leaf away, and then cut through the middle to

leave a large surface from the inside of the leaf. For burns, rub the juicy side of the aloe leaf (the "aloe gel") all over the burn. Repeat four times per day. Keep the patient under a mosquito net to keep the flies away. This treatment for burns gives far better results than the usual Vaseline gauze.

4. Wounds (including chronic wounds), ulcers and diabetic ulcers.
Follow recipe 3. After every treatment, use a slice of pawpaw, honey or sugar as described in chapters 5.7 and 6.29. Aloe gel promotes healing and minimises scarring.

5. Conjunctivitis.
For inflammation of the eyes, follow recipe 3. Place the leaf on the eye for 5 minutes, 4 times a day.

6. Rheumatoid arthritis, osteoarthritis, pains in the joints.
Take one to two spoonfuls of gel each day. Externally massage the gel on the affected joints. The effect of aloe is both to reduce the symptoms, and to help the body to repair the damage. Most modern synthetic drugs merely reduce the symptoms.

7. Cancer
Aloe vera is increasingly being used in many clinics in cancer treatment. Take one to two spoonfuls of gel each day. This may be combined with honey, or other natural treatments, e.g. propolis, *Artemisia annua* tea etc.

8. Loss of hair.
Remove some aloe gel from a leaf. Mix one tablespoon with the yolk of a fresh egg and massage it into the hair every evening. Or use aloe gel alone.

9. Venereal sores.
Treat several times a day according to recipe 3. Orally, take antibiotics.

10. Veterinary use
Aloe can also be used with animals in the same way as described above. The gel can be mixed with the normal food.

SIDE EFFECTS
Do not use aloe sap during pregnancy. No side effects are known with aloe gel.

5.3 *Amaranthus cruentus*: amaranth

Amaranth (F, D), amaranto (Sp), mchicha (Sw).

BOTANICAL DESCRIPTION: Family: Amarantaceae.
There are around 6000 varieties of amaranth, in 4 groups, weed amaranth, vegetable amaranth, grain amaranth, ornamental flowers. Examples of vegetable amaranth are the wild *Amaranthus gracilis* and the cultivated *Amaranthus hybridus*. Examples of cultivated grain amaranth are *Amaranthus cruentus* (illustrated) and *Amaranthus hypochondriacus*.

Cultivated amaranths are tall annual herbs, maturing usually in less than 100 days, that grow up to 3 m in height. Grain amaranth has been grown for thousands of years by the Aztecs in South and Central America.

CULTIVATION

Amaranth requires warm soil but little water, it is drought resistant, and can survive where the rains are unreliable. Sow about 2 cm apart, and plant 2 cm deep. Rows should be 60 cm apart. They germinate within 3 days if the soil is wet. After 3 weeks, they should be thinned out, and after another 2 weeks one plant should be left every 20 to 30 centimetres. Any plants that are thinned out can be cooked and eaten as vegetable. It thrives in soils rich in nitrogen.

PARTS USED: mainly the seeds, but also the leaves.

USE AROUND THE WORLD

A native of MEXICO, grain amaranth is now grown extensively in EAST AFRICA and ZIMBABWE, where the flour made from the grain is mixed with maize flour or millet flour and made into porridge. This is used with great success to strengthen the immune system and vastly improve the health of AIDS patients. Other species of amaranth are grown primarily for their leaves which are used as a vegetable.

CONSTITUENTS AND RECOMMENDATIONS FOR USE

Of all the many species of amaranth, grain amaranth provides the most outstanding nutrition. The grain (seeds) contain vitamins, minerals, including calcium and potassium, and many essential amino acids, in particular lysine, threonine and tryptophan. Lysine is important for its role in limiting the multiplication of the herpes virus. Amaranth also contains squalene, which helps to keep the skin moist, and to destroy toxins in the body. A good quality vegetable oil can be produced from the seeds.

Grain amaranth has the functions of a) strengthening the immune system, b) combating malnutrition and under-nutrition and c) increasing the mother's breast milk.

1. The leaves of vegetable and grain amaranths are a good source of vitamins and minerals when eaten as a vegetable. They are especially rich in iron, to treat anaemia. Prepare like spinach, but do not overcook.
2. Pop the seeds in a frying pan, as if making pop corn. Popped amaranth can be eaten as it is or with other things as a breakfast cereal. This is said to increase the availability of the protein. Popped grain amaranth also stimulates the appetite.
3. Pound the seeds and add this amaranth flour directly to sauces.

Make porridge with amaranth flour alone. Use between 5 and 7 heaped tablespoons to one litre of water. Or add amaranth flour to any other flour, such as millet, maize, sorghum and/or cassava, to make porridge.

The Iganga Unity Food Producers Farm Cooperative in Uganda produce porridge meal either using 3 parts of maize to 1 of amaranth flour, or 3 parts of millet to 1 of amaranth flour. With maize flour the porridge takes 30 minutes to cook. With millet, only 10 minutes – a useful saving of energy! Moringa leaf powder may also be added to this porridge. One tablespoon of moringa leaf powder should be added to ½ a litre of porridge.

4. Amaranth flour can form up to a third of the total flour in baking bread, chapattis, biscuits, cakes or pancakes.

Anamed has become known for the dramatic improvement in health of HIV/AIDS patients through the use of artemisia tea and moringa leaf powder. Many anamed co-workers have found amaranth to be just as effective as moringa.

5.4 *Artemisia annua anamed* (A-3): sweet Annie, sweet wormwood

Armoise chinoise (F), chinesischer Beifuss (D)

BOTANICAL DESCRIPTION: Family: Asteraceae
Wild species of *Artemisia annua* grow only in temperate climates. *Artemisia annua anamed* is a hybrid that will grow in the tropics and produce an abundance of leaves. These leaves are rich in artemisinin, the particular ingredient that is very effective in treating malaria. This hybrid grows up to three metres high, but cannot withstand frost and requires careful cultivation.

THE SIGNIFICANCE OF *ARTEMISIA ANNUA*
Malaria parasites have developed resistance to conventional malaria drugs, which very often fail to cure the disease. *Artemisia annua* has been used for over 2000 years by the Chinese to treat fevers, and more recently to treat malaria. anamed has found this plant, taken as tea, to be more successful in treating malaria than chloroquine or amodiaquine, and without having any of their unpleasant side-effects. Its effectiveness is comparable to that of the modern (and expensive!) artesunate tablets. Because artemisia tea already contains at least 10 different antimalarial agents, it is by itself already an "Artemisinin Combination Therapy" (ACT), and thus saves the expense of commercial ACT drugs. We hope that one day even the World Health Organisation (WHO) will recommend the use of artemisia tea. Please visit the anamed home-page, www.anamed-edition.com, to read why we continue to strongly advocate A-3 tea for the treatment of malaria. *Artemisia annua anamed* (A-3) can enable a hospital, or a community, to have a constant supply of malaria medicine available, and almost completely free of charge - it just demands a lot of hard work!

CULTIVATION
The seeds and seedlings are very small and sensitive. They require a lot of attention, every day, including Saturdays and Sundays. To prepare the earth, mix 10 parts by volume of old compost or really black earth with 10 parts of sand. Add 20 parts of water and boil the mixture for at least 5 minutes to kill all the weed seeds.

It is helpful to make a small, portable seedbed. This could be half a jerry-can (cut vertically), or a specially made wooden tray with a 5 cm high edge. 1000 seeds require about a square metre. Make holes in the bottom of the tray so that surplus water can flow away. Fill the seed tray completely with the earth. Water it. Spread the seeds on the top. Do not cover with earth. Artemisia germinates in the light! Place the tray in a bright place, even in direct sunlight, but do not allow the soil to dry out. In very dry climates put the entire tray into a transparent plastic bag, punctured with a few holes, to keep the soil moist and to create a humid atmosphere. When necessary, place the entire tray in a larger container of water so that the water soaks up gently from beneath. Germination occurs after 3 to 5 days. Transplant any seedlings that grow together too closely to a free place on the seed tray using a pair of tweezers. When the seedlings are about 3 cm high, about 6 weeks after sowing, transplant into pots. When they are 15 cm high, about 10 weeks after sowing, transplant into open ground. This ground must be fertile and light in structure, therefore first dig a deep hole (50 x 50 x 50 cm), and refill the hole with the top soil mixed with, leaves, sticks and compost.

Allow a square metre for one to three plants. If the dry season is expected sooner than 4 or 5 months, they can be closer together. Plant them in different places. In this way there is less danger that all your plants will flower at the same time. You will also learn where the plants thrive best. The dry season is stressful for the plants, they may begin to flower. The challenge is to keep them from flowering for as long as possible! As soon as the first flower buds appear, strip the leaves from the stems of the *entire* plant and dry them. The stems and plant remains can be composted, or used in veterinary medicine.

From existing plants, cuttings can be taken, more plants grown and even more patients treated, and the plants can be propagated from one year to the next. We recommend that you take cuttings from the most healthy plants every month.

Take cuttings as follows: cut branches into many short pieces, each about 2cm long. Remove all the leaves from the lower half. Either suspend the cuttings in water until roots form, or plant them directly one cm deep in damp earth in a portable seedbed. The ideal earth is a mixture of sand and good, fertile soil. Proceed as described for seedlings.

From just one plant, ideally about two months before the start of the rainy season, you can take up to 1,000 cuttings! If each of these cuttings were to produce a plant only 1 metre high, each plant should yield at least 200g of dried leaves. From 1,000 plants that would be 200kg. Since each malaria treatment requires about 35g, this would be enough for 5,714 adult malaria patients – just from one “mother” plant!

PARTS USED: leaves. With fresh leaves, the weight required in the recipes below is five times greater.

RECOMMENDATIONS FOR USE

With the following complaints, you have the choice whether you take artemisia in the higher daily dosage of 5g per day or the lower dosage of 1.25g per day.

High dose: Pour 1 litre of boiling water over 5g of dried leaves(equivalent to 4 teaspoonfuls of “broken” leaves), or 25g of fresh leaves, leave to cool for 15 minutes and then filter. Divide the resulting tea into 4 equal amounts, and drink at six hourly intervals.

Low dose: Pour 200ml (1 big cup) of boiling water over 1.25 g of dried leaves, or 6,25 g of fresh leaves and drink in the course of the day. 1.25 g dried and sieved leaves (“broken”) are equivalent to 1 rounded teaspoonful.

1. Malaria

To weigh 5g you need a good scale! Or 5g is the amount that just fits into a plastic 35mm film container. Take the high dosage for seven days. The tea can be sweetened with honey or sugar.

Daily dosages of artemisia tea

Weight of patient (kg)	Age	Artemisia tea taken orally. ..g leaves in ..ml of water per day for 7 days
5-6	2-3 months	0.5g/100ml
7-10	4-11 months	1g/200ml
11-14	1-2 years	1.5g/300ml
15-18	3-4	2g/400ml
19-29	5-9	3g/600ml
30-39	10-11	3.5g/700ml
40-49	12-13	4g/800ml
50+	adults	5g/1000ml

If, in your region, malaria almost always returns within 3 weeks (recrudescences), there are two possibilities. The first is to give artemisia tea for a total of 12 days. The second is to give artemisia tea for seven days, and on the third day of treatment to also give 3 tablets of Fansidar or another conventional anti-malarial medicine.

Pregnant women: To be on the safe side, we recommend that pregnant women take the tea only under supervision and with the approval of their doctor.

Children under five years old should also ideally be supervised by medical staff. They may require an additional medicine.

If a child refuses to take this very bitter artemisia tea, pulverise the same quantity of dried leaves and hide them in something the child likes, e.g. a piece of banana. As with the tea, this should be given four times a day.

For more detailed information about the treatment of malaria with A-3 tea, see www.anamed.net, and our publications nr. 204 and nr.220.

2. Prevention of Malaria:

a.) Expatriates and Visitors from Europe (NON-IMMUNES) who wish to try this tea should proceed as follows: Pour one cup (200ml) of boiling water over about 1.25 g of dried Artemisia annua anamed (about one teaspoonful) every morning before breakfast. After at least 15 minutes, e.g. after breakfast, filter and drink this tea. The tea should be drunk all at once, and not over the course of the day. Please start with this on the day of arrival, take daily whilst abroad, and continue for at least 3 weeks after returning home.In case of fever ,see a doctor immediately!

b.) Persons that are born and live in the Tropics (SEMI-IMMUNES) may drink only once or twice a week a cup of Artemisia. This reduces the number of malaria attacks by about 50%.

3. AIDS: Supportive treatment to strengthen **the immune system:** Artemisinin has already been patented as an AIDS therapy. In several health centres that practise Natural Medicine AIDS patients drink artemisia tea, in a higher or lower dose, each

day of their lives, where possible also with lemon grass tea, a lot of garlic and aloe gel. For more information, see the *anamed* publication "AIDS and Natural Medicine", order number 115.

4. Bilharzia: Artemisinin reduces the number of bilharzias pathogens. Try the higher dose, but continue giving the tea for 2 to 3 weeks. Possibly combine this treatment with a conventional treatment. If possible please check the result of this treatment in a laboratory and send us your results.

5. Bronchitis and sore throat: Pour boiling water onto some fresh or dried artemisia leaves, and put the container on a low heat. Inhale the vapour. For sore throats, gargle with artemisia tea.

6. Cancer, tumours: Artemisinin is already used by doctors in the treatment of tumours. Patients may, whenever possible with the support of their doctor, take artemisia tea each day and judge to what extent it influences the course of the illness.

7. Candida albicans in the mouth: Chew some artemisia leaves throughout the day. Children may prefer a mixture of one teaspoonful of honey with one of dried, powdered A-3 leaves.

8. Chikungunya and Dengue Fever: Drink artemisia tea according to the higher dose for two weeks. According to feedback we have received, the duration of fever and pain is reduced by this.

9. Eye infections and conjunctivitis

Prepare tea as described above for haemorrhoids. Filter through paper. Soak two clean cloths in the filtered tea. When cool, put one cloth on each eye for ten minutes. Support this treatment by taking an infusion (see recipe 1) internally.

10. Fever, common cold: take 1 litre of artemisia tea (higher dose) and 2 litres of lemon grass or peppermint tea each day for 7 to 12 days.

11. Haemorrhoids. Drink an occasional cup of artemisia tea (lower dosage). Externally also use self-made artemisia ointment.

12. Other Problems, e.g. ulcerative colitis, Crohn's disease, diverticulitis and chronic dysentery, also various rheumatic diseases, arthritis, soft-tissue rheumatism, borreliosis, babesia: Take artemisia tea in the higher dose for 7 days, and then in the lower dose until the symptoms disappear. Artemisia disinfects the system and modulates the immune system (brings it back into balance).

10. Make a refreshing health drink!

Take 50ml artemisia tea prepared as described in recipe 2 above, add 950ml cold water, the juice of two lemons and 50g sugar. Stir well. This drink is a magnificent replacement for commercial sodas!

SIDE EFFECTS: For internal usage, with the correct dosages, practically no side effects have been observed. Always harvest before the plant flowers, because in rare cases the pollen of the flowers may cause an allergic reaction.

5.5 *Azadirachta indica*: neem

Neem (F, D), nim, margousier (F), pulsiana (Sp), mwarubaine (Sw)

BOTANICAL DESCRIPTION: Family: Meliaceae.
The neem tree is evergreen and grows to the great height of 25 to 30 metres. It lives for between 100 and 200 years, and grows up to 30 metres high and 20 wide. It normally starts fruiting after 3 to 5 years, and becomes fully productive after 10 years. Under favourable conditions, one tree will yield about 50kg fruit per year and 350kg green leaves. 50kg of fruits give 30kg of seeds, which in turn give about 6kg of oil and 24kg of oil seed cake.

Neem is found in Africa, Asia and South Amercia. It is often used for reafforestation because it is fast growing and survives on stony or sandy soils. It is used as building timber because it is not attacked by termites.

Neem trees planted near houses help to repel mosquitoes.

In animal experiments, neem extracts proved to have antidiabetic, antibiotic (e.g. against tuberculosis), antiviral, diuretic, and spermicidal effects. They are also effective against protozoans (malaria, sleeping sickness). They reduce fever and are anti-allergic.

For agricultural use, an insecticide is made of the seeds or leaves (see below). Insects which come into contact with a neem extract do not die immediately, unlike, for example, after treatment with tephrosia or tobacco (see chapter 4.11), but are blocked in their development process and die within a couple of days. With other insects, neem insecticide acts as a repellent, and the insects simply keep away. Plants sprayed with this liquid are less frequently attacked by insects. Neem trees remain healthy even during grasshopper plagues. This is largely due to constituent azadirachtin.

CULTIVATION
Neem trees are best propagated from their seeds. Choose fresh seeds - they only germinate if less than 3 months old. Wrap the seeds in damp newspaper, put it in the shade, and keep it moist. Renew the paper every two days. After 4 to 7 days the seeds crack and begin to sprout. Pot them in compost made up of 50% soil and 50% well rotted cow manure. Plant them in their final growing positions after 3 months.

To propagate from a cutting, strip a small twig of its leaves and stick into moist ground.

They can be planted on upper slopes of hills, unproductive wasteland, roadsides or shallow rocky soil.

Neem trees thrive at low as well as at high altitudes, on sandy, stony or loamy soil. They grow well in a humid climate, but can survive prolonged dry periods. They even grow on acidic soils, which they helpfully neutralise with fallen neem leaves.

PARTS USED: leaves, seeds, twigs, seed oil.
To produce neem oil, pound the dried kernels, then add a little boiling water to make a paste. After kneading for a while, the oil begins to ooze out.

USE IN OTHER COUNTRIES:
India: The oil is used internally for worms and the tea of the leaves for malaria and rheumatism. In India also people take baths in hot water in which neem leaves have been steeped, to treat all manner of skin infections. Neem's anti-malarial activity is recorded in Ayurveda books as having been used as far back as 2000B.C.. Its name in Swahili, means forty, because of the claim that it can treat so many diseases. Neem toothpaste is now widely available which prevents and treats gum infections, and neem soap which has a similar effect on skin infections.

Sometimes, particularly in the D. R. Congo and Angola, the tree *Melia azedarach* (see chapter 6.30) is often mistaken for *Azadirachta indica* and called neem. *Melia azedarach* grows very easily. It can be safely used for all the agricultural purposes listed below. Although *Melia azedarach* is used extensively in traditional medicine, we recommend that *Azadirachta indica* be preferred for medicinal purposes because it has been better researched and is less toxic. Some differences between the two are:

	neem (*Azadirachta indica*)	melia (*Melia azedarach*)
seeds	long	round
flowers	white	lilac, violet or pink
leaves	pinnate	bipinnate (branched)

RECOMMENDATIONS FOR USE
Note: In all these recipes, when we speak of a leaf, we refer to a single small leaf. Thus, our picture at the beginning of chapter 5.5 shows 10 leaves for our recipes.

1. Malaria
Pour 1 litre of boiling water over 40 fresh single small leaves, or 5g dried leaves, and drink this tea in the course of the day. Do not use for pregnant women.

2. Prevention of caries
Use a small neem twig as a toothbrush twice daily. This method provides not only mechanical cleaning, but also has an antbacterial effect on germs both in the caries and the gums. This is due to the presence of sunstances such as nimbidinand quercetin in the bark.

3. Sleeping sickness (trypanosomiasis)
Supplement the usual treatment by drinking neem leaf tea every day (see recipe 1 above).

4. Head lice

Wash your hair every day. Use one of the following:

i) Leave 10g dried neem leaves in 100 ml alcohol (45%, e.g. gin or vodka) for 7 days. Filter, and use as a hair lotion 3 times a day for 5 days.
ii) Rub some drops of neem oil into the hair, 3 times a day for 5 days.
iii) Pound some neem seeds to make a paste. Wash your hair each evening and then rub about one teaspoonful of this paste into the hair. Leave till the next evening.

5. Skin problems

Neem is effective in treating most skin infections such as acne, fungal infections, psoriasis, scabies and eczema. It can be used also to treat allergic reactions. You may

- **take a bath**: Traditionally Indian people bathed in neem leaves in hot water.
- **make an ointment**: Take 100g of a cheap local ointment and add 10g neem oil.
- **make a tincture**: Soak 20g dried leaves in 100ml of 70% drinkable alcohol. After one week, filter the solution. Immediately before use, mix a teaspoonful of this tincture with a teaspoonful of vegetable oil and apply to the affected areas.

a) Fungal infections, e.g. athlete's foot. Either rub leaves on the affected area, or use neem seed oil or neem ointment.

b) Skin treatment for smallpox or chicken pox. Neem oil or tincture may also provide anti-viral treatment for smallpox or chicken pox. This is because it can inhibit a virus from spreading.

c) Warts. Apply oil directly to the skin.

d) Scabies. There are several possibilities:

i) Pound leaves to a mush with a little water, and rub onto the affected area.
ii) Rub neem oil onto the affected skin.
iii) Grind to a paste a mixture of fresh neem leaves and turmeric in the ratio 4:1 by weight (or a handful of neem leaves to a piece of turmeric ½ the length of the index finger). Rub all over the body and leave to dry.

e) Indolent ulcers, ringworm, psoriasis. Apply neem oil. If the reaction is too strong, dilute with vegetable oil. Alternatively, boil some leaves in just enough water for 15 minutes, and then lay the leaves as a hot compress on the lesion for 15 minutes morning and evening. Some people recommend this treatment also for leprosy wounds, but follow your doctor's advice.

f) Infected burns. Boil one handful of fresh leaves in 1 litre of water for 20 minutes, filter while still very hot (to avoid contamination), cool, and use immediately to wash infected burns. Prepare and use fresh tea in this way three times a day. Put the patient under a mosquito net to avoid new infections.

g) Boils. If the boils are blind, a poultice of the leaves can be applied. For **open boils, ulcers, and eczema**, these leaves must be well boiled in a little water before they are applied as a poultice.

h) Candida. Mix one part of neem oil with 9 parts of the following substances:
for candida in the mouth, honey.
for candida in the vagina, yoghurt or vegetable oil.

for candida on the skin, castor oil or any other vegetable oil.
Apply the mixture to the affected area.

6. Diarrhoea and dysentery
Once a day prepare neem tea by boiling 40 fresh, washed neem leaves in a large cup of water for 5 minutes. Adults should drink this tea in the course of the day, with plenty of other fluids. Continue this treatment for three days. Always add oral rehydration solution (ORS) (see chapter 4.6).

7. Agriculture: Insecticide from fruits
Harvest ripe fruits, remove the pulp, wash the seeds and dry them thoroughly in the sunshine. Store in a sack pervious to air. For pest control; pound 1 cup of seeds and put them in 1 litre of water to draw for 6 hours. Filter and spray, or sprinkle the solution over the plants in your shamba the same day, because it does not keep long. Repeat the treatment after 6 days. To prevent pests on your crops, apply a weaker concentration (take 1/2 cup of seeds to 1 litre water) to the plants every week.

8. Insecticide from leaves
If there are no fruits available, take 1 kg fresh leaves and boil for 10 minutes in 5 litres water, allow to cool for 3 hours, filter and use.

9. Insect spray
Suggestion for a recipe for the house: Crush 100 g dried neem seeds, pulverize, pour 500 ml highly-concentrated alcohol (or, if not available, kerosene) over it, store in a tightly fastened container for 10 days. Then filter twice through a paper strainer and fill into a spray bottle.

10. For fighting nematodes (harmful invisible worms living in the soil)
Place some neem leaves together with the seedlings or seeds into the holes prepared for planting.

11. For fumigation (as an insectifuge)
To smoke insects, including mosquitoes, out from houses, put neem leaves on the embers. The fire can even be outside the house.

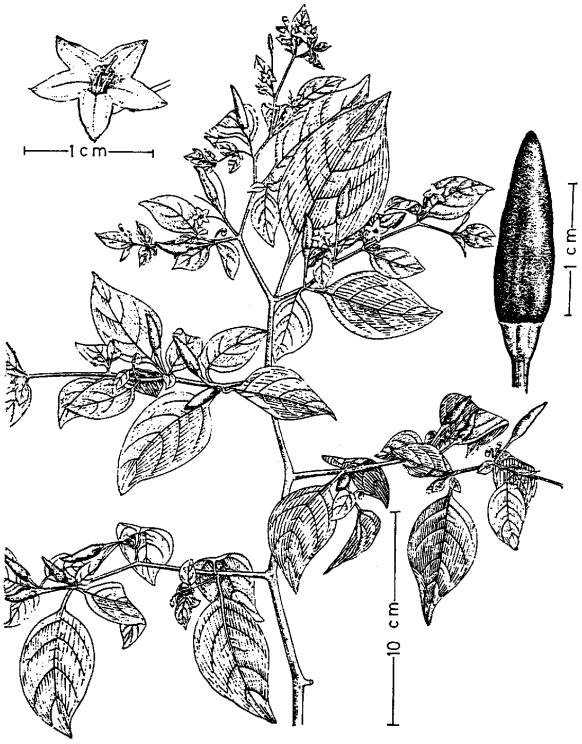
12. As a preservative for food
For foods such as rice, beans or maize etc., mix some small twigs with dried leaves into the stored goods. Or pound 250g dried leaves, mix with 1kg dry ash and add this mixture to 50 kg of food (or seeds). Wash the food before use.

SIDE EFFECTS: After prolonged, internal use, irritation of the liver or kidneys is possible. Because of our lack of experience, internal use cannot be recommended for pregnant women.

5.6 C*apsicum frutescens*: hot pepper, chilli, Spanish pepper

Piment (F), Cayenne-Pfeffer (D), aji-guaguao (Sp), pili-pili (Sw).

BOTANICAL DESCRIPTION: Family: Solanaceae.
A plant up to 2 m high. Its fruits are small, 1-2 cm long and 0.5 cm across. Green at first, they turn bright red when fully ripe.
The active substance is called capsaicine.



CULTIVATION
Likes rich, well-drained soil in the sun. Needs a minimum of 18 to 21°C. Best sown from seed, by scattering 1 gram per square metre. Plant out at intervals of 40cm in rows 60cm apart. Harvest after 4 months.

PARTS USED: fruits, leaves.

USE IN OTHER COUNTRIES:
Around the world chilli is used to treat rheumatism. In D. R. Congo it is also used for tooth and stomach ache. In Hawaii it is known for its bactericidal properties. In Cameroon and the South Pacific, chilli is used locally for skin diseases.

RECOMMENDATIONS FOR USE
Chilli is, together with pawpaw, one of the most effective and therefore most commonly exported medicinal plants. In Switzerland one can find six different types of ointments for rheumatic arthritis containing the active substances from *Capsicum frutescens*. Extracts made from the leaves and fruits show a disinfectant effect, e.g. against *Schistosoma mansoni*, a parasite that causes bilharzia.

Thais, whose diet includes vast quantities of chilli, seldom suffer from heart attacks. It is thought that this is because of the fibrinolytic action (i.e. it dissolves blood clots) of the enzyme capsaicine.

1. Rheumatism; sprains, muscle pains, arthritis, lumbago and sciatica

a) Pound one spoonful of fresh or dried chilli with one spoonful of vegetable oil. Massage the patient with this mixture so vigorously that it almost hurts. Afterwards keep the joint warm.
b) Make rheumatism oil and ointment, see chapter 4.3 and the picture on the back cover. Chilli ointment should be made in every health centre pharmacy.

2. Diabetic feet

Use recipe 1 above, but treat the foot or leg with great care. Do not break the skin.

3. Leg pains

Mix 1 tablespoon of pounded chilli, 1 tablespoon of flour (e.g. cassava flour) and 3 tablespoons of vegetable oil. Stir to make a paste. Spread this on a piece of cloth and

wrap it round the affected area of the leg. To avoid skin irritations remove the plaster after 12-24 hours.

4. Flatulence and haemorrhoids
Add chilli to your meals. Yes, even in cases of haemorrhoids! The reason is that haemorrhoids are often aggravated by fungi in the bowels, and these fungi are destroyed by chilli.

5. Skin diseases, shingles (herpes zoster)
Apply chilli oil or chilli ointment in such a quantity that the patient is just still able to tolerate the pain.

6. To relieve labour pains
The woman is given a chilli fruit to hold between her teeth while giving birth. Her attention will be taken away completely from the abdominal region!

7. Hair loss
Take minerals (see chapter 4.5, "mineral powder"). To improve the circulation of the blood in the scalp, sit on a chair and bend your head backwards; a helper carefully massages your scalp with rheumatism oil (chapter 4.3) and washes it again after 30 minutes. Be extremely careful not to get any of the oil into your eyes; cover them up!

8. For preservation
In ointments chilli works as a natural preservative.

SIDE EFFECTS:
Caution! Capsaicine is the most aggressive substance known in plants. Always wash your hands carefully after producing or using a medicine containing *Capsicum frutescens*. Avoid any contact with eyes, nose, anus or open wounds. **Capsaicine can lead to blindness when it gets into the eyes.** When handing out your medicine, make sure you inform every person about this.

5.7 *Carica papaya*: pawpaw, papaya

Papayer (F), Papaya (D), papaya, fruta bomba (Sp), mpapapaya (Sw).

BOTANICAL DESCRIPTION: Family: Caricaceae.
Papaya is a traditional fruit and medicinal plant. It grows up to 7 metres high. Introduced from tropical America, it is now found in all the tropical regions of the world, wherever the soil is fertile enough.

CULTIVATION
There are male (which bear no fruits) and female trees. Always put 3 seeds together in the ground and later remove the male seedlings: 1 male plant to 10-20 female plants is enough. To be sure to have many fruits near to the ground, work a lot of organic material or compost into the soil. Replace pawpaw trees every 4-5 years before they become too high to reach the fruits easily.

PARTS USED: ripe and unripe fruits, seeds, flowers, leaves, roots.

USE IN OTHER COUNTRIES:
The pawpaw tree is a pharmacy in itself. A description of its various areas of application would easily fill a whole volume. A few examples only: In Europe and Asia pawpaw is used to treat worms and dysentery. In Africa, cough, dysentery, malaria, gonorrhoea, bronchitis and hepatitis. In America, maw worms, amoebas and asthma. The juice of the unripe fruit is registered in the United States Pharmacopoeia 1985 for use with necrotic wounds.

RECOMMENDATIONS FOR USE
All parts of the plant contain substances of medicinal value, such as flavonoids, antibiotics, fungicides, vitamins and enzymes. The enzyme papaine is known primarily as a worm killer; it is to be found in all parts of the plant, but particularly in the pulp of unripe fruits.

1. Cleaning dirty wounds
Bathe dirty wounds with "pawpaw latex water", for example 1 litre of cool, boiled water with 5 drops of sap from an unripe pawpaw **that is still hanging on the tree**. To obtain the sap, first thoroughly wash the fruit, and then make vertical cuts in the skin of the green fruit. Collect the drops of white sap in a clean spoon or cup. The knife and spoon that are used must be of stainless steel, because rust destroys the papaine. Leave the fruit on the tree, and you can return to use it again time after time, (because if you do remove the fruit, the sap dries up very quickly).

2. Infected wounds, small suppurating burns or open boils
Use one of the following. In each case, always leave the pawpaw hanging on the tree. When the wound is free from pus, dress the wound with pure sugar or the sugar / honey mixture described in chap. 6.29.

a) Use “fresh pawpaw sugar”: Mix one teaspoonful of pure sugar with 5 drops of sap from an unripe pawpaw (the ratio is one drop of sap to 1 gram of sugar). Make this fresh every day. By “pure” sugar we mean sugar that is taken out directly from a new bag from the sugar factory. Apply plenty of this pawpaw sugar to the wound. As soon as the mixture becomes damp, add more. The wound may require attention in this way several times a day.
b) Use a slice of an unripe pawpaw: Wash an unripe pawpaw that is still hanging on the tree with a cloth and boiling water. Clean a knife, put it in boiling water, and then cut a slice of the pawpaw the thickness of a child's little finger. Lay over the

wound, and secure it with a bandage. Leave for four hours. If it causes much pain, remove it sooner. Give this treatment 4 times a day for several days until all the pus has disappeared. Alternate this treatment with a dressing of sugar, or a mixture of honey and sugar.

3. Large suppurating burns
Wash the burn several times daily with "pawpaw latex water", see recipe 1 above. Chew also 1 tablespoon of pawpaw seeds three times daily for three days. The patient should go to the nearest health centre! Leave the burn open, and make the patient lie under a mosquito net.

4. Infected wounds (alternative treatment with a tincture)
Make an alcoholic extract from the leaves. This destroys bacteria, especially staphylococci, which are most often found in wounds that have gone septic. Mix 10g of dried and pulverised pawpaw leaves in 100ml of 70% alcohol. After one week, press and filter. Dab on the wound frequently through the day. Chew also 3 times daily 1 tablespoon of pawpaw seeds for 3 days.

5. Fungal infections
a) The latex of the unripe pawpaw is effective in treating fungal infections (e.g. ringworm disease). Mix 10 drops of latex with one tablespoonful of vegetable oil. Rub the affected areas with this mixture 3 times daily. Prepare a fresh mixture every day.
b) Add leaves of *Cassia alata* (ringworm bush) to this mixture (see chapter 5.8, recommendation 2).

6. Worms
Use pawpaw latex (sap), see recipe 1 above. Papaine eliminates most of the various types of intestinal worms, even tapeworm.

Dosage of pawpaw latex to treat worms	
age (years)	No of teaspoons
6 months - 1 year	½
1 - 3 years	1
4 - 6 years	2
7 - 13 years	3
14 years and older	4

The latex is given, just once, in the morning on an empty stomach, together with a laxative (e.g. see ringworm bush, section 5.8). The worm treatment can also be given when the patient is already suffering from diarrhoea. We recommend repeating the treatment again after one week to ensure that all the worms are destroyed.

7. As a prophylactic for worms and amoebas
Chew a piece of a papaya leaf (size: 5 cm x 5 cm) daily, or take orally 1 tablespoon of seeds. Worms seem to hate the taste even more than human beings and will leave

you alone! (A development worker in Eastern D. R. Congo, who frequently suffered amoebas, was only able to continue her work because of this practice!)

8. Vitamin A, B, or C deficiency
Eat plenty of ripe papaya fruits to guarantee a sufficient supply of vitamins: Vitamin A for good eyesight, vitamin B for good nerves, vitamin C to support the immune system against infections, see chapter 4.10.

9. Light case of amoeba dysentery
a) Thoroughly wash and chop one handful of pawpaw leaves. Add 1 litre of water, boil for 5 minutes and then leave to cool for 15 minutes. Filter and drink in the course of the day, or
b) chew a teaspoonful of fresh pawpaw seeds 3 times a day for 7 days.

10. Severe amoeba dysentery
a) See chapter 5.12 *Euphorbia hirta,* recommended use no 2. We have already used this treatment successfully with thousands of patients. Or
b) doctors working with *anamed* have achieved remarkable results by giving one tablespoon of ground pawpaw seeds three times a day for seven days.

11. Asthma attacks
To give relief in asthma attacks, either
a) smoke young dried pawpaw leaves in a pipe or wrapped in paper in the form of cigarettes, or
b) drink pawpaw tea as prescribed for light cases of malaria.
For a stronger treatment, see under *Datura stramonium*, chap. 5.10.

12. Malaria (light cases)
Pour one litre of boiling water over one handful fresh pawpaw leaves. Filter after 15 minutes. Adults drink this volume during the day, children less, according to their age. Not for pregnant women.

13. Indigestion
Papaine is an enzyme that aids digestion. With your food, either take a few drops of pawpaw sap, or a small piece of a papaya leaf, or chew three pawpaw seeds.

14. Cough
Dig up 1 handful of pawpaw roots (not the main root!), wash thoroughly, cut finely and boil for 10 minutes in 1 litre of water. Filter. Dosage: Adults 1 cup 3 times daily, children less, depending on their body weight.

15. Supportive treatment for hepatitis, jaundice, yellow fever
Alcohol is absolutely forbidden! Eat a lot of fruit. Then also, either
a) eat regularly cooked, unripe pawpaw fruits as a vegetable, or
b) boil one handful of roots in 1 litre of water for 10 minutes, leave to steep for 15 minutes, and drink during the day, or
c) every day drink a brew made by pouring 1 litre of boiling water over 1 handful of male pawpaw flowers.

16. Guinea worms

Thoroughly pound the following ingredients together in a sterilised container:

pawpaw latex	10 drops
flesh from unripe thorn apples (*Datura stramonium*, see chap. 5.10)	1 teaspoon
salt (sterilised by heating)	½ teaspoon

Apply to the area where the head first appears three times per day for 2 or 3 days, freshly preparing the mixture each time. As the worm appears, wrap it around a stick. Our experience in Sudan was that on the third day the worm was paralysed, and easily removed.

17. Cancer

Pawpaw is used traditionally in South America to treat cancer. Today it is a constituent part of some natural cancer treatments, which are even used by European university hospitals. You may try taking artemisia tea plus aloe gel together with pawpaw. The pawpaw may be drunk as tea made from the dried skin of ripe pawpaw fruits, or the seeds of ripe pawpaws or the flesh of half-ripe pawpaws may be eaten.

18. To make tough meat tender

Wrap your tough meat in fresh pawpaw leaves and cook it the next day.

19. Soap substitute

While soap is getting more expensive every week, wouldn't it be great to "grow" one's own soap? Papaya trees provide us with free soap: Rub hands and body with pounded leaves - but do not disfigure your neighbour's tree!

SIDE EFFECTS:
Internal use: Papaine may cause stomachache.
External use: Allergic reactions may occur using it over a longer time. When harvesting the sap, make sure that no pawpaw latex gets into your eyes.

5.8 *Cassia alata* (recently renamed *Senna alata*): ringworm bush, candle bush

Dartrier (F), Flügelkassie (D), guacamaya francesa (Sp)

BOTANICAL DESCRIPTION: Family: Caesalpiniaceae.
The bush originally came from South America and has spread all over the tropical regions. It grows 2-3 m tall, with big feathered leaves. The inflorescence looks like a candle. The fruit, shaped like a straight pod, is up to 25 cm long. *Cassia alata* closes its leaves in the dark: test it by placing an upturned bucket over the branch for 30 minutes! In the Tropics, *Cassia alata* grows at altitudes of up to about 1200 metres. At higher elevations, the bush *Cassia didymobotrya* is widespread. This is a very similar plant, but instead of being pure yellow the top part of the flower is dark brown in colour. It has very similar properties to *Cassia alata*.

CULTIVATION
Cassia alata grows at low altitudes, in soil that is rich in humus. Propagate by sowing directly into the ground.

PARTS USED: leaves, roots.

USE IN OTHER COUNTRIES:
In New Guinea, *Cassia alata* is used as a laxative and fungicide, in the Philippines for impetigo and fungal infections. In Mali it plays a role in treating scabies, in Congo as a sedative. In Senegal the plant is used for maw worms, fungal infections and as a laxative. Ivorians apply it as a worm medicine, the Congolese also for leprosy.

RECOMMENDATIONS FOR USE
In the tropics the ringworm bush is well-known for its wide range of medicinal efficacy - in New Guinea it is even called "pharmacy plant". Its constituents include the yellow chrysophanic acid, which has been known for over a hundred years in Europe for its fungicidal action.

Cassia alata fights staphylococci, bacteria often found in infected wounds. Its laxative effect, due to its anthraquinone content, is also well proven.

1. Fungal infections (e.g. ringworm), scabies, psoriasis
Grind fresh leaves in the mortar to obtain a kind of "green cotton-wool". Mix with the same amount of castor oil (if not available, palm oil, or any other vegetable oil). Rub on the affected area 2-3 times daily. Make this medicine fresh every day. For fungal infections, you may add 10 drops of pawpaw latex, see chapter 5.7. Alternatively produce *Cassia alata* oil or ointment using the method described in Chapter 4.4.

2. Infected wounds
Mix thoroughly together:

pounded, dried leaves *Cassia alata*	10 g
70% alcohol	100 ml

or:

pounded, dried leaves *Cassia alata*	1 cup
spirits (e.g. liquor, cognac, about 40% alcohol)	1 bottle

Leave for 1 week, sieve and use as a wound disinfectant.
Bigger wounds need treatment at the hospital.

3. Constipation
Pour 1 cup of boiling water over 1 teaspoon of dried leaves or root-bark, and filter it after 10 minutes. Drink before going to bed; it will take effect after 8 hours. Drink also 3 litres of water each day.

SIDE EFFECTS:
Avoid internal use over a longer period, and do not use internally during lactation or pregnancy.

5.9 *Cymbopogon citratus*: lemon grass

Herbe-citron, Fausse citronelle (F), Lemongras (D), caña de limón (limoncillo) (Sp).

BOTANICAL DESCRIPTION:
Family: Poaceae.
The grass grows to a height of about 50 cm.

CULTIVATION
Divide an existing plant. Plant in rich, well-drained soil in part shade. Water well in the early stages.

PARTS USED: leaves.

USE IN OTHER COUNTRIES:
In all tropical regions tea is prepared from lemon grass to treat fever. In Asia the plant is used for flavouring wine and as a spice in foods. The plant helps with toothache, cholera and flatulence, it also serves as a diuretic. In West Africa the whole plant is used in case of fever, colds, gonorrhoea. Lemon grass oil gives a scent to soaps and perfumes.

RECOMMENDATIONS FOR USE
Lemon grass needs little care and should have its place in every garden. We strongly recommend that every dispensary and hospital plants lemon grass as part of their hedges in order to prevent soil erosion. The contour lines in medicinal gardens are planted by combining lemon grass with bushes and trees.

Lemon grass contains a lot of myrcene and citral, substances effective in treating cramps and stimulating digestion. Drinking lemon grass tea increases the rate at which the body transpires and the frequency of urination, which help to wash out pyrogens, i.e. the microbial products causing the fever. In general, drinking lots of pure water is recommended for many diseases, because it helps all body functions to work more effectively. This is most important in hot climates where dehydration is always a great danger. Lemon grass gives this water a very pleasant flavour.

1. Bronchitis, sinusitis, cold
Boil one handful of leaves in one litre of water and inhale the vapour.

2. Fever, malaria
Whenever you have malaria, drink 2 litres of lemon grass tea. Prepare an infusion with 2 handfuls of lemon grass and 2 litres of water. If necessary, in addition drink a

stronger anti-malarial tea, e.g. artemisia (5.4) or bitter leaf (6.47). Drink it warm and in portions during the day. Children take less according to their weight.

3. Haemorrhoids
Old leaves contain more tannins than young ones. Therefore, boil 1 handful of old leaves of mango or eucalyptus in 2 litres of water for 15 minutes. Then add 2 handfuls of lemon grass and continue to boil for another 2 minutes. Leave to steep for 15 minutes. Filter, and add more warm water, and take a hip bath for 20 minutes.

4. Toothache; bad breath
Chew a fresh, washed leaf 2-3 times a day.

5. As an insectifuge
In order to repel insects put plenty of dried leaves on the embers inside the house (on a small fire), or grow plants in pots inside the house.

SIDE EFFECTS: none are known.

5.10 *Datura stramonium*: thorn apple, jimson weed, devil's apple

Pomme épineuse (F), Stechapfel(D), estramonio (Sp), mranaa (Sw).

BOTANICAL DESCRIPTION:
Family: Solanaceae.
Very poisonous herb, up to 1m tall, found in tropical countries at altitudes from 0 to 2,000m, likes rubble tips. The flowers are about 8 centimetres long, trumpet-like and white or bright blue.

CULTIVATION
From seeds. Sometimes invasive.

PARTS USED: Seeds and leaves.

USE AROUND THE WORLD
AFRICA: Boiled, pounded leaves are put onto burns to reduce the pain. This should only be done, however, if the burn is small, because of the danger of intoxication. The leaves must be boiled to prevent bacterial infection of the burn. It is used in folk medicine to relax cramps as it contains anti-spasmodic alkaloids. CONGO: To treat caries some leaves are pounded and put in a cup of boiling water, then cooled and used as a mouthwash twice a day for 6 days without swallowing.

CONSTITUENTS AND RECOMMENDATIONS FOR USE
Datura contains atropine and other anti-spasmodic alkaloids.

1. **Insect bites:** Swab the affected area of the skin with fresh sap from the leaves (wash your hands afterwards!).

2. **Asthma:** The leaves are smoked to treat asthma. Strong asthma cigarettes are made as follows:

Dried datura leaves	150mg
Dried eucalyptus leaves	150mg
Dried pawpaw leaves	700mg

   Make into cigarettes with paper, smoke in a pipe or crumble dried leaves onto a metal plate, ignite and allow the smoke to fill the room.

3. **Various diseases: Datura Tincture** (for production in hospitals only)
   - Datura seeds, dried (not above 50°C) and finely ground 8g
   - plain alcohol 95% 45 ml
   - filtered water 55 ml

   Mix; after one week press and remove seeds. In our experience, this medicine is equivalent to the imported belladonna tincture in atropine content (0.03%), and equivalent in use and dosage (adults: maximum 30 drops 3 times daily, children: maximum of 1 drop / kg of body weight 3 times daily).

   A. **intestinal spasms, biliary or renal colic, asthma attack**: 30 drops every 2 hours, not more than 90 drops a day.

   B. **chronic asthma, gastric ulcers:** 5-10 drops 3 times daily.

   C. **pre-medication for an operation**, dosage according to the doctor, in a crisis together with cannabis tea.

   D. **Parkinson's Disease**: start with 5 drops 3 times a day, and increase the dose until the side-effects become greater than the beneficial effects.

   E. **Poisoning with organophosphates** (the most used insecticides in the Tropics): Take 30 drops every 30 minutes (or more, and / or more often, as prescribed by the doctor) until the pulse is and stays normal.

   F. **In a crisis situation**, e.g. war, you may chew the seeds directly instead of using the tincture. 2 drops correspond to 1 seed. Therefore,
      adults: take a maximum of 15 seeds, 3 times a day, i.e. not more than 45 seeds per day.
      children: 3 times a day, a maximum of 1 seed for every 2 kg of body weight.

Caution: *Datura stramonium* is a very poisonous plant. The therapeutic and toxic doses are close to each other. The content of alkaloids in the leaves changes during the day, but the seeds we collected constantly contained 0.4% alkaloids identified as atropin / hyoscyamine. For this reason we use the seeds and not the leaves.

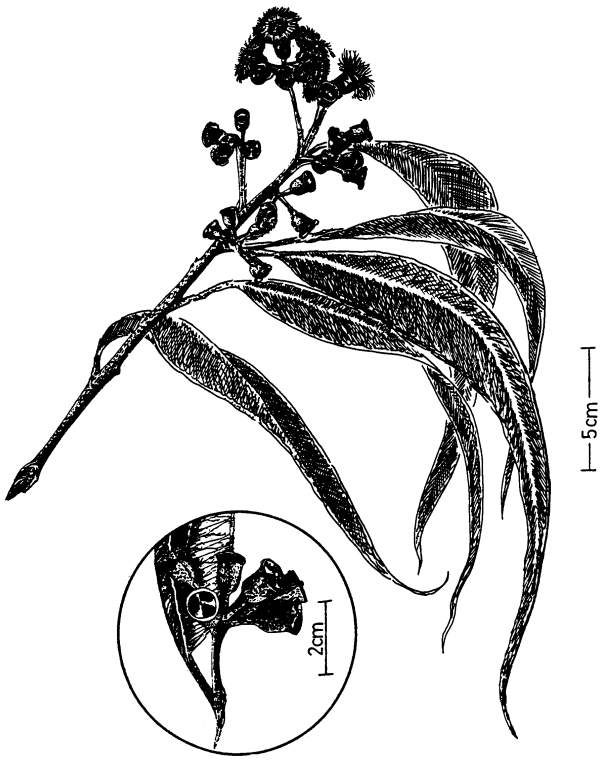
5.11 *Eucalyptus globulus*: eucalyptus tree, blue gum tree, fever tree

Arbre à fièvre (F), Eukalyptus (D), eucalipto (Sp), kalafulu (Sw).

BOTANICAL DESCRIPTION: Family: Myrtaceae.
Tall (30 m), slender tree, introduced from Australia. There are 150 species used for different purposes (*E. globulus* and *E. robusta* are "*officinalis*" in medicine, *E. citriodora* is used in the production of perfumes).

How to identify *E. globulus*: The broad juvenile leaves are bluish, and occur in opposite pairs on square stems. The mature leaves are quite different! They are narrow, sickle-shaped and are dark green and shiny, arranged alternately on rounded stems.

CULTIVATION
Propagate by sowing seeds without covering them. Plant seedlings in fertile, well-drained soil in the sun. Can survive frost. *E. globulus* grows best in the mountains. All eucalyptus trees make the soil more acid, with the result that crops cannot be grown near them.



PARTS USED: leaves, twigs.

USE IN OTHER COUNTRIES:
In America and Europe eucalyptus tea is taken for bronchitis, dysentery and urinary tract infections. In Africa this tea is used for repelling insects and is inhaled for colds. In South Africa it is applied to abscesses. In Asia it is a medicine for coughs, influenza, tuberculosis, asthma and worms.

RECOMMENDATIONS FOR USE
Eucalyptus contains various essential oils. Particularly noteworthy are eucalyptol and cineol, which have antiseptic and expectorant effects. The leaves also contain phenol, a strong disinfectant, and tannins, which support the mucous membranes in resisting attacks from bacteria. For both internal and external use, the best are *Eucalyptus globulus* or *Eucalyptus citriodora*. If these are not available, other eucalyptus species may be tried for external use.

1. Cough, urinary tract infection, sore throat

a) **Eucalyptus tea**: Pound 1 handful of dried or fresh leaves and boil with 1 litre of water for 5 minutes. Filter and drink in portions during the day. This tea can also supplement the treatment for tuberculosis.

b) **Cough syrup**: Pour 250ml of boiling water over 20g of dried leaves, cover and leave to steep for 1 hour. Filter. To one cup of this tea add one cup of sugar, bring briefly to the boil and filter. Children of 7 years should take 1 teaspoon 3 times daily, and smaller children less according to their body weight. Older children and adults should drink the tea rather than taking the syrup. Not for children under two years.
c) **Cough drops: Eucalyptus tincture**: Mix 300ml of boiled and filtered water with 100g of dried eucalyptus leaves. Alternatively, and more simply, mix 365 grams of fresh eucalyptus leaves with 35 ml of boiled and filtered water. In each case, then add 700 ml of plain alcohol (95%). After one week, press and remove the leaves. Adults take 30 drops, 3 times daily.

2. Sore throat
Chew ½ a leaf slowly for some hours, 3 times daily.

3. Fever, supportive treatment for malaria
Boil 1 handful of leaves with 2 litres of water for 5 minutes. Drink hot in portions during the day. The result is an increase in transpiration, which helps to fight the germs or whatever causes the fever.

4. Supportive treatment for diabetes and urinary infection
Follow recipe 3 above. An increase in urination will result. In some cases of diabetes the blood sugar level is lowered. However, limit this treatment to a few days only.

5. Colds, rheumatism
Eucalyptus oil: Heat 1 handful of dried and pulverised leaves in 100ml vegetable oil on a water bath for one hour. Filter. Rub the chest firmly with this oil.

6. For dressing wounds
To dress a wound, cover it with a compress soaked in the eucalyptus oil of recipe 5. This both disinfects the wound, and prevents the dressing from sticking to the wound. Change morning and evening.

7. Asthma, bronchitis
Pound 1 handful of fresh or dried leaves and then boil in 1 litre of water. Inhale for 15 minutes while steaming hot, with your head and the pot under a towel.

8. Dental hygiene
Use a small twig as a toothbrush, or make eucalyptus tooth powder, see chapter 4.5.

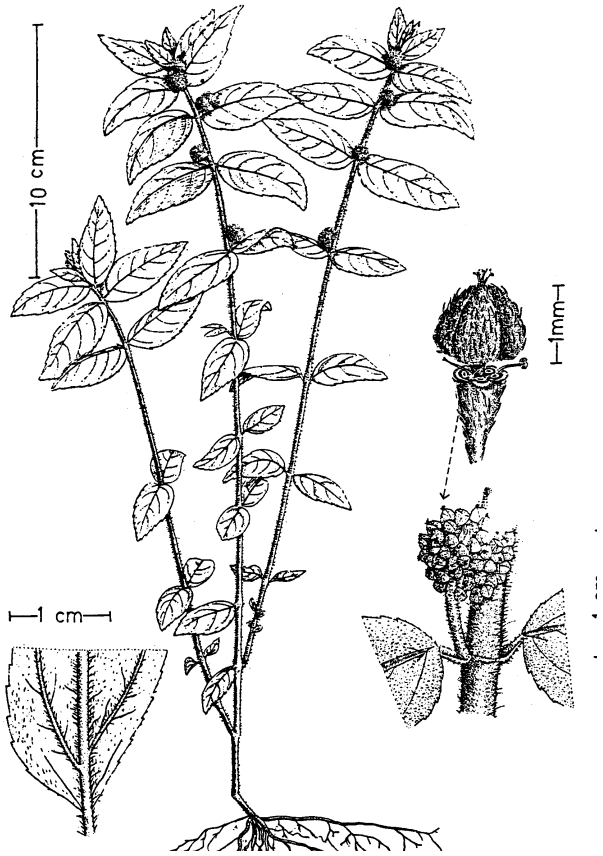
9. Flies and mosquitoes
To keep insects away, make mosquito repellent oil, see Chapter 4.3. Alternatively, simply rub your body with leaves or burn dried leaves inside the house.

SIDE EFFECTS: Because of its high efficacy, internal use is not recommended for children under 2 years. Adults should limit the treatment to a few days.

5.12 *Euphorbia hirta* (syn. *Chamaesyce hirta*): asthma weed

Euphorbe indienne (F), Indisches Wolfsmilchkraut (D), golondrina (Sp), mwache (Sw).

BOTANICAL DESCRIPTION: Euphorbiaceae.
A common weed in the Tropics, often found in villages, 30-40 cm tall, sometimes trailing on the ground, with opposite, dentate leaves on short stalks. It has stiff, tiny, intensely yellow coloured hairs. The tiny flowers are green and are on short stems. When the stem is broken, a white milky sap appears – this is an important distinguishing feature of this plant. The fruit contains 3 reddish-brown seeds, three-edged and 0.8 mm long.



CULTIVATION
Propagate by seed. The plant prefers dry, sandy soil rich in organic matter, in full sun.

PARTS USED: the whole herb. When harvesting, always cut the herb with a pair of scissors, so that the roots are left in the ground. Otherwise you will quickly destroy all the plants in the area and have none left!

USE IN OTHER COUNTRIES:
In Senegal, Mali, Burundi, Benin and D. R. Congo the herb is mainly used for diarrhoea and dysentery; in Niger for asthma; in Nigeria for constipation and enteritis. In West Africa the plant is also known for its effect in stimulating the production of mother's milk. In Asia the asthma weed is mainly used for asthma and diseases of the respiratory tract. In the Philippines *Euphorbia hirta* tea is widely taken to prevent and cure Dengue fever. The Indian Pharmacopoeia recommends the plant for worms in children and for stimulating the milk production in women; the sap for colic and to remove warts. The plant is registered in the African Pharmacopoeia (OAU, 1985); if it was easier to cultivate and to process it would certainly be used for medical purposes in Europe as well - but this plant cannot be cultivated in large amounts!

In Kasai, in the D. R. Congo, this plant is called “anti-cataract”.

In experiments with animals an extract of fresh *E. hirta* showed the following effects: anxiolytic (releasing anxiety), analgesic (relieving pain), anti-inflammatory and sedative. The extract is also active in cases of diarrhoea (even if this was caused chemically). *E. hirta* has also been shown to have anti-microbial properties.

RECOMMENDATIONS FOR USE

The asthma weed belongs to the family *Euphorbiaceae*, many members of which are very poisonous and/or carcinogenic. For this reason you have to be absolutely sure that you have the right plant – see the botanical description above.

1. Amoeba dysentery

Boil 15-30 g (1 handful) of the fresh, washed herb (or dried herb if need be) with 1 bottle of water for 15 minutes. Filter and drink in portions during the day. Repeat the treatment for 8 days in a row. Also drink ORS (see chapter 4.6).

2. Severe amoeba dysentery, bacillary dysentery, cholera

Make anamed anti-amoeba tea. Wash and mix one handful each of

- asthma weed (*Euphorbia hirta* - the whole plant, but not the roots).
- guava leaves.
- young bright green mango leaves.

If one of these three plants is not available, pawpaw leaves may be used instead.

Boil for 2 minutes in one litre of water, leave to steep for 30 minutes and then filter. Drink in portions throughout the day. For dosages for children, see chapter 2.6. Both adults and children should always also take ORS (see chapter 4.6).

Continue to drink this tea for 8 days, even if the symptoms disappear after 2 days, which in our experience is often the case.

This recipe has helped *anamed* to save hundreds of lives, especially in cases in which people

- with amoeba infections suffered from terrible stomach cramps after taking the usual medicine (Metronidazol), and who therefore stopped taking this "modern" treatment.
- whose bacillary dysentery was caused by germs that were resistant to almost all antibiotics.

All the above-mentioned plants are effective against amoebas and bacteria and thus can also be used separately. For patients with nausea, or for babies, do not add the (bad-tasting) pawpaw leaves during the first days.

3. Urinary tract infection, kidney infection, intestinal cramps, diarrhoea

Drink the infusion from recipe 1; it is no cure for gonorrhoea though! As a precaution, do not take for more than 8 days. In cases of diarrhoea, always use ORS (see chapter 4.6).

4. Intestinal worms

Wash and mix:

asthma weed, whole plant without roots,	1 handful
pawpaw leaves	1 handful

Boil for 15 minutes in 1 litre of water, then filter. Drink in portions in the course of the day. If a child refuses to drink this tea, prepare it with the handful of asthma weed only. Another successful treatment is pawpaw sap, see chapter 5.7.

5. Asthma

a) Smoke dried leaves rolled into a cigarette, or
b) Place your head on 1 handful of these leaves at night, or
c) Use recipe 1 above.

6. Cataracts

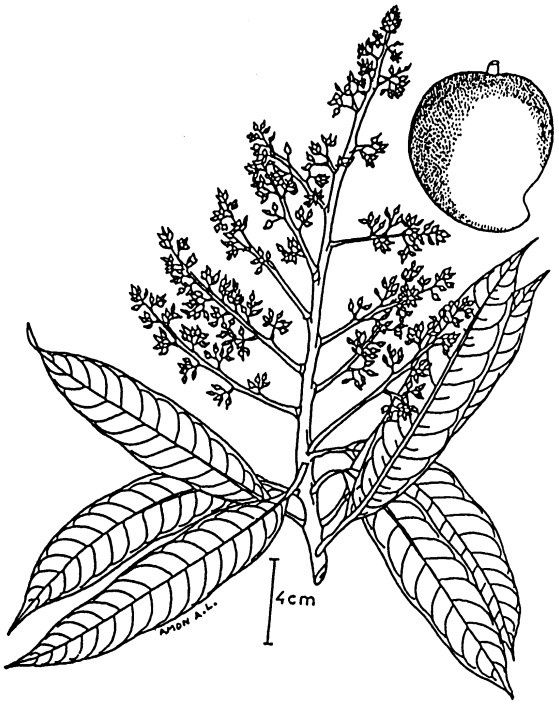
At an early stage of the disease put one drop of *Euphorbia hirta* sap into each eye three times daily for 10 days. To avoid the danger of eye infections, before breaking the stem the plant must be very well washed and dried with a clean towel. It is not known why this works!

7. Warts

Apply the plant latex onto the warts.

SIDE EFFECTS:
Do not exceed the recommended dosage or time. *Euphorbia hirta* belongs to a botanical family which includes many toxic species.

5.13 *Mangifera indica*: mango tree



Manguier (F), Mango (D), mangueira (Sp), mahembe (Sw).

BOTANICAL DESCRIPTION: Family: Anacardiaceae.
Tree up to 25 m high, grows all over the Tropics.

CULTIVATION
The mango tree thrives in hot regions at low altitudes. Grow from seed in plastic pots, and plant out at 8 metre intervals. The trees fruit after 4 to 6 years.

PARTS USED: Young leaves, bark, flowers, fruits, seeds. So as not to kill the tree, take bark from the branches only (and only from one side), never from the trunk.

USE IN OTHER COUNTRIES:
In Australia tea made from the leaves is taken in cases of amoeba dysentery. In Mali and Niger the bark and the leaves are used for sore throats, toothache, scurvy and

fever. In Senegal the sap in the leaves is known as a medicine for mental diseases. On the Côte d'Ivoire the leaves are used for bronchitis, asthma and bruises.

RECOMMENDATIONS FOR USE
The leaves of the mango tree contain up to 10% tannins - the substances responsible for its efficacy with diarrhoea. Furthermore flavonoids with a diuretic action can be found.

1. Diarrhoea; amoeba dysentery
Take 30 g (1 handful) of fresh young green leaves, boil with 1 litre of water for 30 minutes, filter and drink in portions during the day. Combine with asthma weed for greater effectiveness, see paragraph 5.12.

2. Constipation
Eat a lot of very ripe mango fruits.

3. Cough, bronchitis
Take 30 g (1 handful) of fresh young leaves and boil them in 1 litre of water for 10 minutes. Filter and drink in portions during the day.

4. Fever
Use recipe 3, but take 2-3 litres of water. Drink during the day in small portions. This increases the rate at which the body transpires and the frequency of urination, both of which help to wash out pyrogens, i.e. the microbial products which cause the fever.

5. Haemorrhoids
Take 5 handfuls of older leaves and boil in 5 litre of water for 30 minutes. Filter and use this decoction for a hip bath.

6. Sore Throat
Prepare recipe 3, gargle with 1/2 cup of the solution every hour.

7. Inflammation of the gums, scurvy
The gums can become inflamed by a lack of vitamin C. To avoid this, eat plenty of fruit! If there is none, chew 3 young mango leaves daily, which contain lot of vitamin C, and also tannins.

8. Worms
a) Thoroughly dry 1 mango stone, then roast and pound. Boil the powder with 1 bottle of water. Make 2 portions and drink them the same day, or
b) Put 1 handful of pounded flowers in 0.7 litres of water and leave to draw at room temperature overnight. Filter. Drink in two portions the following day.

We prefer, however, the treatment with pawpaw (chapter 5.7) or asthma weed (chapter 5.12).

SIDE EFFECTS: Old mango leaves are poisonous, do not take them for internal use.

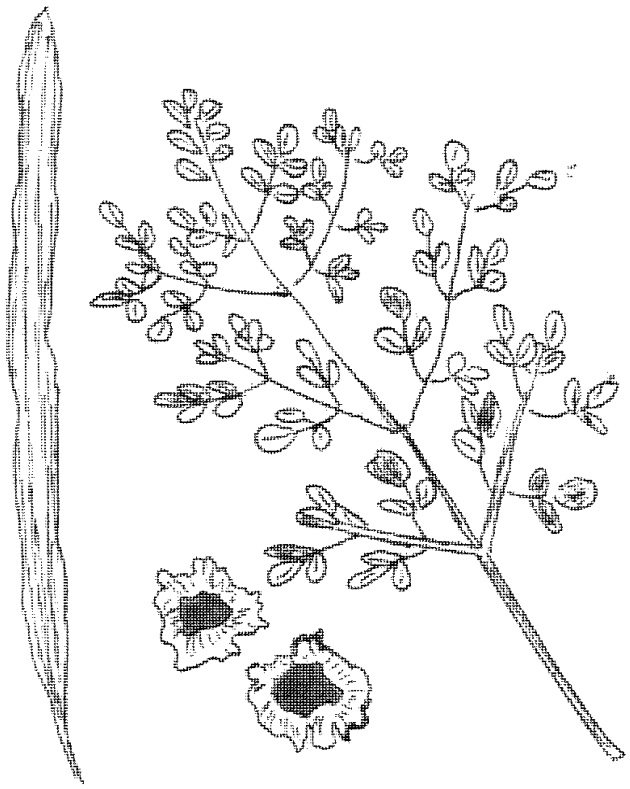
5.14 *Moringa oleifera* and *M. stenopetala*: drumstick tree

Moringa (F,D), Babano del arbo (Sp).

BOTANICAL DESCRIPTION: Family: Moringaceae.
Moringa oleifera is a small, fast-growing deciduous tree or shrub that reaches 12m in height when mature. It is native to India. Its wood is soft, its bark light and it tends to be deeply rooted. It grows best where the temperature ranges from 26 to 40°C, the annual rainfall is more than 500mm and the altitude is less than 1000m. It is tolerant to drought. Although it bears pods, it is not leguminous.

Moringa stenopetala is native to Kenya and Ethiopia, growing at altitudes of up to 2000m. It is even more drought resistant than *M. oleifera.* Its leaves, pods and seeds are larger, and it is thought to have similar remarkable properties (see below).

CULTIVATION
The tree grows rapidly from seeds or cuttings, even in poor soils. It prefers well-drained, sandy earth. As the tree grows, the more it is cut back, the more leaves it will produce.



PARTS USED: leaves, pods, seeds, bark, roots, flowers, oil, gum. In traditional medicine all parts of the tree are used.

RECOMMENDATIONS FOR USE

1. Nutrition

Plant many moringa trees! Every family with young children, especially where there is any danger of under-nutrition, should have at least one healthy tree in their garden.

The leaves are quite remarkable, they contain protein, minerals and vitamins. The protein content is almost equal to that of eggs. The minerals include calcium, iron, potassium and phosphorus. The calcium content of fresh leaves is 4 times that of milk, and of the dried moringa leaf powder (see below) 17 times. The vitamins present in moringa include vitamins A, B and C. The vitamin A content of fresh leaves is 4 times that of carrots, and of the dried moringa leaf powder 25 times. Moringa leaves may be eaten fresh, cooked lightly as a vegetable or used as moringa leaf powder.

Moringa leaf powder

In a programme run by Church World Service from the USA in Senegal, moringa leaf powder was shown to be very effective in giving strength and increased body weight to malnourished children and pregnant mothers. With mothers of young babies it increased the production of breast milk (lactation).

To make moringa leaf powder;

a) Harvest the leaves, and wash if necessary.
b) Dry them within 3 days in the shade. In sunlight they lose their vitamin A.
c) Pound and sieve.
d) Store in airtight jars in a dark place. If possible, check the moisture content with a hygrometer, so that you know exactly how long you can store it.

We recommend that moringa leaf powder be freshly made every month.

This leaf powder can be added to rice, grains, sauces, in fact anything at all. For children or adults suffering malnutrition and other health problems, a spoonful should be added to their diet three times a day.

Pods, flowers and seeds

The pods are also eaten. When very young, cut them into short pieces and cook and eat like green beans. When they are a bit bigger and tougher, boil them and scoop out the seeds and flesh. When they are big and old but still green, just use the seeds - called moringa peas. Fry them in oil and eat as nuts.

Moringa flowers are a source of good honey.

Moringa seed has a fairly soft kernel, so the oil can be extracted by hand using a screw press. The seed is first crushed, 10% by volume of water is added, followed by gentle heating over a low fire for 10-15 minutes, taking care not to burn the seed. One such test yielded 2.3 litres of oil from 10 kg of kernels. Moringa oil can be used for cooking. It is as nutritionally valuable as olive oil. The oil is slow to turn rancid, and is excellent in salads.

2. Medicinal uses

A. General health: In nutrition programmes, as children and adults develop strength, it is very noticeable how, very often, medical problems such as anaemia, diarrhoea, stomach ulcers and skin problems disappear. In the literature it is said that skin infections can be treated with a paste made from the seeds.

B. HIV/AIDS: We have received a lot of feedback from people who use moringa leaf powder and artemisia tea in the treatment of AIDS patients. Taken daily, this simple procedure has improved their condition dramatically. See the anamed publication "AIDS and Natural Medicine".

C: Diabetes: Make an infusion from the leaves and drink several times a day. Alternatively, three times daily chew and swallow one white moringa seed. This treatment is more successful for some patients than others, therefore have your condition checked in the laboratory.

3. Use to purify water.

Seed pods should be left to mature on the tree and harvested when dry. The light 'wings' and shells of the seeds are easily removed, leaving the white seed kernels. These are finely crushed and pounded, using a pestle and mortar. The amount of seed needed to treat river water depends on how much suspended matter the water contains. Users quickly become familiar with the changing needs of their particular water as the quantity of sediment changes with the seasons.

To treat 20 litres of water (the amount carried in the average large bucket) about 10 crushed seeds are needed (thus one seed can clarify 2 litres of water). Add a small amount of water to the crushed seed to form a paste. Put the paste into a clean bottle - a soda bottle is ideal. Add a cup (200ml) of water and shake for 5 minutes. This action activates the chemicals in the crushed seed.

Filter this solution through white cotton cloth into a 20 litre bucket of the water you want to purify. The contents are stirred rapidly for 2 minutes, followed by slow stirring for 10-15 minutes. During this slow mixing period, the moringa seed coagulates the fine particles and bacteria into larger particles which sink and settle on the bottom of the bucket. After one to two days, clear water can be drawn off.

This process will remove 90-99.9 per cent of the bacteria which are attached to the solid particles, as well as clearing the water. If the water is very badly polluted, however, some harmful micro-organisms may not be removed. For drinking water, further purification is then recommended, either by boiling (if possible in a solar oven) or filtering with a simple sand filter.

Note: Moringa seeds can be used first for oil extraction. The remaining press cake, which can be dried and stored, may then be used instead of seeds for water treatment.

4. Other technical uses

Moringa oil can be used in lamps, for lubricating delicate mechanisms, for soap-making and as a base for cosmetics.

Use in agriculture

a) Agro-forestry: Moringa is very useful for wind-breaks and hedges - it grows again rapidly after being cut back. In fact, frequent cutting back will increase the production of leaves. Hedges are perhaps the best way of combining the benefits of moringa, e.g. leaf production, firewood, shade, structure for climbing plants, forming a wind-break, preventing soil erosion and dividing the fields.
b) Cattle fodder and fertilizer: Leaves and seed-cake.

SIDE EFFECTS: Root bark of moringa should not be taken internally, nor should the roots be used in any way by pregnant women.

5.15 *Psidium guajava*: guava

Goyavier (F), Guave (D), guayaba (Sp), mapeera (Sw).

BOTANICAL DESCRIPTION: Family: Myrtaceae.

Small bushy tree, 3-5 m high. The leaves are stiff, have short stalks and smell pleasant. Depending on the sort the fruits are round or oval and have sweet red pulp.

CULTIVATION

Does not tolerate frost. Requires rainfall of over 1 metre per year, or to be watered, and rich soil. Flowers after one year. Propagate from seed.

PARTS USED: young leaves, fruits, roots.

USE IN OTHER COUNTRIES:

In Europe and Asia tea made from the leaves is known as a medicine for diarrhoea, in Egypt and Hong Kong for coughs, in Senegal to regulate menstruation, in Hawaii for bacterial infections.

RECOMMENDATIONS FOR USE

The guava leaves contain several substances that help with diarrhoea: tannins, which have a protective effect on mucous membranes; flavonoids that have antispasmodic and antibiotic effects; and volatile oils that are disinfectant.

1. Simple diarrhoea in adults and gastritis

a) very simply, just eat some unripe guava fruits, or

b) make guava tea; take one handful guava leaves (i.e. the amount the patient can hold, or hide, in his or her fist) and add one litre of water. Boil for 20 minutes in a covered pot, and then filter. Add more water to bring the volume up to 1 litre again. Drink in portions through the day.

2. Diarrhoea in children, and severe diarrhoea in adults: "Guava ORS"

To one litre of guava tea (see recipe 1), add 4 tablespoons honey or 2 heaped tablespoons sugar, and one level teaspoon salt. If there are no guava leaves, take water, salt and sugar only.

Dosage: each day, give the child 200ml (one glass) for every kg bodyweight. If you do not know the weight of the child, give, under 6 months, 700ml, 6 months to 2 years, 1400ml, 2 to 5 years, 2100ml, older than 7 years 2800ml, and adults 3500ml.

3. Scurvy (vitamin C deficiency)

Eat lots of very ripe fruits.

4. Amoeba dysentery

For light cases, follow recipe 1b above.
For serious cases, make a tea combined with other plants (see chapter 5.12).

5. Cough

Follow recipe 1b, or simply chew one young guava leaf 5 times a day.

6. Diabetes

In some cases the use of guava tea or juice may lower the blood sugar level. Follow recipe 1b. Have the results verified in a laboratory.

7. Bleeding wounds

Boil 2 handfuls of fresh leaves with 1 litre of water until only 1 mugful (500ml) of the mixture remains. Filter and use it for washing the wound.

8. Open abscess

The first recipe costs nothing, the second almost nothing! First recipe: Mix a cup of pounded fresh leaves with one cup of water. Boil gently for 20 minutes. Use this to make a compress, and prepare fresh morning and evening. Second recipe: Wash 1 handful of fresh leaves, pound and add 1 teaspoon of salt and 1 teaspoon of sugar. Heat in a saucepan without water, until the mixture turns brownish (not black). Use the mass to make a compress.

9. Vaginal wash

Use a warm decoction of leaves after childbirth.

SIDE EFFECTS: unknown

CHAPTER 6

50 MORE PLANTS AND NATURAL PRODUCTS

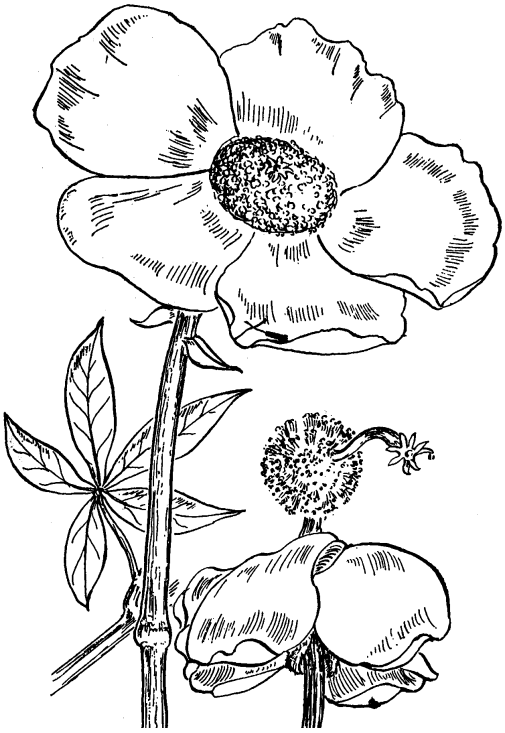
The plants described in chapter 5 are extremely useful, and are those plants which are most important for anyone wishing to practice Natural Medicine. In the tropics there are, of course, a lot more medicinal plants. Some of them;

- are hardly mentioned in pharmaceutical literature (e.g. kalanchoe).
- are known as spices (e.g. pepper, ginger).
- serve as foods (e.g. oranges, peanuts).
- are known as poisons (e.g. *Vinca rosea*).
- are used for ornamental purposes (e.g. African marigold).
- are used to "heal the earth", or to prevent soil erosion, e.g. *Cassia spectabilis*.

Some of these plants are included in this chapter. Also included are some other useful, natural substances, such as honey and salt.

The presentation in this chapter is different from that of chapter 5. Here in chapter 6 we have underlined those treatments that we particularly recommend, either because we use them ourselves, or because they are described in reputable pharmaceutical literature. But, always, LET YOUR OWN EXPERIENCE BE YOUR BEST GUIDE.

6.1 *Adansonia digitata*: monkey bread, baobab



Baobab (F, Sp), Affenbrotbaum (D), mbuyu (Sw).
Family: Bombaceae.
This tree is too seldom planted. It thrives in an extremely dry environment and can live for two thousand years. The tree contains substances effective against heart disease, diarrhoea, asthma, fever and high blood pressure.
TROPICS IN GENERAL: The leaves contain protein and vitamins A and C. They are used as a vegetable, prepared like spinach. The leaves can also be dried and made into leaf powder like moringa, and used in malnutrition programmes. The fruit is eaten and can be used to make fruit juice. The fruits are also used to treat infections and fever, and to increase transpiration. To treat diarrhoea in children, take 20g of the fruit pulp and boil it in 1 litre of water. The black seeds can be roasted, and eaten like groundnuts. Pounded seeds are used to make soups. The seeds contain fat which is used for cooking and cosmetic products.

6.2 *Allium cepa*: onion

Oignon (F), Zwiebel (D), cebolla (Sp), kitungu (Sw). Family: Alliaceae.

Annual plant with numerous types differing in colour. Origin Asia. The bulbs develop better in cooler climates, that is why in Africa onions are planted at the beginning of the (somewhat cooler) dry season.

ASIA: used for cough, sore throat and high blood pressure, also as a diuretic medicine. EAST AFRICA: used for fever. ARABIC PEOPLES apply onions to abscesses. Garlic, is used for the same illnesses in lower dosage.

1. Avitaminosis (Vitamin A, B and C deficiency): Include onions in your daily diet. Onions can always be eaten, independent of their state of growth. If possible eat them fresh and raw.
2. To improve the memory: Eat lots of fresh onions regularly, or even better, garlic.
3. Cough and sore throat: Mix ½ cup of chopped onions with ½ cup of water, stir, drink in portions during the day.
4. Gastro-intestinal infection: Eat a lot of fresh, chopped onions.
5. High blood pressure, urinary tract infection, diabetes: Regularly eat ½ cup chopped onion in the course of the day. Do not forget to go to the health centre to check your health condition.
6. Fungal infection, abscesses: Pound ½ handful of chopped onion and swab the wound or affected area with onion juice; or put ½ onion on the abscess and tie it in place with a bandage. This treatment is effective. Chopped cloves of garlic, however, are more effective, but are also more irritant.
7. Otitis, purulent otitis (i.e. an infected ear with pus)

   Chop 1 handful of onions finely. Put them into a piece of thin cotton cloth. Use this as a compress on and behind the ear. Secure with a bandage around the head; keep warm; renew the onion morning and evening. At night, use as a pillow.

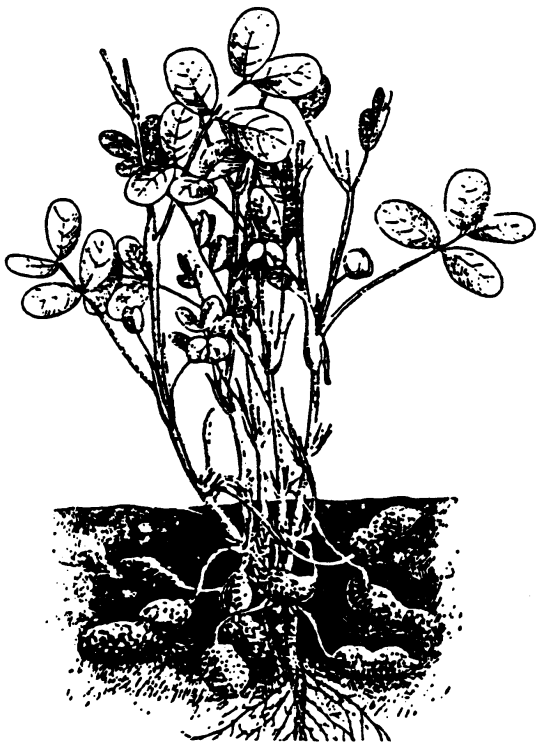
Side effects: With people who suffer allergies, or after prolonged use, skin irritations may occur. Avoid contact with the eyes.

6.3 *Ananas comosus*: pineapple

Ananas (F, D), ananás (Sp), mnanasi (Sw). Family: Bromeliaceae.
Pineapple contains an enzyme called "bromeline", which reduces inflammations. The ripe fruit contains a lot of vitamin C.

1. Oedema and external inflammation; tie a piece of unripe fruit on the oedema or inflamed area (e.g. with a bandage string).
2. Amenorrhea (absence of menstrual flow), urinary tract infection, as a diuretic and for worms; mix about 500g of the unripe fruit with 0.7 litres of water, boil together and drink this quantity in portions during the day. If necessary, repeat for several days.
3. Scurvy and fever; drink a lot of juice of ripe fruits to support the immune system of your body. Juices of the following fruits are also rich in vitamin C: lemon, orange, pawpaw, tangerine, passion fruit etc.
4. Indigestion; the juice of unripe fruits is very helpful.
5. Like the papaine of pawpaw, bromeline makes tough meat tender. Wrap tough meat in a skin of an unripe fruit overnight.

Avoid contact of pineapple juice with the eyes. The juice of unripe fruits is not recommended for pregnant women or patients with gastric ulcers.



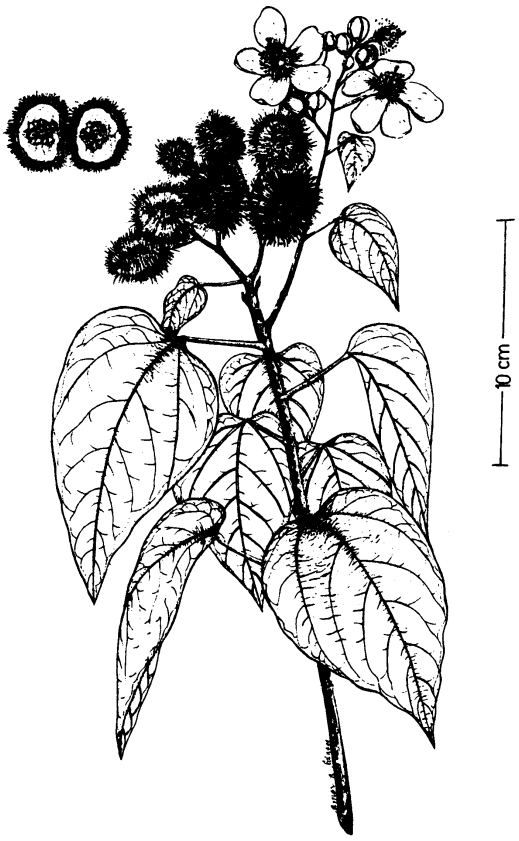
6.4 *Arachis hypogaea*: peanut

Arachide (F), Erdnuß (D), cacahuete, mani (Sp), njugu (Sw).
Family: Papilionnaceae.

The plant is 20-30cm tall, the fruits ripen underground. TROPICS: Peanuts contain a lot of proteins and vitamins. The protein content of milk powder is equivalent to dried peanuts, but, in the Tropics, costs 10 times as much. The oil is very nutritious, too, and can be pressed in the villages with a simple mechanical press. It does not keep long though.

Sleeplessness: Drink an infusion made of 1 cup of boiling water poured over 1 handful of leaves.

6.5 *Bixa orellana*: annato, lipstick tree



Roucouyer (F), Annato (D). Family: Bixaceae.

Bixa is a fast-growing tropical bush whose seeds are intensely red-coloured. This colouring (annato, *Terra indica*), consisting of carotinoids, is completely harmless and is used worldwide to colour cheese, butter, pastry, tomato puree, lipsticks, hair, cotton and silk (orange).

SOUTH AMERICA: The colouring is used for skin protection against the sun on long marches.

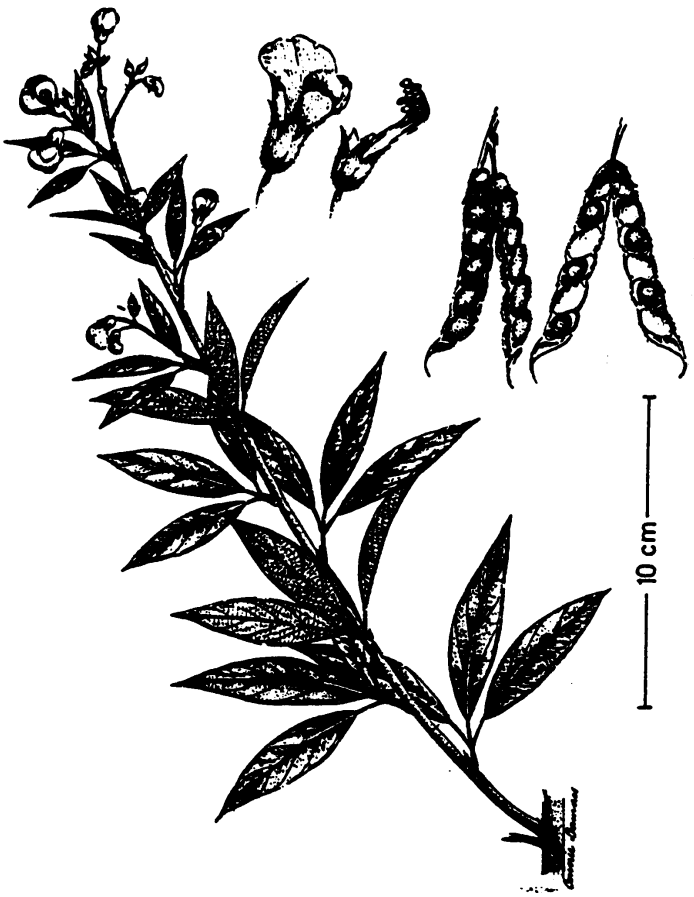
1. To disinfect wounds (PHILIPPINES) Boil 10 spoonfuls of Bixa seeds (best taken from capsules which are about to burst open) in 10 spoonfuls of water, filter, and add 1 spoonful of fresh garlic juice.
2. Burns: Heat 10 units of vegetable oil with 1 unit of clean bixa seeds for 10 minutes at around 100°C, and filter.
3. We use Bixa to colour soap (see chapter 4.1.7.) and ointments, by adding fresh seeds to the boiling oil.
4. Water solutions, too, can be coloured red as follows: Leave 100g seeds and 0.5g NaOH in 200 ml water for 6 hours, filter and dilute as much as you like. Or: To make red ink, add 20g salt to this solution (as a preservative). This is also suitable for refilling highlighter pens!

6.6 *Brassica oleracea*: cabbage

Choux (F), Weißkohl (D), col (Sp), chyu (Sw). Family: Brassicaceae.

Vegetable containing a lot of iron, can be eaten raw or cooked. The sap of the unripe plant contains a substance with an anti-ulcerous action which protects the mucous membrane of the stomach.

R. D. CONGO-KIVU, EUROPE: The vegetable is eaten for scurvy and eaten raw for gastric ulcers. Fresh leaves are applied to the skin to treat skin diseases, particularly cases of eczema of unknown origin.



6.7 *Cajanus cajan*: cajan, pigeonpea

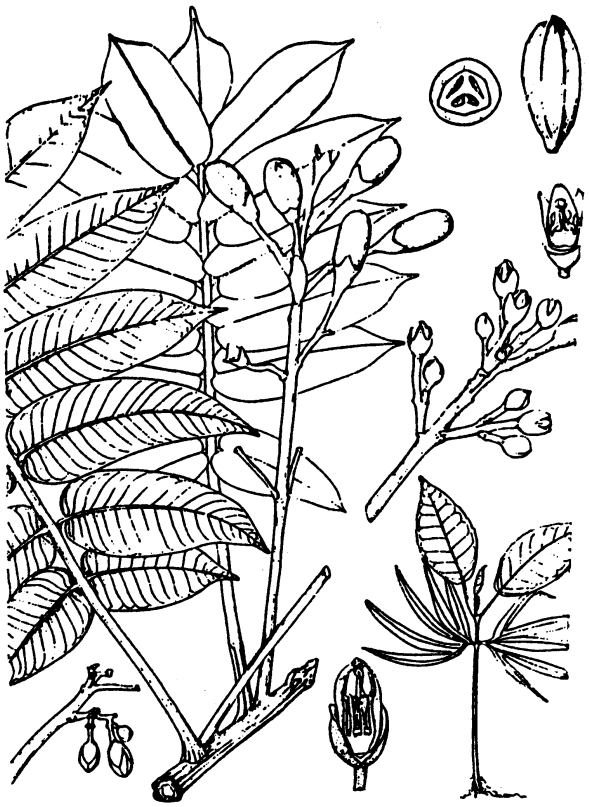
Cajan (F), Straucherbse (D), mbaazi (Sw). Family: Fabaceae.

Leguminous shrub, 1-2m tall, flowers yellow and about 1.5cm long. The pod is hairy, 4-7 cm long and contains 2-7 seeds. The leaves make a good green manure. It grows in tropical countries from sea level up to altitudes of 2,400 m. It is an ideal plant for preventing soil erosion; for this purpose plant cajan in horizontal rows, following the contour lines. Space out at 20cm intervals, in rows 3 to 5 metres apart. Between these rows cultivate food plants and medicinal herbs.

ASIA: For abscesses at an early stage, a pasty compress made of unripe bananas and cajan seeds is applied to the affected area and secured with a bandage.

AFRICA: Good soil covering.

The seeds are rich in protein, and can be eaten. Soak them for several hours, pound them and then either fry them or steam them. Immature pods may be boiled and eaten as a vegetable.



6.8 *Canarium schweinfurthii*: elemi

Elemi (F, D), Arból de la Bien (Sp), mbafu (Sw). Family: Burseraceae.

Big forest tree with bark full of fissures. Cooked and salted, the olive-like fruit is a delicacy. Shortly after cutting into the bark, the resin, a soft cloudy and viscous mass ("elemi"), emerges, with an intense smell like terpenes.

AFRICA: Elemi is used in torches, or lit directly as a substitute for candles. In

Catholic churches it is used as incense. Medicinally used in ointments and oils for rheumatism and arthritis (see chapter 4.3) and scabies. In the Congo a decoction of the bark is used for stomach-aches, after-birth pains and in cases of placenta retention.

EUROPE: Preparation of "elemi depuratum": Warm the resin slightly, sieve through a cloth and store in an airtight container. Used in plasters to stimulate the healing action of the skin. Used in carpentry to make varnish. Normal varnish is just oil of castor, linseed or sesame. If this is too expensive, mix 1 (volumetric) unit of elemi and 2 units of wax (candle) in 7 units of diesel, heat in a solar oven (never over a fire!) and filter while hot. For outdoor purposes, engine oil is used instead of diesel.

6.9 *Cannabis sativa*: hemp, marijuana

Chanvre (F), Hanf (D), cáñamo (Sp), mbangi (Sw). Family: Cannabaceae.

Wild herb found all over the world. The tips of the twigs of the female plants are harvested and used. Drying temperatures should not exceed 50°C.

AFRICA: This marijuana is often smoked by mentally sick or impoverished men. It is used as a pain-killer and to "get high". Normally its cultivation and trade are strictly regulated or forbidden.

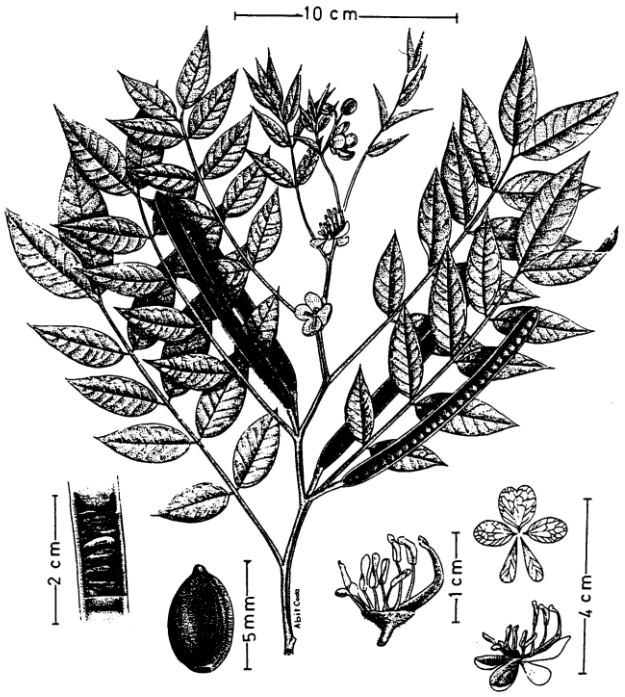
TROPICS: Like morphine, cannabis belongs to the opioid analgesics. If no commercial opioids are available, or if they are too expensive, then with cancer or AIDS patients cannabis may give good relief from pain - but make sure you inform the official authorities first.

The Wagenia people in D. R. CONGO use a tea made of the leaves for rinsing the vagina when a premature birth is expected.

Vomiting in cancer or AIDS patients, extreme pain, psychotic crying: Give a cannabis cigarette. The effect is nearly immediate, best after 30 minutes and disappears after 3 hours. Alternatively, cannabis tea or tincture may be used. These take about an hour to work, but the effect lasts for about 8 hours.

Caution: The side effects include nausea, partial loss of memory, anxiety, constipation and schizophrenia.

6.10 *Cassia occidentalis* (recently renamed *Senna occidentalis*): coffee senna



Café senna (F), Sennakaffee (D), yerba hedionda (Sp), mwingajini (Sw).
Family: Caesalpiniaceae

Shrub 0.8-1.5 m tall. The leaves are even-pinnate and alternate, the flowers are yellow. The pods, about 15 cm long, curve slightly upward and contain 10-20 seeds. Found throughout the tropics within villages.

In THE TROPICS, *Cassia occidentalis* is used for skin diseases; constipation, high blood pressure, haemorrhoids, gonorrhoea, malaria, hepatitis and as a worm medicine. Ground raw seeds are taken orally for guinea worms. In D. R. CONGO the root-sap serves to induce contractions in child-birth (oxytocicum).

1. Constipation, haemorrhoids. Bring 1 teaspoon of dried leaves and 1 glass of water to the boil, allow to steep for 15 minutes, then filter. Drink before going to bed. For constipation, also drink 3 litres of water per day.
2. Mild cases of malaria. Prepare a decoction of one handful of leaves in one litre of water. Drink in portions in the course of the day, and repeat this treatment for seven days. Also drink 2 litres of lemon grass tea each day.
3. Skin diseases. Crush 1 handful of fresh leaves, spread the pounded mass on the skin and cover with a bandage. Change it twice a day.

Caution: Pregnant women must not take cassia leaf extracts internally as the anthraquinone content may cause premature birth or even abortion. It should also not be used by breast-feeding mothers. No-one should exceed the stated dose, as colic may be caused.

6.11 *Cassia spectabilis* (recently renamed *Senna spectabilis*): cassia

Casse marron (Fr), cañafistula cimarrona, cañafistol, bruscón (Sp), mhoba (Sw)
Family: Caesalpiniaceae.

This tree is hardly used for medical purposes, but it has great value as a "living fence", for reafforestation and for preventing erosion in medicinal gardens. It grows naturally in the tropical forest, has big, bright yellow

flower umbels, their shape resembling the flowers of the European horse chestnut tree. With cuttings of about one metre in length you can establish an entire forest. Under the branches cultivation is possible. To prevent soil erosion, put such cuttings 50cm deep into the soil, at intervals of 20cm. At the beginning of the rainy season, prune the hedge to a height of 1 metre, and dig the branches into the soil as a green manure.

Fungal infections. If *Cassia alata* (ringworm bush, see chapter 5.8) is not available, use *Cassia spectabilis* instead.

6.12 *Cinchona officinalis*: cinchona

Quinquina (F), Chinabaum (D), quina (Sp). Family: Rubiaceae.

Various species belong to *Cinchona officinalis*, e.g. *Cinchona succiruba*, a tree that grows up to 24m high. Cinchona trees, which originate from the Andes, grow everywhere in the Tropics, and grow best at altitudes of between 1,000 and 2,400m. Cinchona bark is harvested either by cutting 8 year old trees and taking off the bark, or by continually cutting off thin pieces of bark during the tree's growth. The tree's wounds are covered with clay or moss. The harvested bark is dried in the sunshine.

Wild cinchona trees have been destroyed through uncontrolled exploitation. If you are lucky enough to live at the right altitude, do plant 3 trees in your garden. Cinchona bark has been used for over three hundred years to treat fever and malaria.

Depending on the species, the bark contains between 1 and 3 per cent quinine, and about 4 per cent quinidine and other alkaloids. In industrial production, quinine, which is effective in treating malaria, is extracted and processed into tablets (daily dosage for adults: 1 to 2g). Quinidine is used for tachy-cardiac patients (i.e. the heart beats too fast).

1. Malaria: As first choice, use *Artemisia annua* (see chapter 5.4), because it has fewer side effects. Only use cinchona if this does not work. Boil 10g or 3 heaped teaspoons of pulverized bark in 1 litre of water for 10 minutes, filter and drink in portions over 24 hours. This is equivalent to about 350 mg of quinine. Children should take less, depending on their body weight.

2. If you like to offer lemonade to your guests, boil 1g or ¼ teaspoon of bark in 1 mug of water for 10 minutes. Add the juice and the grated peel of 3 lemons, give it another short boil and filter. Now add 300g or 2 cups of sugar and 3 litres of cold water. Serve as cool as possible.
3. Hair lotion: Massage the brew under 1 above into the hair.

Side effects: Taken internally: headache, vomiting or diarrhoea. Stimulates labour, therefore do not use recipe 1 if there is a danger of a miscarriage. If used over a longer period, embryo damage, eye damage and deafness may occur.

6.13 *Citrus limon*: lemon

Citronnier (F), Zitrone (D), cidra limón (Sp), ndimu (Sw).
Family: Rutaceae.
Small tree, about 6-9 m high.

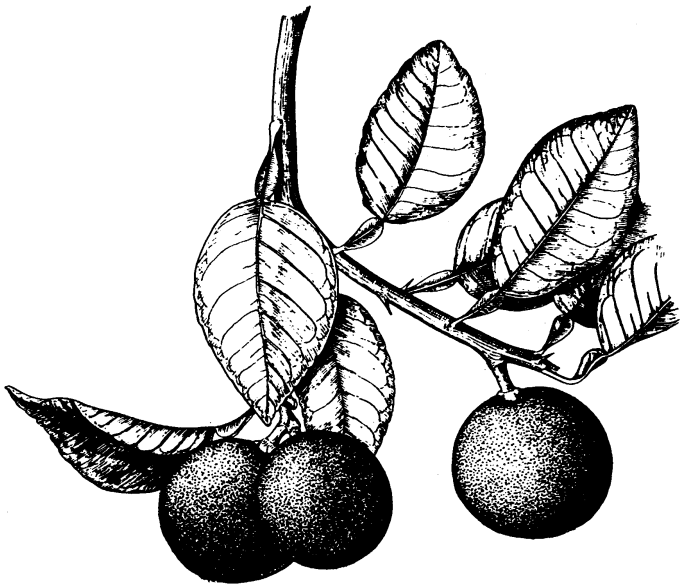
In EUROPE a warm drink with lemon juice and honey is prepared in case of fever, to increase perspiration. In ASIA the sap of young leaves is used for infected ears, and tea of the fresh peel is used for nausea. In the CÔTE D'IVOIRE a tea for coughs and colds is brewed from young leaves.

Lemons are rich in vitamin C and contain a range of minerals, especially potassium. Thus consumed regularly in drinks or as food they help to strengthen the immune system. The volatile oils are more highly concentrated in the peel. Limonene, which is found in these oils, has anti-cancer properties.

1. Cough. Boil 2 handfuls of young leaves (dried or fresh) with 1 litre water. Filter and drink in portions during the day.
2. Bronchitis. Chop one handful lemon peel. Add 1 litre boiling water and leave to steep for 15 minutes, then filter. Adults: Drink this quantity in the course of the day. Children less, according to body weight.
3. Scurvy. Every day, eat at least 1 lemon, 1 grapefruit, 2 oranges or 5 tangerines.
4. Fever. Rather than taking aspirin it is much better to strengthen the immune system! Three times a day drink the juice of 1 lemon in one mug (500 ml) of hot water. Do not heat the juice up, as this would destroy the vitamin C.
5. Cold, fainting. Squeeze a piece of fresh peel and inhale the volatile oil which is released.
6. Herpes labialis (cold sores). Herpes labialis, which gives small lesions on the lips or in the mouth, is caused by the herpes simplex virus. Several times a day, squeeze a piece of fresh lemon (or orange or tangerine) peel either
   a) directly onto the herpes lesion, or
   b) onto a piece of thin plastic, which is then put onto the lesion.
   If this is too painful, add a drop of vegetable oil.

Conjunctivitis. In a crisis and if aloe is not available, some anamed co-workers recommend that one drop of lemon juice be squeezed into the affected eye. They repeat this twice a day until the infection has disappeared. The intense pain lasts for only a few seconds.

6.14 *Citrus sinensis*: orange tree



Oranger (F), Orange (D), naranja de China (Sp), Machungwa (Sw).

Family: Rutaceae.

A tree growing up to 5m high, with very fragrant, white flowers. The fruits turn yellow or orange when ripe. The rind is rich in essential oils. The juice contains acids, sugar and vitamin C.

WORLDWIDE: The rind is recommended as an appetizer and to help digestion: Chop the peel. Boil 10 tablespoonfuls in 1 litre of water for 2 minutes, strain and drink throughout the day.

AFRICA: For asthma, cough, migraine: Boil 1 handful of leaves in 1 litre of water for 2 minutes, and drink during the day.

For cold sores (herpes labialis lesions), follow the same recipe as for lemon, chapter 6.13.

6.15 *Cocos nucifera*: coconut palm

Cocotier (F), Kokos (D), cocotero (Sp), kaawa (Sw).

Family: Arecaceae.

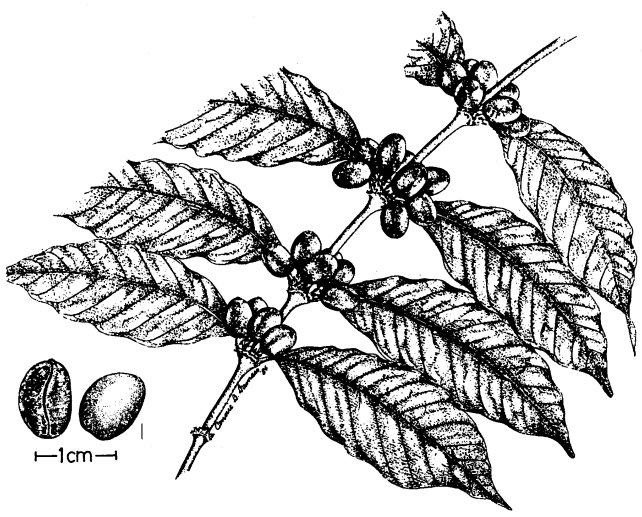
The coconut is a nutritious food plant. During World War II, British soldiers in Africa used the juice of coconuts as a substitute for glucose perfusions (it contains 5% sterile, pyrogen-free glucose - but this is not a recommendation!)

AFRICA: The juice is thrown away far too often. After adding a pinch of salt, it can be used as a rehydration drink for children suffering from diarrhoea.

D. R. CONGO: it is used as a hair lotion and for skin care.

6.16 *Coffea sp.*: Coffee

Cafetier (F), Kaffee (D), café (Sp), kaawa (Sw). Family: Rubiaceae.



At lower altitudes the "robusta" variety is cultivated, at higher altitudes "arabica". A new breed, "arabusta", does well at a range of altitudes.

WORLDWIDE: Coffee is drunk;

a) for certain types of migraine,
b) for nausea,
c) as a stimulant and to increase blood pressure,
d) for resuscitation, and
e) in larger quantities, but more diluted, as a diuretic.

It must not be given to persons with gastro-intestinal ulcers. Coffee increases the rate of heart-beat.

6.17 *Cola acuminata*: *Cola nitida*: cola

Cola (F, Sp)), Kola (D), ngongolia (Sw). Family: Sterculiaceae.

Both trees are native to West Africa. The nuts contain about 2% catechine-caffeine (colanine). The increased heartbeat and diuretic action are weaker with cola than with coffee (some Africans cannot take coffee, but the same amount of caffeine in cola nuts does not give them any trouble!).

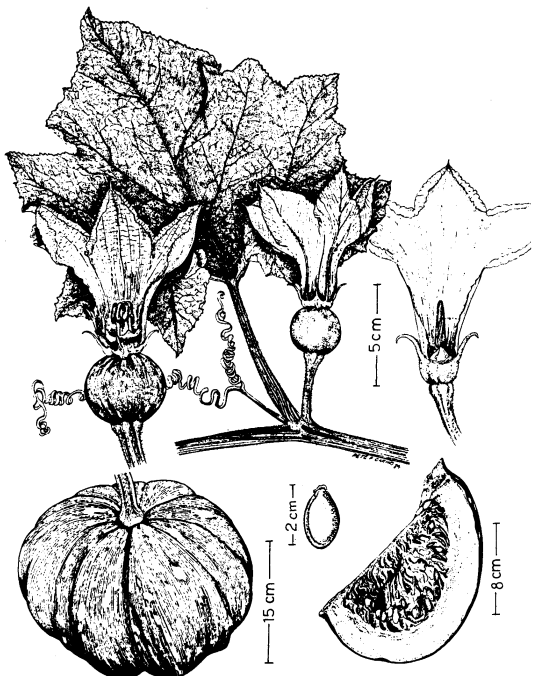
Fresh nuts should be kept in moist turf or sand. Nuts are dried by cutting them into slices and allowing them to dry for 24 hours at a maximum of 80°C. To roast them they should be cut into pieces and roasted like coffee.

EUROPE: Strong stimulant.

For migraine, neuralgia, diarrhoea, and for use as a stimulant or cardiotonic: Take 1-4g dried, pounded nuts daily.

For melancholy, loss of appetite, as an anti-depressant: Take 1 nut daily.

6.18 *Cucurbita maxima*: pumpkin

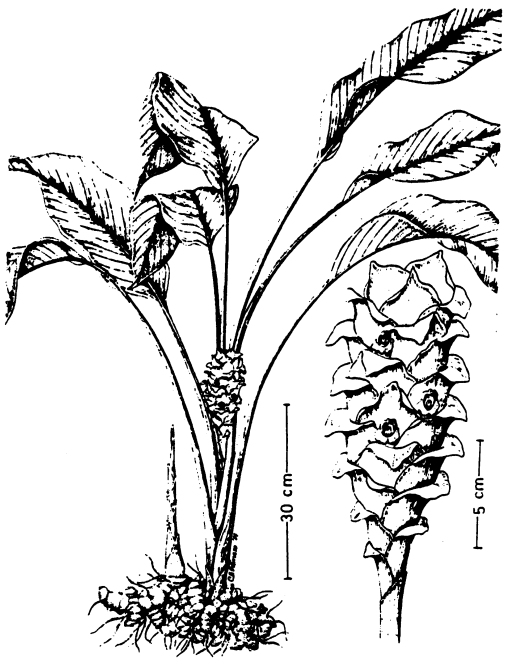


Courge (F), Kürbis (D), calabaza amarilla (Sp), liboke (Sw). Family: Cucurbitaceae.

Climbing plant, annual.

WORLDWIDE: The flesh, seeds and leaves are a valuable food. The seeds are effective in treating worms and prostatitis (inflammation of the prostrate gland, which causes difficulty in urinating, especially in older men).

1. For tapeworms: Take 100g (or 20 tablespoonfuls) raw ground seeds together with a laxative on an empty stomach. The laxative is very important, because the worm is not killed, only paralysed. As a natural laxative, eat a lot of very ripe pawpaw or mangoes.
2. To stimulate lactation after giving birth: Take 2 tablespoons of raw pounded seeds with plenty of liquids for 7 days twice a day (in the morning and in the evening).
3. Prostatitis: Same recipe as 2 above, taken for 1-2 months.



6.19 *Curcuma longa*: turmeric

Faux gingembre (F), Gelbwurz (D), yuquilla (Sp), dawam mchuzi (Sw).

Family: Zingiberaceae.

Perennial herbaceous plant, leaves 15 by 40cm, arising from a hand-shaped rootstock (rhizome). The flowers grow independently from the leaves directly from the rhizome, which is yellow and has a ginger-like taste.

Recent research has shown turmeric to have anti-malarial properties. Regular consumption may help to protect one against malaria.

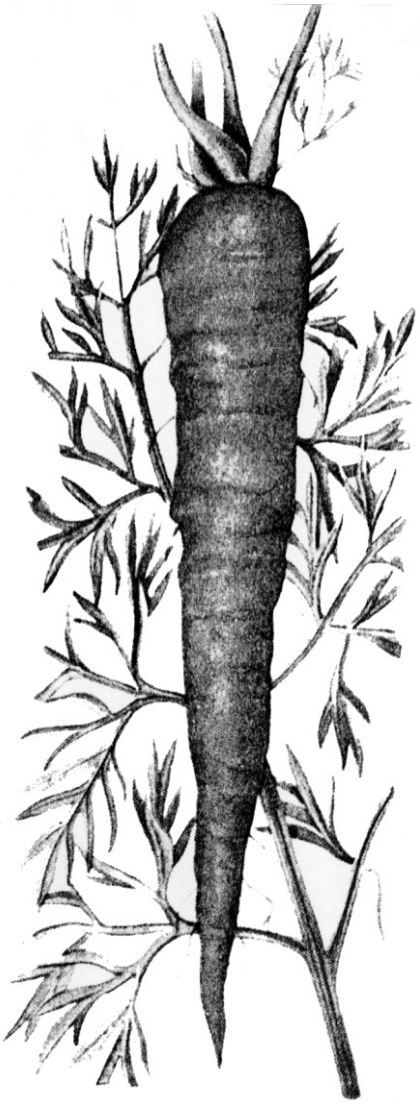
To preserve, cut into slices, allow to dry, and store in a cool and dry place.

WORLDWIDE USES:

1. For rheumatic arthritis: Eat 3 times daily 0.5g turmeric powder. This has been verified in clinics.

2. For flatulence, indigestion, irregular menstruation and to stimulate secretion from the gall bladder: a) Eat 1g turmeric powder 3 times daily, or b) pound 3g of dried, or 10g of fresh, rhizome, boil it in 0,7 litre of water for 5 minutes, and drink during the day. Repeat for several days. Or c) mix 50g of dried and pounded turmeric roots with 100 ml good 50% alcohol; filter after one week. Dosage for adults: 20 drops, 3 times daily.
3. For coughs: Use 6g of dried, or 20g of fresh, rhizome, pound, boil in 1 litre of water for 5 minutes, drink during the day, and for several days.

Turmeric is also used as the main ingredient in curry powder. Curcumin, which can be extracted from turmeric, is used as a colouring for cotton, silk, waxes, butter, powder and creams.



6.20 *Daucus carota*: carrot

Carotte (F), Karotte (D), zanahoria (Sp).
Family: Apiaceae.

In the Tropics, carrots grow mainly at higher altitudes. The roots are edible (and are more healthy raw than cooked), as they contain carotene, i.e. provitamin A (which is transformed in the body into vitamin A).

WORLDWIDE: Raw carrots are used to stabilise the stomach, intestine and bowels. Thus they are useful for both diarrhoea and constipation, especially in children, for flatulence and too much gastric acid.

Carrots are slightly effective against hookworms, irregular menstruation and prostatitis.

Eating raw carrots every day reduces the level of cholesterol and is therefore a preventive measure for arteriosclerosis.

6.21 *Elaeis guineensis*: oil palm

Palmier à l'huile (F), Ölpalme (D), palme de azeite (Sp). Family: Arecaceae.

The oil palm originated in Africa, and is now found throughout the Tropics. Palm oil has been part of the diet in Africa for centuries. It can be prepared from the fruits of trees that grow in the wild, but a much higher yield of palm oil can be obtained from cultivated trees. It grows best where it is very hot the whole year round, between 25 and 28°C, where the rainfall is high and where the soil is rich and deep. Thus, it may

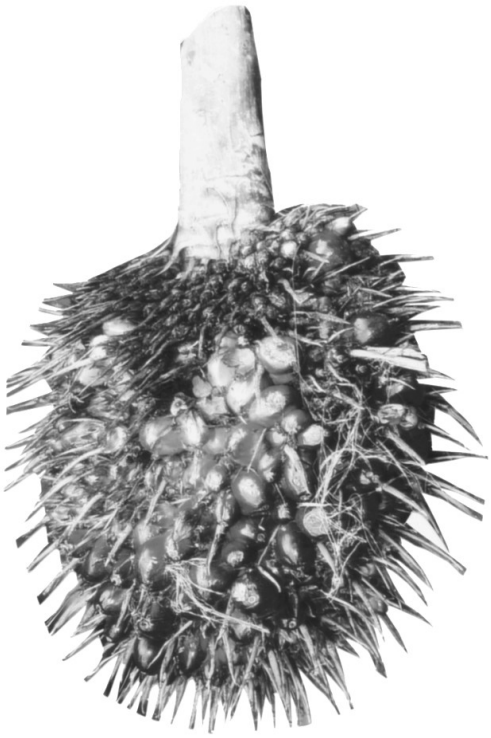
need fertilising. In these conditions, an oil palm will begin to produce fruit 3 to 4 years after planting.

From the oil palm, one can produce palm oil and palm kernel oil:

1. Palm oil: To produce the best palm oil, make it on the same day as the seeds are harvested.

   Use the red palm oil in your kitchen, or, better still, use fresh palm fruits, whenever you cook with oil. The intense red colour is due to the high carotene content, which is also called "provitamin A". If you take just one teaspoon of palm oil a day, you can throw away all vitamin A capsules and medicines! Vitamin A protects the eyes. In countries where the oil palm grows, fewer people suffer blindness!

   World exports of palm oil are second only to soya oil! Vast quantities are exported from Africa to be processed and re-imported as "refined" or "purified" colourless palm oil. In fact, the vitamins have been removed, so this oil is really "vitaminless" or "impoverished" oil! Therefore, use your own locally produced oil!

   This palm oil is very useful in the production of soaps, ointments and cosmetics. Hence the name Palmolive!

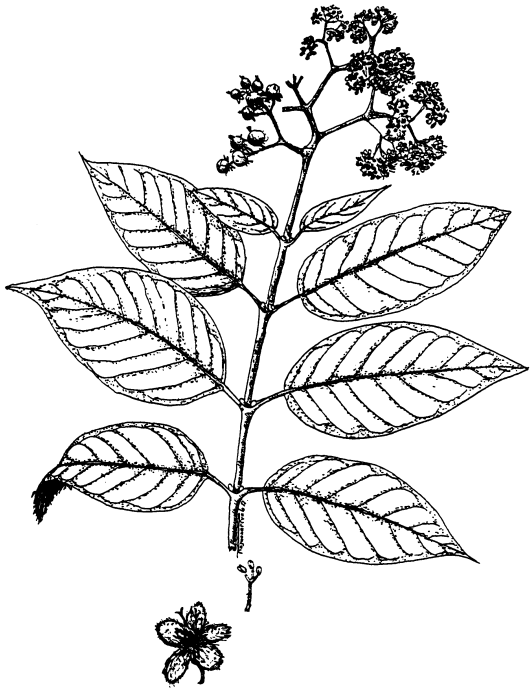
   If you really do want the palm oil to be colourless, perhaps to make white soap, then heat the palm oil in a pot so strongly that the carotene is destroyed (it is ready when a piece of white paper dipped into the pot no longer turns yellow). Do be careful. It smells a lot, and there is a real danger that the oil will catch fire. Wear glasses, and keep children well away.

2. Palm kernel oil: Produced by removing the shells, roasting the palm kernels in a pan, crushing the nuts into a fine paste, adding water, heating and finally creaming the oil off the top. This oil must be gently reheated to expel all traces of water. It is a colourless oil, and a good cosmetic.

   Palm kernel oil is used as a base material for making suppositories and lipsticks. Procedure: melt 5 units of palm kernel oil with 5 units, if you live in a cold climate, or 10 units (hot climate) of beeswax. It is also used in making chocolate.

   After producing palm kernel oil, the residue, palm kernel oil cake, is rich in protein and can be fed to cattle.

6.22 *Harungana madagascariensis:* harungana



Harungana (F; Sp), Haronga (D), mdura (Sw). Family: Hypericaceae.

Harungana is a bushy tree that usually grows 4 to 7 metres high. When leaves or branches are cut, a brilliant orange sap flows abundantly. This is a good way to recognise this plant. This sap can be used for skin diseases, for scabies and as a haemostatic (i.e. to stop bleeding), for example after circumcisions. The red plant sap is used to dye clothes.

D. R. CONGO: The seeds are used to induce a birth. EAST AFRICA: A decoction from the roots or the bark, taken twice a day, stops the menstrual period.

SIDE EFFECT: An increased sensitivity to sunlight: therefore avoid direct exposure to sunlight during treatment.

6.23 *Helianthus annuus*: sunflower

Tournesol (F), Sonnenblume (D), girasol (Sp), maanwa (Sw). Family: Asteraceae.

Sunflowers are mainly planted for the production of sunflower oil, which is used in cooking, and in the production of margarine and cosmetics. Sunflower oil is rich in vitamins A, C, D and E and also in linoleic acid, an essential amino acid.

The seeds are also nutritious, and can be lightly roasted and eaten as a snack or in salads. The plant is a nutritious fodder, and good as a natural fertilizer.

PHILIPPINES: A decoction from seeds is used for headache. WORLDWIDE: Seeds serve as food (they contain proteins and fat). Tea or a tincture of the petals is used traditionally to lower fever, e.g. in the case of malaria. To prepare the tincture, mix 10 grams of dried petals with 100 ml of gin or 40% alcohol, shake once a day over a period of three weeks and filter. Adults take one teaspoon three times daily.

6.24 *Hibiscus sabdariffa*: roselle, African malve, Jamaica sorrel

Hibiscus africain (F), Afrikanische Malve (D), serení (Sp), ufuta (Sw)

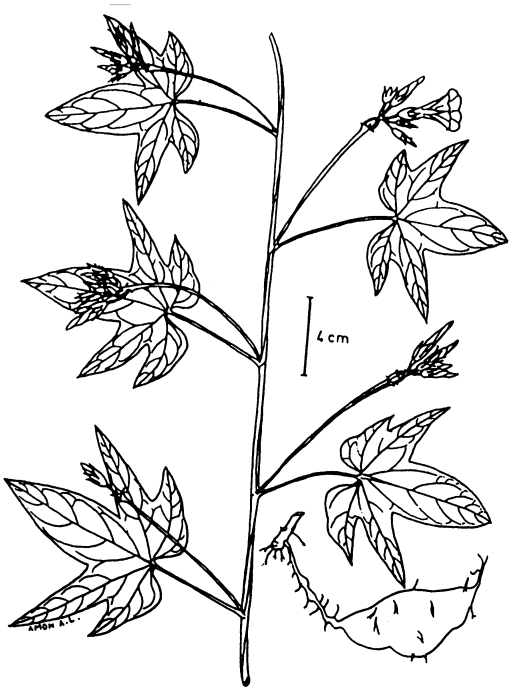
Family: Hibisceae.

Shrub native to Sudan, now found throughout the Tropics.

TROPICS: Tea from the dried calyx of hibiscus flowers has a pleasant, slightly sour taste. It is rich in vitamins B and C and it is used as a refreshing health tea and breakfast tea. It has a mildly diuretic effect, relieves nerve pains and causes an increase in bile production and transpiration. In clinical tests it showed growth-retarding action on tuberculosis bacteria, therefore, drink it regularly in addition to any prescribed TB treatment.

EUROPE: Used to give herbal teas an attractive red colour.

6.25 *Ipomoea batatas*: sweet potato



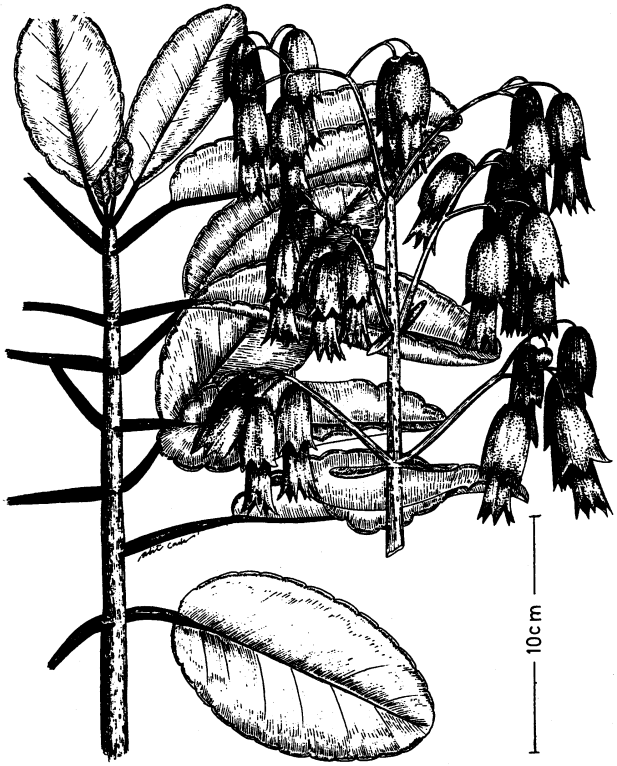
Patate douce (F), Süßkartoffel (D), boniato (Sp), viazitamu (Sw).

Family: Convolvulaceae.

Annual herbaceous plant with white and blue flowers. It is an ideal plant for covering the soil (soil exposed to the sun is degraded - as happens in cassava fields). The root crop contains far more proteins than cassava and should therefore be given priority. Orange potatoes help to prevent blindness, especially in children, because they, as well as the leaves, are rich in vitamin A. The leaves are edible when cooked, they are rich in vitamin C and iron, which makes them effective in combating anaemia.

TROPICS: The sweet potatoes are eaten, but, regrettably, the leaves are seldom eaten as a vegetable. PHILIPPINES: The leaves are used as a medicine for diarrhoea; SOUTH AMERICA: In folk medicine the leaves are used for tumours, especially of the larynx. ASIA: For gastritis, the cooked sweet potatoes are chopped, dried and pounded to flour. 1 teaspoonful is taken with a little water. According to another recipe for diarrhoea, fresh raw potatoes are cut, dried and then heated up until they turn into charcoal, then pulverized and the powder taken orally.

6.26 *Kalanchoe pinnata*: kalanchoe



Kalanchoe (F, D), kinetenete (Sw). Family: Crassulaceae.

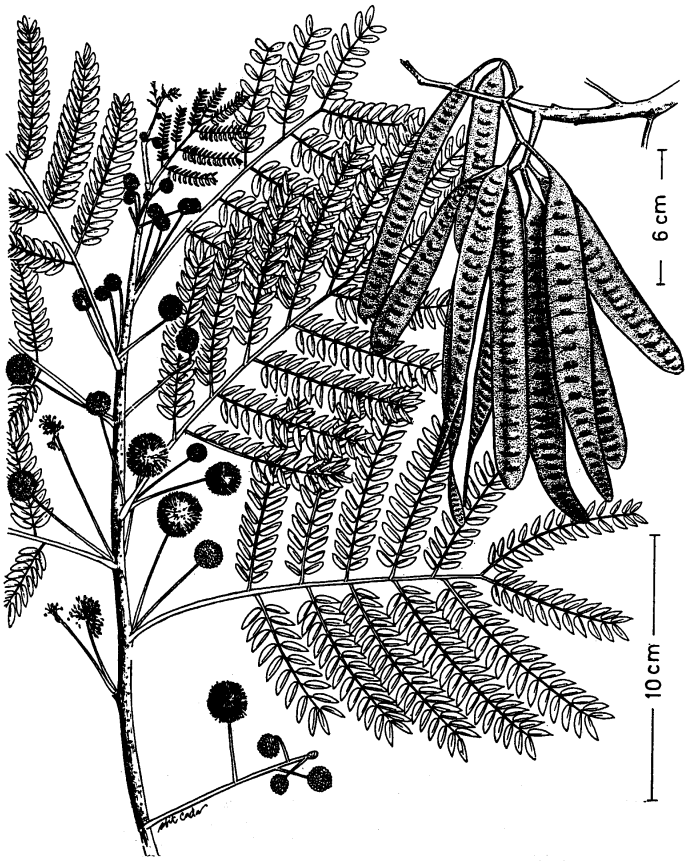
Ornamental plant that grows up to 1m high. New plants can be produced by cutting off leaves and planting them.

INDIA: Called "headache plant"; a paste made of leaves is applied on the forehead.

TROPICS: For burns: Pounded fresh leaves are boiled for 20 minutes in a little water and applied to the burnt skin as a poultice. For wounds: Pound 1 handful of washed leaves, add 1 teaspoon of sugar or honey, and heat up the mass until it turns brownish (caramel-like). It is used as a wound dressing and has to be renewed twice a day.

SENEGAL: Make a paste of leaves for rheumatism.

MANY TROPICAL COUNTRIES: for otitis (ear infections): Squeeze a warmed leaf and put a few drops of the juice into the infected ear 3 times daily.



6.27 *Leucaena glauca*: leucena

Leucena (F, D), aroma blanca (Sp), lesena (Sw). Family: Mimosaceae

A tree, 2-6 m high, with feather-like, compound leaves and long pods. It is suitable for reafforestation, firewood and keeping bush-grass from cultivated land. Like cajan (6.7) and *Cassia spectabilis* (6.11) we recommend planting leucena to prevent soil erosion. If leucena trees are planted around gardens and fields, and the branches are cut off and worked into the soil (before they bear flowers and seeds!), then the fertility of the soil is improved. The leaves serve as a natural fertilizer,

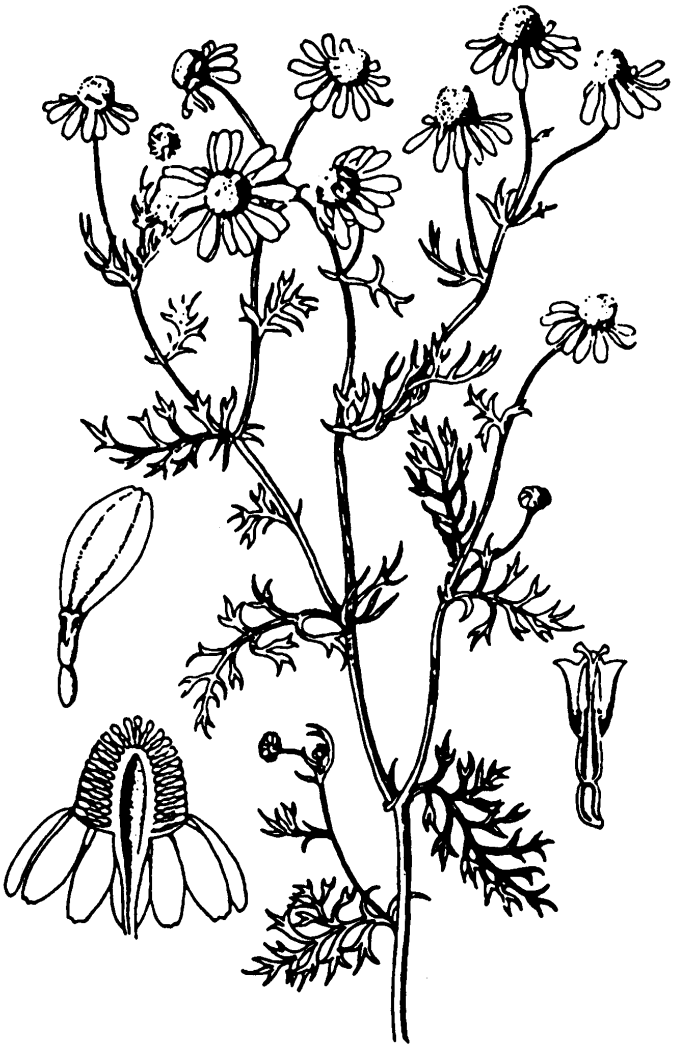
contributing minerals which the tree brings from deep down in the earth, and because the tree is leguminous, the roots fix nitrogen in the soil.

PHILIPPINES: For hookworms and roundworms: Dry 30 ripe seeds, pulverize them and take the powder orally with 1 mug of hot water 2 hours after breakfast. Children should take less, depending on their weight. Not suitable for children under 7 years. Side effects: Stomach trouble, diarrhoea.

6.28 *Matricaria chamomilla* (syn. *M. recutita*): chamomile, scented mayweed

Camomille vraie or camomille allemande (F), Echte Kamille (D), manzanilla (Sp).

Family: Asteraceae.



Annual plant, strongly aromatic, with small, hollow flower heads. Chamomile grows in Europe, the subtropics and at higher altitudes in the Tropics.

The infusion of chamomile flowers is used internally and externally; it is effective against flatulence; it soothes the stomach, releases cramps, is antiseptic and anti-inflammatory.

1. Used as a tea for gastritis or as an eye-bath for conjunctivitis: Pour 1 litre boiling water over 1 handful of flowers. For eye baths, first filter the tea through paper.
2. Used as an ointment for wounds, inflammations of the skin, skin irritations with babies, venereal sores, eczema and haemorrhoids: Heat 100g of camomile flowers in 1 litre of vegetable oil in water bath for 60 minutes, then filter. Add 100g of beeswax, briefly heat up again to ensure good mixing, and leave to cool. Use the best vegetable oil you have, e.g. olive oil, shea butter, palm kernel oil etc.
3. To produce suppositories for haemorrhoids, follow recipe 2, but instead of 100g of beeswax, use 500g of beeswax, and for oil, use semi-solid oil or grease. Pour into moulds

6.29 Mel: honey

Miel (F), Honig (D), Miel (Sp).
Honey predominantly comprises of a range of sugars, in particular levulose and dextrose. Its strongly antibacterial action is due to this high concentration of natural sugars and to the presence of inhibine.

Production of honey and beeswax: In spite of the fact that honey is of a much higher value than sugar, in tropical villages it is often sold more cheaply. In order to make sure that you have good quality honey, either keep bees yourself, or buy the honeycombs (the mature ones only, covered with wax-lids, and without larvae) and process the honey yourself.

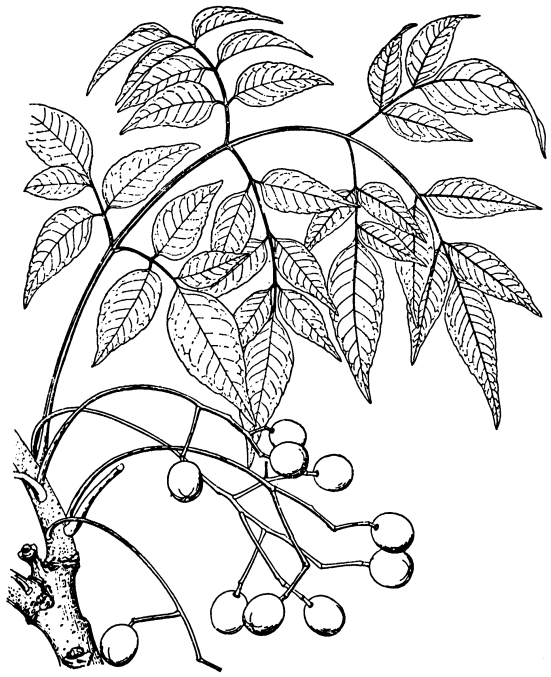
If you have no proper equipment, mash the honeycombs with the meat-mincer, without using the grinding disk. Do this after dark; otherwise you risk an attack from bees! Spread this mixture on a piece of cotton cloth, fastened to the top of a metal bucket. Put the bucket into the solar oven to keep it clean and to prevent attack from bees. Next morning, put the oven to face the sun. The heat of the sun now causes the honey and wax to drip through the cloth. At dusk, remove the honey and also the layer of wax. You can use this beeswax for making ointments (see chapter 4.4). The mixture that remains on the cotton cloth can be mixed with water in the ratio 1 to 1, brought to the boil and further processed to make honey wine (see chapter 4.8). Honey wine is used in the preparation of cough syrups and other medicinal wines. What is then left is placed into deep baskets, these are hung up in trees, protected from rain with a piece of iron sheet, and are now ready to serve as the foundation of new beehives.

Uses of honey

1. Medicinal syrups, oral rehydration solutions (ORS) and in the treatment of malnutrition. We recommend that, wherever possible, you replace sugar with honey.
2. Soaps, ointments, shaving creams and moisturising creams (see chapter 4.1).
3. Internally for heart diseases, liver damage, exhaustion and coughs.
4. Externally for wounds and burns. With its osmotic and antibacterial properties, honey absorbs water, kills the bacteria and promotes the healing of wounds, even chronic wounds that have resisted every sort of treatment over a long period of time. To treat a wound, first wash it, and then apply a mixture of equal amounts of sugar and honey. The sugar prevents the honey from becoming too runny. The wound should be treated with the honey / sugar mixture several times a day, without washing it again. Alternatively make honey ointment by gently heating together 20 parts of honey with 10 parts of good quality vegetable oil and 3 parts of beeswax. This ointment is extremely good for bedsores, acne and all manner of wounds.

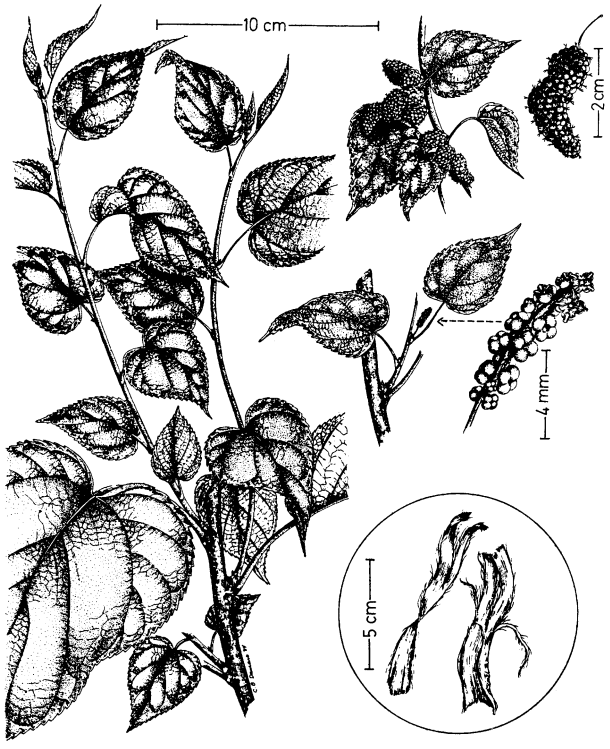
Propolis is a natural disinfectant produced by bees in their beehives, and has been shown to have antibiotic, anti-fungal, antiseptic and antiviral properties, and to strengthen the immune system. To produce propolis tincture, mix 10g of propolis with 100ml of pure medicinal alcohol (98%) for internal use, and shake once a day for 30 days. Filter. Dosage: Take 20 drops one to three times daily.

6.30 *Melia azederach*: melia, chinaberry, bead tree, Persian lilac



Persischer Flieder (D) Santa Barbara (Sp).
Family: Meliaceae.
Melia is a close relation of neem, see chapter 5.5. It is a fast-growing tree, flowering after only one year. We use it for reafforestation, particularly in areas subject to invasions of locusts (the tree is not attacked), or where termite-resistant timber is needed for building. Its flowers are lilac in colour, the leaves are more branched than neem, the seeds and fruits, in contrast to neem, are completely round.
UNITED STATES: Pounded bark was formally used to treat intestinal worms.
TROPICS: Traditionally, tea made from the leaves is used for intestinal worms, typhoid fever and malaria. We recommend these uses only for situations where no better medicine or medicinal plant is available, because melia has a certain toxicity. For agricultural purposes, however, it can be used like neem, see chapter 5.5. Insecticidal products made from melia are even stronger than those made from neem.

6.31 *Morus nigra*: mulberry



Mûrier (F), Maulbeere (D), mora negra (Sp), mforsadi (Sw). Family: Moraceae.
Bush 2 to 3m tall, leaves with dentate sides. The edible fruits are oval, 1.5-3cm long, bright red turning dark purple when ripe. They are fleshy and have a sweet-sour taste (similar to the European blackberry).
TROPICS: Cultivated for the fruits, which have a high Vitamin C content, mulberry is also grown to feed silkworms in sericulture. In folk medicine the root bark is used as a laxative and for tapeworms. Eaten in big quantities, the fruits have a light laxative effect and are helpful for coughs. They are used to colour wine and as natural make-up. Mulberry leaf tea (infusion) makes a pleasant drink, which is said to relieve asthma and reduce hypertension.

6.32 Natrium chloratum: sodium chloride, table salt. Chemical formula: NaCl

Sel de cuisine (F), Kochsalz (D), sal (Sp)

In the Tropics salt is very important. If not available, people living in the interior regions of Africa produce a salt substitute; they take wood ash, boil it with water, filter it, and then boil the filtrate gently until a white substance crystallises out. Dried ants and caterpillars, which are widely eaten, have a high salt content, too.

1. As a nutrient, an adult needs 4g of salt each day. Beware however of modern "fast foods", which often have an excessive content of both salt and fats.
2. As a medicine it is used:
   a) for bronchitis, as a spray inhalation. Put two teaspoons of salt in 1 litre of water. Pour into a spray and inhale it.
   b) for dressing wounds and burns: Salt has wound healing properties.
      A. Wash the wound, either with cool guava tea or with saline solution (2 teaspoons or 9g of salt to 1 litre of boiled water). If the wound or burn is small and is free of pus, treat with either honey (see chapter 6.29) or aloe gel (see chapter 5.2) If the wound or burn is small but infected, use *Carica papaya* sap (see chapter 5.7). If the wound or burn is big, the patient needs to be transported to the nearest health centre as quickly as possible.
      B. Dissolve 2 teaspoons of salt in 1 litre of water. Boil a piece of cloth, to be used as bandage material, for 20 minutes in this salt solution. When cool, place the bandage on the wound or burn. Keep the wound constantly moist with the saline solution. Repeat the saline preparation daily.

      On burns, avoid ointments. It is better to pour this salt solution over it several times a day. In this way you allow the oxygen in the air to disinfect the burn. Use a mosquito net to avoid infection of the burn by flies. See also *Aloe vera*, chapter 5.2, honey, chapter 6.29 and *Carica papaya,* chapter 5.7.
   c) in saline solutions as a drip in hospitals.
   d) as iodized salt (preparation see chapter 4.5.D)
3. As a preservative: Slice low-fat meat or fish as thinly as possible, cover it with the same weight of salt for 24 hours. Then dry in the sun-box for 1-2 days, together with the salt water that has appeared. Store the dried meat/fish in airtight containers. The salt that crystallises out of the salt water in the sun-box can be used again, or used for making licking-blocks for animals.
4. In veterinary medicine: Give 50-100 g as a diuretic for cattle.

6.33 *Nicotiana tabacum*: tobacco

Tabac (F), Tabak (D), tabaco (Sp), mtumbako (Sw). Family: Solanaceae.

Tobacco is one of the best known and most harmful plants in the world. There is no capital city in the Tropics that does not have its own cigarette factory. But, please, resist at all costs the temptation to start smoking. Nicotine is strongly addictive, and increases dramatically the chances of developing lung cancer and respiratory problems.

In folk medicine in VIETNAM leaves are eaten as a laxative and in the PHILIPPINES as a sedative, where the decoction from leaves is also used for worms. However we warn you very seriously against such recipes: The decoction of 1 single cigarette is powerful enough to kill a baby!

We can, however, benefit from the great effectiveness of tobacco as an insecticide (although neem leaves are better because they are less toxic, chapter 5.5) Put about 10g dried tobacco leaves in 1 litre of water for 12 hours, filter and spray your vegetables with this solution (wait 2 weeks before harvesting or until the rain has washed it off). Animals attacked by insects are treated by applying the same solution to the affected area of their skin, or you can simply rub these areas with tobacco leaves. Put some leaves in your chickens' nests, especially when they are heavily attacked by fleas; alternatively use leaves of neem or eucalyptus.

6.34 *Ocimum basilicum*: basil, sweet basil

Basilic (F), Basilikum (D), albahaca moruna (Sp), kurimbasi (Sw).
Family: Lamiaceae.

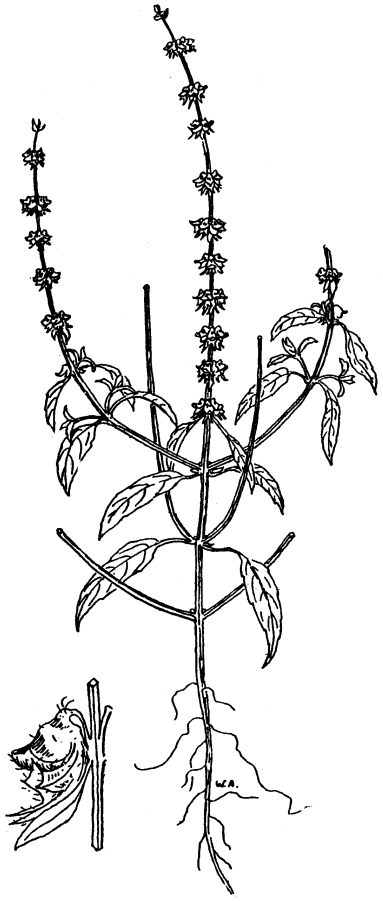
A small, annual herb, grown near the houses, with dentate, aromatic leaves.

TROPICS AND EUROPE: Basil is used as a herb in cooking and salads, particularly together with tomatoes.

Ocimum basilicum has antimicrobial and anti-fungal properties, and has a wide range of medicinal activities.

D. R. CONGO: For fever and flatulence prepare an infusion: Pour 1 litre of boiling water over 20g of the fresh herb, allow to draw for 5 minutes, strain and drink in portions during the day. Basil tea also helps digestion.

INDIA: Basil tea is said to cure many diseases, including colds, influenza and malaria.



6.35 *Oryza sativa*: rice

Riz (F), Reis (D), arroz (Sp), mpunga (Sw).
Family: Poaceae.

The plant can grow up to 2m. "Dry rice" is cultivated on ordinary soil, e.g. in Cameroon and Uganda; "water rice" (swamp rice) is grown in fields artificially flooded (mainly in Asia). In the Orient, rice is regarded as a medicinal plant.

ASIA: To treat diarrhoea in adults grains of rice are roasted well and pulverized. For diarrhoea in children a soup from rice flour works well if there is no sugar and salt available to prepare an ORS. Or simply drink the water in which rice has been boiled.

TROPICS: Rice-bran is a good medicine to treat vitamin B1 deficiency (beri-beri). Always use local "brown" rice, therefore, in preference to polished white rice!

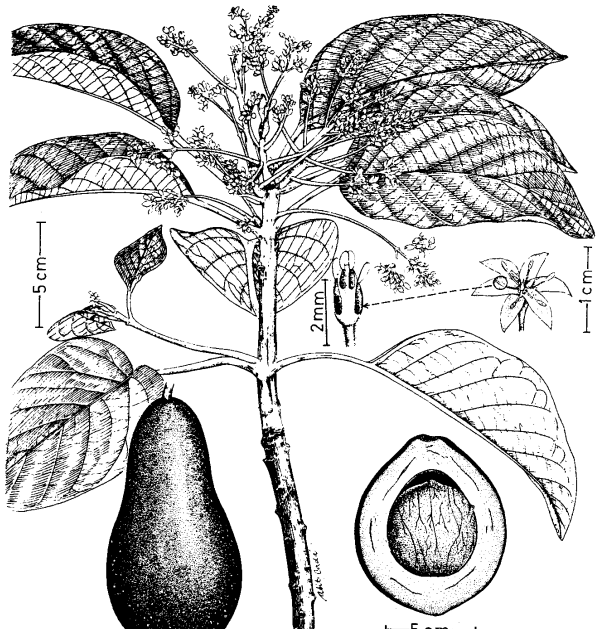
6.36 *Passiflora incarnata*: passion flower/fruit

Passiflore, maracuja (F, Sp), Passionsblume (D), matunda (Sw).
Family: Passifloraceae.

Passiflora coerulea is also used. Both species have yellow fruits, the size of eggs. The plant is a vine that grows up to 10 m long. The fruits have a pleasant taste. It was first cultivated by native people in South America (the Aztecs), then spread by Spanish missionaries. Wherever possible passion flower should be planted along fences, so that your fence becomes a good source of vitamins! It contains the sedative maracugine. In the TROPICS, the roots are used as a diuretic: 1 handful of roots are boiled in 1 litre of water for 10 minutes, which is then drunk in portions during the day. For asthma, dried leaves are smoked in a pipe.

1. For sleeplessness, states of anxiety and spasms (cramps), make a tincture from 10g dried leaves in 100 ml of 70% alcohol. Dosage: 30 drops 1 to 3 times daily.
2. For cramps, states of anxiety, asthma, nervousness and as a sedative: Boil 1 handful of young leaves in 0.7 litres of water for 10 minutes, drink during the day.
3. For sleeplessness: Boil 1 handful of leaves, dried or fresh, in 1 cup of water for 10 minutes, sieve and drink in the evening.
4. For scurvy: Eat plenty of fruits because of their high vitamin C content.

6.37 *Persea americana*: avocado



Avocatier (F), Avocado (D), aguacate (Sp), ovakado (Sw).
Family: Lauraceae.

A tree of up to 20m tall. The fruits, sometimes named butter fruit, contain nutritious fats. Spread on bread the pulp is much better than the usual margarine, which, in the Tropics, contains a lot of preservatives. It is good for people suffering from malnutrition.

R. D. CONGO: For coughs, a decoction is made from young leaves (1 handful in 1 litre water).

ASIA: For diarrhoea: Dried dark green leaves are boiled in 1 litre of water for 15 minutes. Dosage: For adults use 20g leaves, older children 10g, and little children 5g. The decoction is to be taken in portions during the day. (Advice: Combine with ORS, see chapter 4.5.)

For skin care and minor skin problems, mix the flesh of a ripe avocado with some drops of lemon juice and apply to the skin for 12 hours per day, e.g. overnight.

6.38 *Phaseolus vulgaris*: bean

Haricot (F), Gartenbohne (D), frijol común (Sp), maragwe (Sw).
Family: Fabaceae.

The plant is found almost everywhere in the world; there are 500 different types. In many countries only the seeds are eaten, but the green pods, too, are a valuable food!

Use: As a diuretic, for gout, rheumatism, kidney diseases and as a supportive measure for gonorrhoea: Dried bean pods (10g) are soaked in 1 litre of water

overnight, then brought to the boil, afterwards filtered. Drink during the day. In patients with diabetes this treatment slightly lowers the level of blood sugar. Pulverized, dried beans are used for compresses on weeping eczema, and as a powder in body care.

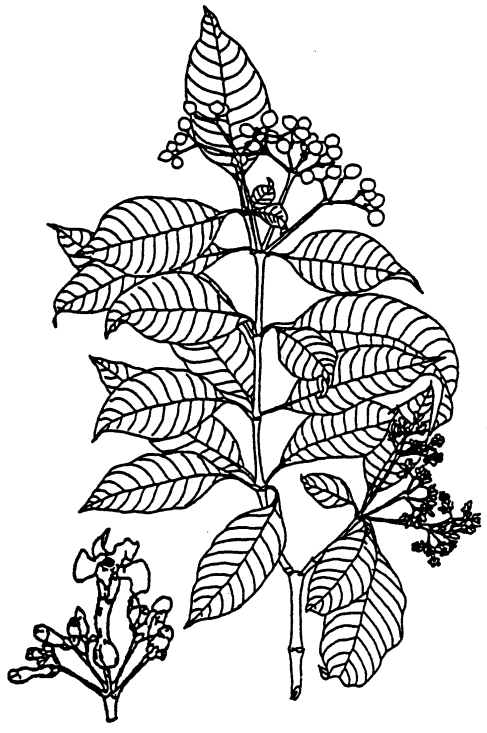
6.39 *Piper guineense*: (West African) pepper

Poivrier (F), Guineapfeffer (D), pimienta (Sp), kechu (Sw). Family: Piperaceae.

Vine of the tropical rain forest. The dried ripe fruits are highly valued as a spice and for flavouring. There are some 700 types of tropical pepper.

R. D. CONGO: As a spice and for stomachache. For indigestion a drink is prepared, combined with *Curcuma longa*. For back pain and rheumatism; mix one spoonful pepper powder with one spoonful vegetable oil, and then, with this, immediately give the patient a strong massage.

AFRICA: For rheumatism and venereal diseases a brew from the roots is drunk; for coughs a decoction is made from the leaves.



6.40 *Rauwolfia vomitoria*: swizzle stick tree, African serpentwood

Rauwolfia (F, D), kimusukulu (Sw). Family: Apocynaceae.

Small tree (3-4 m) growing on the outskirts of villages and on fallow land. The fruits are in the form of red berries. During the colonial period the root bark was a popular raw material. Rauwolfia contains numerous alkaloids, some of them poisonous. The drug industry uses this plant to produce sedatives and medicines for high blood pressure.

1. Rauwolfia powder: To lower high blood pressure and as a sedative for agitation, hallucinations and psychotic crying; dry and pound root bark of *Rauwolfia*

*vomitoria,*or in Asia, *Rauwolfia serpentina.* Dosage: Take orally 100-150mg twice daily. As it is difficult to weigh such small amount, hospitals can follow this recipe; mix 100g Rauwolfia powder with 900g filling material – this can be milk powder, sugar, commercial wheat flour, or well dried maize flour that has been heated gently until it begins to turn brown, and then pulverised. It is important that the filling material has the same granule size as the Rauwolfia powder. Now fill 1 gram capsules, or home-made paper bags, with 1g of this mixture. Adults should take 1g of this mixture three times a day.

2. Scabies on small areas only, e.g. only on the hands; rub some fresh leaves over the affected area 3 times per day, if necessary with some drops of vegetable oil.

Caution: Overdoses make cause muscular weakness, anxiety and depression. The correct dosage is, therefore, very important, and demands great experience in its usage. Even externally it must only be used in small amounts!

6.41 *Ricinus communis*: castor oil plant

Ricin (F), Rizinus (D), higuereta (Sp), mbono (Sw). Family: Euphorbiaceae.

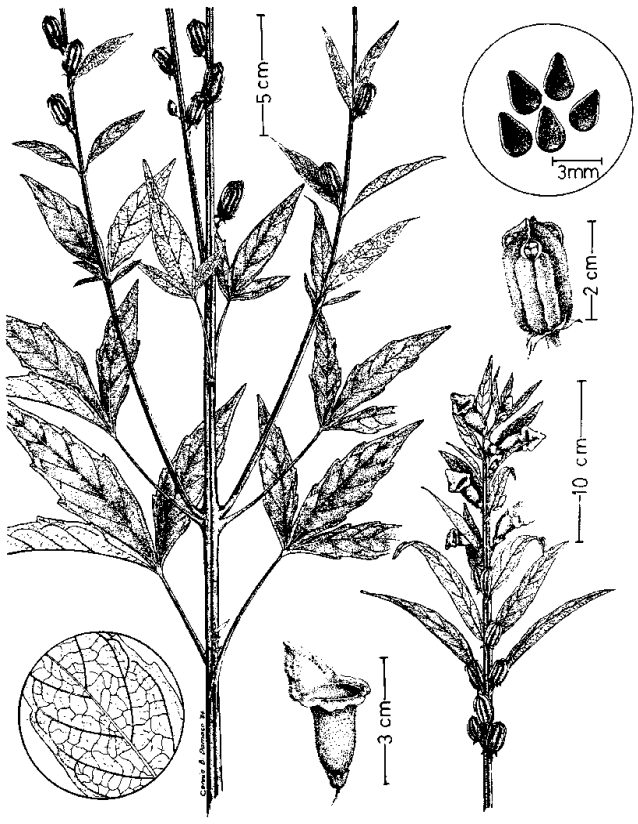
Castor is a strong bush which is usually found on rubble tips or fallow land. After sowing, the bush can grow to a height of 3-4m within a year. All parts of the plant are poisonous, and the seeds contain ricin, an extremely toxic protein.

Powdered seeds, powdered roots or fresh leaves are used to treat skin diseases; so you may rub fresh leaves over the affected area 3 times per day. Seeds mashed to paste are traditionally applied to wounds as a haemostatic and disinfectant. The seeds must never be taken orally as they are toxic.

1. Castor oil for internal use: The oil must be extracted from the cold seeds. This can only be done using very high pressure equipment, so the oil must, therefore, be bought from a pharmacy. It is used medicinally;
   a) as a laxative. It is effective when constipation is acute. Dosage: Adults; 1 to 2 teaspoons twice daily. Children ½ to 1 teaspoon twice daily. Take until diarrhoea begins.
   b) in cases of poisoning with paraffin, petrol or diesel. In such a situation, **absolutely never make the patient vomit**; it is extremely dangerous. Dosage as for constipation (see (a) above).

2. Castor oil for external use: For external use, castor oil can be made at home. Pound two cups of fresh seeds from the castor oil plant - but do not use the same mortar that you use for food! This produces one cup of peanut-butter-like paste. Add one cup of water and one cup of vegetable oil. Stir these altogether in a pan, and heat for as long as it takes for all the water to evaporate (this destroys the emulsifying agent). Now carefully add 10 cups of water, put a lid on the pan and boil for 10 minutes (this destroys most of the ricin). Pour everything into a bottle with a narrow neck, and add enough hot water to just fill the bottle. After a day remove the layer of oil with a syringe. This oil contains about 30% castor oil, and can be used:
    a) for skin and hair care.
    b) for neuro-dermatitis.
    c) alone or together with pawpaw latex (chapter 5.7) or *Cassia alata* leaves (chapter 5.8) it is used to treat fungal skin infections and ringworm.
3. INDIA: Castor oil is made as follows; Boil 2 kg of seeds in 10 litres of water for 1 hour. Press the seeds using a 3KW (or manual) oil press. Allow to settle for a week, and then decant the oil and discard the solid particles. The oil is used for skin and hair care and, in very small quantities, to preserve seeds.
4. To preserve your seed-maize or bean seed (i.e. only seeds for sowing), pound one handful of castor seeds, and mix with 20 kg of maize or bean seeds.
5. Because the castor seeds are so toxic, you can use them as rat or mouse poison. Mix one unit of peanuts with one unit of castor seeds, pound together, and put this mixture in places where the rats go. Caution: Keep well away from children, and all other animals such as chickens or birds, they will all die if they eat this mixture.

6.42 *Sesamum indicum*: sesame



Sésame (F), Sesam (D), sésamo (Sp), ntungo (Sw). Family: Pedaliaceae.

Herb, 50 to 80 cm high, long and dentate leaves, whitish flowers, or with purple and yellow spots. The fruit is a capsule about 2.5 cm long. The seeds are very popular as food.

R. D. CONGO: The brew from the leaves is used for infertility in men and women.

ASIA: For constipation: Take orally 3 teaspoons of sesame oil. For rheumatism, 20g dried leaves are brought to the boil in 0.7 litres water, filtered and drunk in the course of the day.

6.43 *Tagetes erecta*: African/Aztec marigold

Tagète (F), Tagetes (D), chambergo (Sp), tururu (Sw). Family: Asteraceae.

Ornamental plant, native to Mexico, spread all over the tropical regions and into Europe. The flower and leaves have a distinctive, intense odour.

WORLDWIDE: The essential oils lower blood pressure and widen the bronchia; they also have anti-spasmodic, anti-inflammatory and sedative effects. The leaves act as a diuretic and increase transpiration. Nowadays they are used in commercial perfume production. The seeds are worm killers and also work as a laxative. The whole plant is effective in killing nematodes (harmful threadworms living in the soil, a very common pest in the Tropics) - it is advisable to sow marigold in the gardens at the end of the rainy season!

ASIA:

1. For coughs, bronchitis, toothache, irregular menstruation: Pour 2 cups of boiling water over 10 g of dried leaves, allow to draw for 20 minutes, strain. Drink 1 cup in the morning and evening.

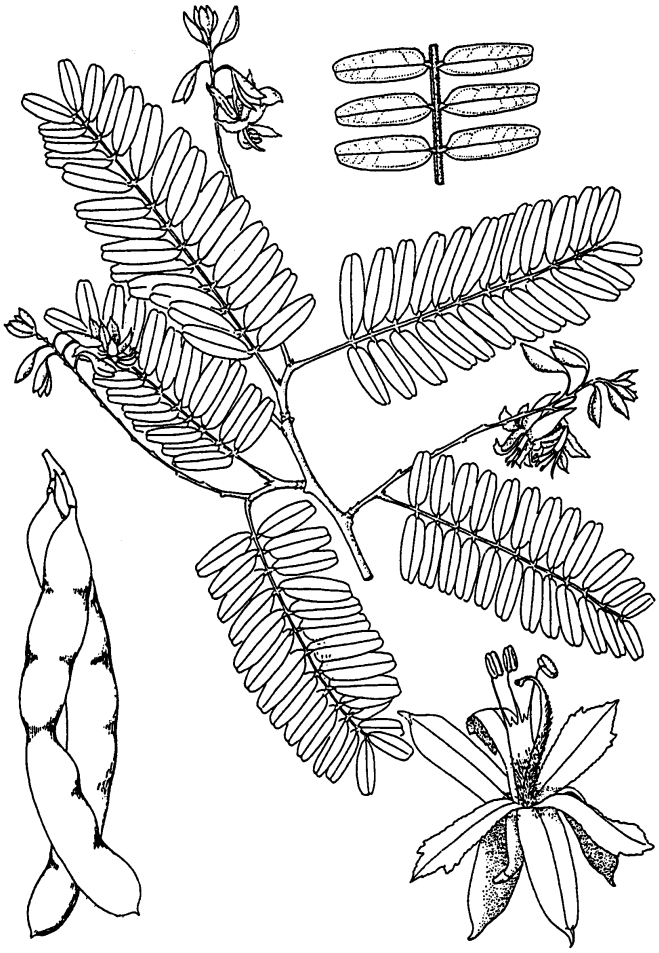
2. For eye infections the tea is filtered through paper, and then used to make a moist compress, which is then placed over the eye.

3. For whooping cough: Pour 0.7 litres of boiling water over 15 flowers, fresh or dried, and drink in portions during the day.

4. Suppurating mammary gland, abscesses: Bring 1 handful flowers with 1 teaspoon of salt and only ½ cup of water to the boil. Make a moist compress with it.

6.44 *Tamarindus indica*: tamarind, Indian date

Tamarinde (Sp).
Family: Caesalpiniaceae



A beautiful evergreen, drought resistant tree with spreading branches growing up to 30 metres high. It has rough, grey-black bark, and light green pinnate (made up of 10 to 18 pairs of leaflets) leaves. In summer, pale yellow, red-veined flowers are followed by brown pods, containing kidney shaped seeds in sticky brown pulp.

The **fruits** are rich in vitamin C, and are eaten fresh or made into a fruit drink. ASIA and AFRICA: Fresh or dried fruits act as a souring agent, rather like lemon juice or vinegar, in curries, fish dishes and sauces. After removing the outer shell, the **seeds** can be eaten raw or roasted,. They can be used to make a sort of flour, and as animal feed. The seed oil can be used in soap.

The tree has an extensive root system, and is therefore good for preventing soil erosion. Although nitrogen fixing, it drops acid leaves, so is not good for inter-cropping. The **timber** is used to make boats, furniture, pestles and mortars, wheels, living fence posts and charcoal.

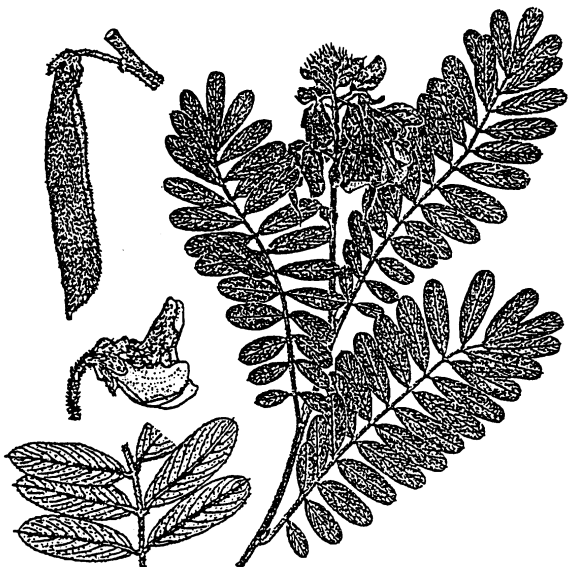
Medicinally, the fruits are eaten for constipation, and used to reduce fever, cure intestinal ailments, treat asthma, give relief from nausea in pregnancy, and as an ingredient in medicines to treat heart complaints and reduce blood sugar. They are used externally as an astringent on skin infections.

6.45 *Tephrosia vogelii*: fish bean, tephrosia

Tephrosia (F,D), kibaazi (Sw). Family: Papilionaceae.

Shrub 1-2m high, found in villages throughout the Tropics. Contains rotenone (a substance sensitive to heat), the leaves should, therefore, be dried in the shade. Use as a green manure to improve soil fertility or in hedges also to prevent soil erosion! Cows and goats do not destroy these hedges.

D. R. CONGO: Root bark is pulverized, mixed with chilli and applied to aching teeth.



TROPICS: Used illegally to paralyse fish to make catching easier. Tephrosia is effective in treating scabies; rub the leaves over the skin.

Tephrosia makes an effective insecticide; prepare a cold extract by soaking 1kg freshly picked and pounded leaves in 10 litres of water for 8 hours. Use this for spraying. Allow two weeks to pass before you harvest any sprayed plants for food. To make an insecticidal powder, dry old leaves, pound and sieve them. Either alone or combined with chilli powder it can be used inside the house to repel insects, but keep well away from children! 100g of powder of dried tephrosia leaves are mixed with 50kg maize to protect it against maize bugs for a period of three months. Wash the maize before eating.

6.46 *Tithonia diversifolia*: Mexican sunflower

Tithonia (F), Mexikanische Sonnenblume (D). Family: Asteraceae.

This plants regenerates degraded soils, and is particularly useful where soil erosion has occurred. It is an excellent green manure for soils short of nitrogen. Use in hedges to prevent soil erosion! Once established however, tithonia is very hard to get rid of; so plant tithonia around but not in the fields. Then work the cut branches into all soil where you grow your crops, taking care that they are carrying no seeds, and sow your next crop immediately.

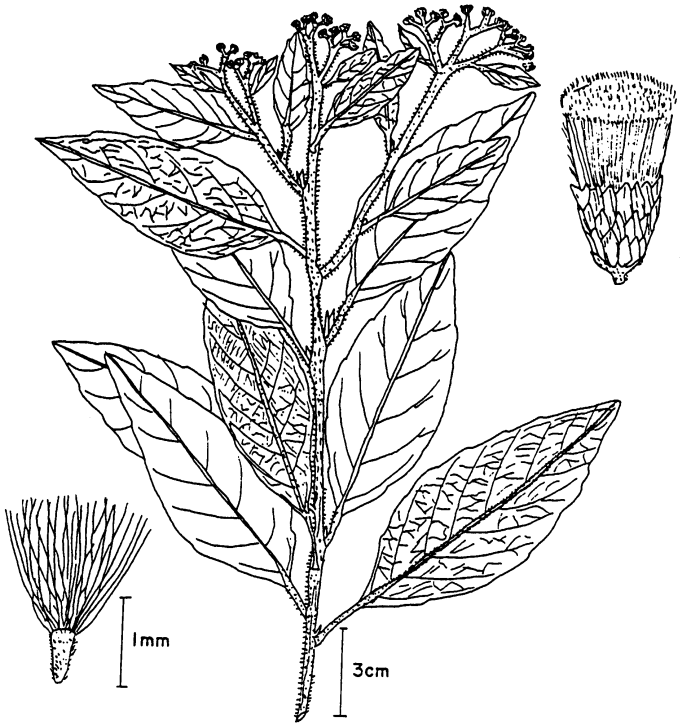
EAST AFRICA: Tea made from the leaves is used to treat pains in the stomach and liver, and abdominal pains during pregnancy; a decoction using only half of one leaf is used per day.

D. R. CONGO: Tea made from the flowers is used to treat bacillary dysentery. Pounded leaves are used for dermatitis and itching skin.

6.47 *Vernonia amygdalina*: bitter leaf

Vernonia (F;D), mtukutu (Sw). Family: Asteraceae

Fast-growing tree, 3-8m high; the colour of the flowers varies between white and slightly bluish. The plant can be easily propagated from cuttings.



ALL OVER AFRICA: Local people boil the leaves 3 times, each time in fresh water, and then eat them as spinach. This useful though extremely bitter plant is used throughout UGANDA to treat malaria. Some nurses told us that they prefer using vernonia to quinine or chloroquine because patients suffer fewer side effects - we can confirm this.

We recommend the following recipe for malaria: Make an infusion by pouring 1 litre of boiling water over 1 handful of leaves. For a stronger tea, boil 1 handful (15g) of dried rootbark, in 1 litre of water for 20 minutes. In both cases, filter and drink in the course of the day.

According to medical literature, this plant is also effective in treating measles, diabetes, asthma, diarrhoea, tuberculosis, sleeping sickness, certain kinds of cancer, worms and constipation. Chimpanzees apparently use vernonia for bilharzia (schistosomiasis), gastrointestinal problems and parasites.

As with neem (chapter 5.5) and melia (chapter 6.30), *Vernonia amygdalina* can be used in agriculture to destroy nematodes, and the leaves to preserve food.

NIGERIA: Chewing young vernonia branches prevents caries. The watery extract of vernonia leaves has a strong anti-oxidising effect; it may, therefore, be a natural preservative which would prevent medicine from going rancid.

Side effects: Although this plant contains two cytotoxic substances, vernodalin and vernomygdin (also known as tumour inhibitors), recent research seems to indicate that the toxicity is very low.

6.48 *Vinca rosea* (syn. *Catharanthus roseus*): soldier's palm, periwinkle

Vinca-rose (F), Afrikanisches Immergrün (D), vicaria (Sp), vinka (Sw).
Family: Apocynaceae.

A robust plant, about 60 cm tall. It is found mainly around houses. It does well on sandy soil. It can be propagated by seed or cuttings. The plants have either white or

pink flowers, and both are equally good. Throughout the world many healers use this plant as their first treatment for diarrhoea. This is totally wrong! *Vinca rosea* is toxic, therefore use only in crisis situations.

In SENEGAL, MALI AND TOGO the whole plant is used traditionally for diarrhoea; on the COMORO ISLANDS for gonorrhoea, in NIGER for hepatitis, in the PHILIPPINES for bacterial dysentery. In a former British Pharmacopoeia, a tea made of the leaves was registered as a medicine for diabetes. *Vinca rosea* contains 65 different alkaloids. Thanks to this plant, the lives of thousands of children suffering from leukaemia have already been saved because two alkaloids (vincristine and vinblastine) have proved particularly effective in fighting leukaemia in children.

RECOMMENDATIONS: In our opinion, for diabetes or high blood pressure, *Vinca rosea* should only be used in a crisis situation. After some days, replace vinca with less toxic plants or conventional medicine.

1. Diabetes: Put 5g of dried leaves or 1 handful (the amount that the patient can hide in the hand) of fresh leaves in 1 litre of boiling water, then leave to steep for 15 minutes. Filter and drink in portions during the day.
2. High blood pressure: Dry the roots of the plant, pare off the bark and pound this bark. Take 1 teaspoonful and boil with 2 cups of water for 10 minutes, filter and drink in the morning on an empty stomach.
3. Bacillary dysentery
   a) Prepare recipe 1 daily. A missionary from Congo reported that, during an epidemic of antibiotic-resistant bacillary dysentery, using this recipe he was able to save about fifty percent of the affected children, which meant hundreds of lives in this area alone.
   b) Use a combination of this tea with the tea made from asthma weed and mango leaves used to treat severe amoeba dysentery (see chapter 5.12).
4. Cancer: Only if no other medicine is available, try recipe 1. You may add aloe and unripe pawpaw to the tea. Externally, use whatever proves to be beneficial; wound dressings out of aloe, or unripe pawpaw, or a compress out of pounded leaves of *Vinca rosea* which have been boiled for ten minutes in a little water.

Side effects: When used over an extended period, the blood pressure may become lower. Stomachache may occur. ***Vinca rosea* must never be used by pregnant women**, and its use must never be prolonged. As with all cancer drugs, *Vinca rosea* can itself cause cancer.

6.49 *Zea mays*: maize

Mais (F, D), maiz (Sp), muhindi (Sw). Family: Poaceae.

Maize came originally from South America. The most important part of the plant are the corn hairs. The hairs are collected before pollination when the plant is in flower. Put them in a shady place and allow them to dry quickly. They contain the alkaloid allantoin, whose anodyne (pain-soothing) action with bladder infections is well-proven.

FRANCE: maize hair is used for its soothing and diuretic effect;

GUINEA, EUROPE AND AMERICA: it is taken for urinary tract infections;
ANGOLA: as a diuretic;

ASIA: as a cure for diabetes, oedemas and high blood pressure.

1. Diabetes: Take 15g dried maize hair and boil it in 1 litre of water for 5 minutes. Drink in portions during the day. Note: Follow diet restrictions for diabetes: Limit the consumption of salt and avoid sugar completely in your daily diet. Combine with other plants which help to lower the level of blood sugar, such as onions (6.2) or bean pods (6.38).
2. Kidney infection, oedema, high blood pressure, and kidney stones: follow the recipe for diabetes. You can drink this tea for more than 6 months without any side effects occurring.

NOTE: The quantity of maize hair is, of course, limited; after removing the maize kernels you can use the cob as well in place of the hair, but it contains less active substances. Instead of 15g hair you should take 100g cobs.

No side effects are known, but if used over a longer period of time supervision at the health centre is necessary, especially with diabetes and high blood pressure.

6.50 *Zingiber officinale*: ginger

Gingembre (F), Ingwer (D), jengibre (Sp), ntangawizi (Sw). Family: Zingiberaceae. Originally from tropical Asia, ginger is a plant of up to 1 m high, grows from a fleshy aromatic rhizome. This rhizome contains volatile oils which stimulate the nerves, making them sensitive to warmth and thus causing a feeling of being hot.

Ginger is treated as an annual or biennial crop. It grows best on deep, well-drained soils rich in nitrogen, and requires full sun or partial shade. It can be propagated by dividing rhizomes at the beginning of the rainy season.

Ginger root is used in CHINA in cooking and for hookworms, and in SOUTH ASIA in curries. Dried ginger root is used in EUROPE as a spice in many recipes. In BRITAIN ginger biscuits are popular. The active ingredients are volatile oils and pungent phenol compounds such as gingerol.

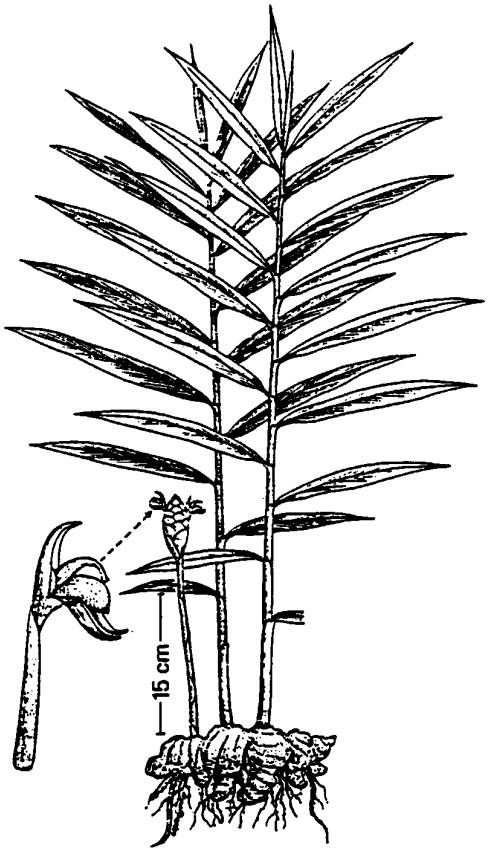
Preparation of ginger medicines**:**

Ginger Powder is produced by washing, drying, pounding and sieving the rhizome. Finely pounded, one level teaspoon weighs 1.5g.

Ginger tincture: Wash and peel the roots. Take 25g freshly chopped ginger, add enough 80% alcohol to give a volume of 100 ml, leave to draw for 1 week, and press.

Ginger oil: Heat 10g of washed, dried and chopped ginger in 50g of vegetable oil for 60 minutes in a water bath, press and remove the remains.

Ginger tea: Make a decoction with 3 or 4 slices of washed ginger root in 300ml of water.



1. Travel-sickness. Take 1 level teaspoon of ginger powder or drink a cup of ginger tea 30 minutes before setting off.
2. To avoid vomiting before operations. Take 1-2 level teaspoons of ginger powder or drink a cup of ginger tea 30 minutes before the operation.
3. To avoid nausea and vomiting during pregnancy. Take 3 times daily ½ level teaspoonful of ginger powder, drink a small amount of ginger tea regularly or make and eat ginger biscuits with your tea.
4. Bacillary dysentery. Take 45g of fresh ginger in portions during the day.
5. Coughs, bronchitis, indigestion. Take orally 10-20 drops of ginger tincture 3-4 times daily.
6. Rheumatism. Follow recipe 6. Additionally, apply ginger oil locally.
7. Wounds. Use ginger tincture as an antiseptic for small wounds.
8. Light cases of malaria. Eat one handful of fresh ginger each day, or boil a handful for 10 minutes in one litre of water. Do not filter, but eat everything until the fever has gone. For higher fever, use bitterleaf (*Vernonia amygdalina,* chapter 6.49) or *Artemisia annua* (chapter 5.4).

Caution: Ginger may cause irritation of the stomach in people with peptic ulcers.

CHAPTER 7

FURTHER TIPS FOR THE HOME, HEALTH WORKERS AND HOSPITALS

7.1 HOUSEHOLD AND FAMILY

"*Let's not turn our bodies into a pharmacy!*" (Molière)

1. Eat well!

Our food should be our medicine! The right foods build up our strength and our immune system - that means the ability to fight and resist infection and disease. The wrong foods lead to malnutrition, and render us likely to catch every possible infection and disease.

Essential foodstuffs	
For a cheap source of energy	Starchy roots: cassava, potatoes, taro Starchy fruits: banana, plantain, breadfruit
For good quality energy and protein	Cereals and grains: wheat, maize, rice, millet, sorghum Bread. Wholemeal bread is vastly better than white bread! Potatoes and sweet potatoes also contain protein.
For more concentrated food	Oil seeds: pumpkin, melon, sesame, sunflower Legumes: beans, peas, lentils, soya Nuts: groundnuts, cashew almonds Animal products: milk, eggs, cheese, fish, chicken, any meat
For vitamins and minerals	Vegetables: dark green leafy plants, cassava leaves, sweet potatoes and sweet potato leaves, tomatoes, carrots, pumpkins, moringa leaves - and many more Fruit: mangoes, oranges and lemons, pawpaws, guavas, passion fruit and many more. Fruit juices
For protein, vitamins and minerals	Moringa (leaf powder), grain amaranth
For a strong immune system	Eat raw garlic.

Grow fruit and vegetables yourself! Plant fruit trees and plants - mangoes, pawpaw, pineapples, bananas, passion fruit etc. Plant moringa and eat the leaves.

Children should be fed several times a day with a variety of foods. They need a little often. If, for example, they eat only millet or cassava, then they suffer because their needs for protein, energy, vitamins and minerals are not met.

Drink natural fruit juices - Africa has an abundance of wonderful fruits! Sodas and other commercial drinks contain all sorts of additives and artificial sweeteners, some of which are actually harmful. "Fast food" also contains unhealthy oils, a lot of salt and preservatives.

If at all possible, breast feed your babies - don't be tempted by advertisements for bottle feeding. Dirt and infections are very easily taken in by babies via their bottles, which lead to diarrhoea and other illnesses. Try to avoid using commercial baby food - it only weakens your household economy!

2. Good home economics

If you and your family are getting skinnier and skinnier, you might be suffering from diseases such as worms or tuberculosis. But you might be suffering from another "sickness" called "poor home economics".

For example, in the village you have to sell 20kg shelled peanuts to buy only 1kg milk powder. The protein content in both products, weight for weight, is just the same (270g protein in 1kg). An adult person can live on 20kg peanuts for 46 days, but on 1kg milk powder for 2 days only!

Some more examples:

- You sell oranges containing a lot of vitamin C in order to buy a bottle of lemonade, which is made of water, sugar and colourings only.
- You sell bananas, which actually contain 3 cups of (hidden) natural sugars to buy 1 cup of commercial sugar in the shop.
- You cannot find any honey to prepare an Oral Rehydration Solution because the father has used it all up to make wine.
- As the son is attending secondary school now, he thinks that he is too highly educated to help his mother in the field, even during his holidays. The mother's overworked body cannot produce enough milk for her baby any more; the baby falls ill, so that the father is forced to sell the last sack of peanuts in order to pay the hospital bill. Hunger is entering the village, and school fees can no longer be paid.

3. Look after your water!

Make sure that the water you drink is clean. Depending on the quality of your water, you may construct a sand-filter, or you can use crushed moringa seeds as described in chapter 5.14. Boiling water, perhaps in a solar oven, is the most effective method.

If people urinate or wash their clothes, or even bicycles and cars, in water that others are going to use for drinking, then they are causing problems!

4. Keep your soil fertile - naturally

a) **Plant leguminous crops** (which naturally put nitrogen into the soil). Leguminous crops include vegetables such as beans and ground nuts, and trees such as leucena.

Leucena can be planted along contours to help prevent soil erosion, and be regularly trimmed into a hedge. The branches which are cut off help to fertilise the soil.

b) **Compost** your waste organic material. All waste fruit skins, vegetable leaves, garden waste (but avoid seeds of weeds), chicken and other animal manure should be made into a heap (not too close to the house). If kept warm and moist, good black earth will be produced within about 3 months which, dug into your garden, will release nutrients (nitrogen and minerals) slowly into the soil.

c) **Avoid the use of agricultural chemicals.** Use either no or an absolute minimum of artificial fertilizers or pesticides. They pollute water, kill harmless (and sometimes valuable) plant and animal life, and harm the natural fertility of the soil.

5. Traditional toilets are clean and practical!

Faeces and urine carry many infections. Dig a pit, and build a house over it. The hole should always be covered. Install a "chimney", i.e. a vertical pipe (covered with a mosquito wire) which takes the foul air directly from the pit, through the floor and the roof and into the fresh air. Then it will not smell. When the pit is full, cover with soil and plant a mango tree! And make a new traditional toilet in another spot. Traditional toilets are in fact better than water toilets; they preserve the nutrients for future planting, whereas water toilets cause streams and rivers to become polluted. And they use less water, which is in many places an increasingly scarce resource. A clean, hygienic traditional toilet is 1000 times healthier than a so-called modern water closet that is dirty because of lack of water!!!

6. Dispose of waste carefully!

The "eternal fires", which seldom go out and on which all rubbish is thrown, are unsightly and dangerous to health. If certain substances, e.g. PVC and aluminium, are burnt together at a low temperature, very poisonous gases called dioxins are produced. Also, rubbish should not be left lying around. It looks bad, sharp edges can cut the flesh, batteries and some electrical components are toxic, and rainwater collects in such as old tyres and provides a breeding ground for malaria mosquitoes.

a) **metal, glass, plastic, batteries**. If there is any possibility to reuse or recycle these things, do so. Otherwise, collect together carefully, and each month bury them deeply. Batteries are particularly toxic. Don't plant your vegetables over the pit!
b) **paper**. Collect it together in the course of the week, and burn it on Saturday afternoon in a mere 5 minutes ! Bury the ash with the metal etc.
c) **wood**. Burn it and put the ash onto the garden - it contains minerals.
d) **organic waste**. Compost it.

7. Cleanliness and hygiene

The African tradition of always washing hands with soap and running water before eating or preparing food, and after using the toilet, is important and excellent. If you have no soap, make it yourself, or use pawpaw leaves. If you are short of water, make

a “tip-tap” which uses a minimum of water. For instructions, see anamed, Teachers’ Resource Kit.

Washing oneself from head to toe each evening keeps both the body and the bed clean.

8. Oral and Dental Hygiene

Caries is no longer only a disease of Europeans; in tropical countries too, especially in the cities, more and more people are suffering from tooth decay. The many sodas which are generously offered to every visitor are largely to blame. The much nicer local fruits and pure juices cause no such problems! The rising consumption of white bread also contributes to the increased problem of caries, whereas cassava is easy on the teeth, because the cassava starch is not nearly so much turned into sugar by the saliva.

If you are lucky enough to live in a village, you can continue to use certain twigs (e.g. neem, see chapter 5.5) for dental hygiene. If you live in a town, you should use your toothbrush after every meal, especially in the evening. If there is no toothpaste, don't worry, because the main thing is the mechanical cleaning, the brushing.

Instead of toothpaste, you can use a little bit of salt, or you put a tiny bit of curd soap (home-made) or any other good soap (see chapter 4) on your toothbrush. Keep the soap separate for this purpose. You may also use tooth-powder, see chapter 4.5.

9. For cooking indoors, install a chimney!

If you are frequently in a room filled with smoke, then you run a strong risk of developing serious eye problems and lung diseases. The best solution to the problem is to build a fuel efficient stove (which would mean fewer trips for firewood) with a chimney – so that all the smoke goes outside.

10. Exercise and fitness

Some people have too much exercise, e.g. women who has to walk many kilometres each day collecting water and firewood. Others have too little. Make your own choice as to whether your family is "developed" or "undeveloped"! In "developed" families, the man and woman share the physical work, and so have similar exercise. In this way the wife is not too weak, and the husband is not too large! When we are fit, we have a much better immunity to disease.

11. Avoid sexually transmitted diseases and AIDS

There is no evidence that a non-toxic plant exists which can cure syphilis or other venereal diseases, but certain plants can help to ease certain symptoms (e.g. itching). Antibiotics should be taken, if the financial means allow it. We have visited pygmies who successfully cure (even antibiotic-resistant) venereal diseases with medicinal plants - but at the high risk of poisoning the patient. We strongly advise you to have the positive result of any treatment (modern or traditional) checked in the laboratory!

AIDS: No modern nor traditional medicine is able to cure AIDS. It is up to you to avoid an AIDS or other virulent infection:

1. Be faithful to your partner.
2. Do not seek treatment from "travelling nurses" (vagabonds who give shots and perform circumcisions).
3. Make sure the nurse does not vaccinate your child with the same syringe or even the same needle already used for another child (there is a risk of infection if the material has not been sterilized).
4. Prevent anaemia to avoid the necessity of a blood transfusion in case of sickness, after an accident or while giving birth.

12. Avoid road accidents – a rapidly increasing cause of death in the tropical world. Campaign for road safety, speed limits, and proper paths for both pedestrians and cyclists.

7.2 VILLAGE HEALTH CARE WORKERS

Normally one health centre or dispensary provides care for 20-30 villages in the surrounding area. Ideally, in each of these villages, there is one man (health care worker) and one woman (e.g. traditional midwife) who work voluntarily (!) to improve health in their own village.

The equipment of such a health care worker includes: bandage material, aspirin, chloroquine (for malaria), mebendazole (for worms), iodine tincture or other disinfectants. The health workers should also have a lot of knowledge of local medicines, and should have the permission to use it in a responsible way. The following are some examples of how a village health care worker can practice Natural Medicine:

a) By dressing wounds and burns using pawpaw, honey, sugar or *Aloe vera*.
b) By using medicinal teas: see chapter 4.2.
c) By preventing and treating diarrhoea in children. They can show the parents how to prepare a sugar and salt solution themselves by using a container of sugar, a container of salt and a mug.
d) By teaching people about a healthy way of life. For example, they can make posters together, e.g. on the topic "Hygiene", or “Soap-making” .This latter poster should teach people never to use so-called antiseptic soaps, without first checking that they contain no mercury!"
e) By having, and actively using a medicinal garden! This should be used both as a teaching aid and as a constant supply of the materials required to produce medicine.

7.3 THE HEALTH CENTRE

The misconception of a dispensary: The word "dispensary" is commonly greatly misunderstood. It comes from the Latin word "dispensere", meaning to distribute, hand out, administrate, donate. This immediately gives a very wrong impression, i.e.

of a house where medicines (usually imported) are handed out or donated. We have seen very many “dispensaries” where sickness is administered, rather than being places where health care is really practised! A nurse showed us her dispensary, which was built like a tunnel: "...here in the first room the patients are examined, in the second they pay, in the third they get their injections and then they leave through the back door..."

The misconception regarding injections: What have we Europeans done to the Tropics? Injections have become a synonym for reliable western medicine, the desired shot (of whatever content) as a guarantee for a quick cure. It is now up to the nurse to fight this misguided belief in the power of injections. Injections should only be given if the patient is unconscious, or if the medicine is not available in the form of suppositories or tablets (e.g. vaccines).

The misconception that fever is a disease: The distribution of aspirin is very common in African health centres. Drugs such as aspirin, metamizol or paracetamol can soothe the symptoms (headache, fever) but can never cure the disease (aspirin can never kill parasites or microbes).

Fever is not a disease but, on the contrary, a gift from God! The fever directs our attention to a dysfunction of our organism, forcing us to get to the bottom of it. Fever compels us to take a rest. You can compare fever with the little red light on the instrument board of a car saying "Stop, there is something wrong with the motor!"

Do you think a driver destroying the little red lamp with a hammer will enjoy his vehicle for a long time? Certainly not. But this example mirrors exactly our habit of regularly swallowing aspirin and other medicines and getting on with life as normal.

Today we know that fever is not only a good indicator, a sign of our state of health, but also an important weapon to "burn" microbes and to transport their waste-products out of our bodies. But how can you burn waste if somebody keeps putting the fire out? You actually harm your body (especially your stomach) if you take tablets for fever as soon as you are attacked by such as malaria or rheumatism.

It has been shown that the nurses with the least training are those most likely to prescribe aspirin!

Below 38.5°C in children and 39°C in adults there is no need to lower the temperature chemically; on the contrary, if the body temperature is low we recommend raising it by giving hot herbal teas (guava, eucalyptus or lemon grass). The increase in transpiration promotes the cleansing process. More waste-products are excreted by sweat than by urine! If the temperature rises too much, wet towels can lower it, if placed all over the body. Give tablets only if these measures are not effective.

Natural Medicine: It depends on the reliability and skill of the staff as to what extent nurses should produce medicines themselves. The further the health centre is located from the nearest hospital pharmacy, the more important it is that nurses are able to prepare their own medicines, e.g. teas, oil for rheumatism, ointment for scabies. It is also important that meetings for healers are organized by the health staff on a regular basis in order to get away from the belief in imported goods and medicines.

The best indicator of a good health centre is not the large number of patients treated per year, but rather the large number of those not treated per year, thanks to their good health resulting from your good teaching about nutrition and Natural Medicine in seminars!

7.4 THE HOSPITAL PHARMACY

A. What to produce

1. **Stock and produce only medicines that are useful.** In many hospital pharmacies I have seen many appetisers, tonics (so-called), vitamin syrups etc. What a waste of time and money! Check also your imported medicines: How much sugar, salt, water, oil from Europe do they contain? I guess about 80%! With the recipes in this book, you can decrease by 60% the weight of medicines imported, save about 50% of your money, spare your nerves and energy and have the satisfaction of producing high quality products yourselves!
2. **Forget syrups altogether.** Syrups just help the pharmacist to become rich! Adults do not need syrups. For children a tablet can be divided just before handing it out, and given with water (or honey), which at times saves up to 95% of the costs. For adults, teas and drops are adequate, e.g. cough drops (chapter 5.11). For children's coughs, drinking a lot of water or tea is much more helpful than any cough syrup!

   Under tropical conditions even the pharmaceutical "syrupus simplex" does not keep but needs preserving. The consumption of such preservatives leads to an increase in allergy rates.
3. **Produce what is heavy** - which is therefore expensive to import and transport. Also, do not rely on gifts from abroad, because one day these gifts might stop, and you may have forgotten how to produce it yourselves!
4. **Produce what saves money** - some things are cheap to produce, but very expensive to buy, e.g. datura tincture or eucalyptus tincture, or ointment for haemorrhoids. Sometimes I have seen the opposite, pharmacists making tablets which are expensive to produce but cheap to buy.
5. **Produce what is important**, but not in the list of "essential drugs", and therefore expensive. Many hospitals have become convinced about the efficacy of Natural Medicine when they have seen infected wounds being treated with slices of unripe pawpaw, then amoeba dysentery with anamed anti-amoeba tea made from *Euphorbia hirta* and guava and fresh, green mango leaves, malaria with *Artemisia annua* tea and arthritis with rheumatism ointment (made with chillies).

B. Medicine made from dangerous plants

Produce what others cannot produce. Some recipes must only be prepared in the hospital pharmacy, e.g. Datura tincture, Rauwolfia powder, Cannabis tincture. These should only be produced by qualified staff in hospitals.

C. Some hints on how to find some chemicals

C.1. Sodium Hydroxide

Small amounts are sold in some supermarkets for cleaning drains. But be sure that no other chemicals have been added. For big amounts ask at breweries, or try to buy directly from a soap factory.

C.2. Alcohol

You can prepare a solution containing about 10% alcohol yourself (see honey wine, chapter 4.8). Local maize spirits prepared in the villages can contain up to 30 or 40%, but for reasons of safety, use them only externally. To get 70% alcohol from maize spirits, you have to distil them again. Use this only for tinctures used externally or for disinfection. You can get 95% alcohol in barrels, e.g. from sugar factories in the capital.

C.3. Wax

Whenever possible, use beeswax (for harvesting and preparation see chapter 6.31). Use for ointments, plaster, waxed-paper, candles, varnishes, paints, shoe polish.

Beeswax is bleached by spreading it on a cloth and exposing it to the sun, and industrially by means of chloride of lime or potassium permanganate, but we never bleach it. There is absolutely no need!

You may also use wax candles. If you need a large amount, buy commercial wax from petrol companies. In the Congo, where they sold it in sacks of 50kg, we used it in ointments. We saw no evidence of skin problems.

A picture from Ukraine!
A European visitor is helped by an African healer

Chapter 8

THE FIRST CHOICE IN THE EVENT OF SICKNESS

IF YOU ARE A DOCTOR OR NURSE: Please monitor the efficacy of your treatment by using microscopes and all means of available laboratory instruments.
IF YOU ARE A HEALER: Collaborate with the hospital to verify the results. Become an expert in herbal medicine!
IF YOU ARE A PATIENT: For some ailments, use of medicinal plants may cure you; in some cases, additional use of plants may be helpful; inform your doctor about this. For serious diseases such as tuberculosis, AIDS, cancer, sexually transmitted diseases, **it is essential that you see a doctor!**

The best treatment is always given first, followed by the next most appropriate treatment, and so on.

Abscess	pawpaw 5.7; onion 6.2.
Agitation	passion flower 6.36; rauwolfia 6.40 and 7.4.b.
AIDS	artemisia 5.4; moringa 5.14; (advice 7.1).
Amenorrhea	pineapple 6.3.
Amoeba dysentery:	
light cases and prophylaxis:	pawpaw 5.7; guava 5.15; mango 5.13.
severe cases:	asthma weed 5.12.
Anaemia	amaranth 5.3; moringa 5.13; iron 4.10; folic acid 4.10.
Anxiety, state of	passion flower 6.36.
Arteriosclerosis (hardening of the arteries), prevention of:	garlic 5.1; carrot 6.20.
Arthritis	chilli 5.6; elemi 6.8; turmeric 6.19.
Asthma	asthma weed 5.12; eucalyptus 5.11; pawpaw 5.7; thorn apple 5.10.
Athlete's foot	garlic 5.1; neem 5.5.
Bilharzia	artemisia 5.4.
Bilious troubles	turmeric 6.19; hibiscus 6.24.
Bronchitis	eucalyptus 5.11; lemon grass 5.9; lemon 6.13; mango 5.13; salt 6.32.
Burns	aloe 5.2; salt 6.32; kalanchoe 6.26; onion 6.2; pawpaw 5.7;
infected burns	neem 5.5, pawpaw 5.7.
Cancer	artemisia 5.4; aloe 5.2; pawpaw 5.7; (advice, vinca 6.48)
Candida	honey and garlic 5.1; artemisia 5.4; neem 5.5.
Caries	toothpowder 4.5; neem 5.5.
Cholera	asthma weed 5.12.
Cold	garlic 5.1; lemon 6.13; lemon grass 5.9; artemisia 5.4;

	eucalyptus 5.11.
Colitis	artemisia 5.4.
Conjunctivitis	chamomile 6.28; aloe 5.2; artemisia 5.4.
Constipation	coffee senna 6.10; ringworm bush 5.8; carrot 6.20; mango 5.13.
severe cases:	castor oil 6.41.
Cough	eucalyptus 5.11; garlic 5.1; lemon 6.13; ginger 6.50; onion 6.2; avocado 6.37; elixir 4.9.
Cramps	passion flower 6.38; asthma weed 5.12; thorn apple 5.10.
Dental hygiene	neem 5.5; eucalyptus 5.11; (advice and recipe 7.1.d).
Diabetes	maize 6.49; onion 6.2; garlic 5.1, beans 6.38; moringa 5.14; guava 5.15; if no other plants are available, vinca 6.48.
Diarrhoea:	
adults	charcoal 4.5; ORS 4.6; guava 5.15; asthma weed 5.12; mango 5.13; neem 5.5.
children	ORS 4.6, guava 5.15, carrot 6.20, juice of coconut 6.15.
Dysentery:	
light cases:	garlic 5.1; guava 5.15; ginger 6.50; neem 5.5.
bacillary:	asthma weed 5.12, vinca 6.48.
Eczema	cabbage 6.6; neem 5.5; chamomile 6.28; bean 6.38.
Eye infections	aloe 5.2; artemisia 5.4; lemon 6.13.
Fever	lemon grass 5.9; eucalyptus 5.11; sweet basil 6.34; baobab 6.1, (advice 7.3).
Filaria	scabies oil 4.3.F.
Flatulence	eucalyptus 5.11; chilli 5.6; turmeric 6.19.
Fungal infection	neem 5.5; garlic 5.1; ringworm bush 5.8; pawpaw 5.7; onion 6.2; cabbage 6.6.
Gastritis	guava 5.15; aloe 5.2; sweet potato 6.25.
Goitre	(recipe 4.10.j).
Gonorrhoea	(advice 7.1).
Guinea worm	pawpaw 5.7.
Haemorrhoids	artemisia 5.4, coffee senna 6.10; mango 5.13; chilli 5.6; lemon grass 5.9; (ointment 4.4).
Headache	see fever or migraine.
Head lice	(oil 4.3.F); neem 5.5.
Hepatitis	pawpaw 5.7.
Herpes labialis	lemon 6.13; orange 6.14.
Herpes zoster	aloe 5.2; chilli 5.6.
High blood pressure	garlic 5.1, maize 6.49; onion 6.2; rauwolfia 6.40;vinca 6.48.
Hookworm	see worms, intestinal.
Hygiene	soap 4.1.
Indigestion	pawpaw 5.7; pineapple 6.3; pepper 6.39; turmeric 6.19.
Infected ears	kalanchoe 6.26; onion 5.1.
Infected gums	mango 5.13; aloe 5.2.

Insect bites	garlic 5.1; aloe 5.2.
Insect repellant	lemon grass 5.9; eucalyptus 5.11.
Insecticide	neem 5.5; tephrosia 6.45; melia 6.30; tobacco 6.33.
Itching skin	onion 6.2; cabbage 6.6: thorn apple 5.10.
Jaundice	pawpaw 5.7.
Kidney infection	maize 6.49; asthma weed 5.12.
Labour pains	chilli 5.6.
Lactation	pumpkin 6.18.
Loss of appetite	colanut 6.17; cinchona 6.12.
Loss of hair	aloe 5.2; chilli 5.6.
Loss of weight	(advice 7.1).
Low blood pressure	coffee 6.16.
Lumbago	see rheumatism.
Malaria	Artemisia 5.4 together with lemon gras and garlic
Malnutrition	moringa 5.14; (advice 7.1).
Mammary gland infection	African marigold 6.43.
Menstruation troubles	African marigold 6.43.
Migraine	coffee 6.16; cola 6.17; orange 6.14; thorn apple 5.10.
Nausea	ginger 6.50; coffee 6.16.
Oedema	maize 6.49; coffee senna 6.10; pineapple 6.3.
Otitis	kalanchoe 6.26; onion 6.2.
Parkinson's disease	thorn apple 5.10.
Poisoning	charcoal 4.5B; castor oil plant 6.41; thorn apple 5.10.
Prostatitis	pumpkin 6.18; carrot 6.20.
Psoriasis	neem 5.5; ringworm bush 5.8.
Rheumatism	chilli 5.6; elemi 6.8; eucalyptus 5.11.
Ringworm	ringworm bush 5.8; neem 5.5.
Roundworm	see worms, intestinal.
Scabies	oil 4.3.F; ointment 4.4; ringworm bush 5.8; neem 5.5; rauwolfia 6.40.
Sciatica	chilli 5.6.
Scurvy	amaranth 5.3; pineapple 6.3; lemon 6.13; orange 6.14; mango 5.13; passion fruit 6.36; guava 5.15.
Sexually transmitted diseases	Use antibiotics. Support this treatment with pawpaw 5.7; aloe 5.2; asthma weed 5.12; (advice 7.1.11)
Shingles	see herpes zoster.
Sinusitis	lemon grass 5.9; artemisia 5.4; garlic 5.1.
Skin care	baby oil 4.3; baby ointment 4.4.
Sleeplessness	peanut 6.4; passion flower 6.36.
Snakebites	black stone 4.7.
Sore throat	eucalyptus 5.11; mango 5.13.
Spasms, intestinal	passion flower 6.36; thorn apple 5.10.
Sprains	chilli 5.6.

Stomach problems	guava 5.15.
Suppurating sores	pawpaw 5.7; garlic 5.1; onion 6.2.
Travel sickness	ginger 6.50.
Tuberculosis	eucalyptus 5.11 (supportive).
Typhoid fever	garlic 5.1; melia 6.30; ORS 4.6.
Ulcers	aloe 5.2.
Urinary tract infection	onion 6.2; asthma weed 5.12; eucalyptus 6.10.
Veterinary medicine	(advice and recipes 4.10).
Vitamin deficiency	(advice 4.10).
Warts	garlic 5.1; neem 5.5; asthma weed 5.12.
Whooping cough	African marigold 6.43.
Worms, intestinal	pawpaw 5.7; asthma weed 5.12; pumpkin 6.18, mango 5.13; leucena 6.27.
Wounds	honey 6.29; salt 6.32; kalanchoe 6.26; pawpaw 5.7; annato 6.5; ointment 4.4.D.
Yellow fever	pawpaw 5.7.

GLOSSARY OF SCIENTIFIC TERMS

Abscess	a collection of pus under the skin surrounded by swollen tissue.
Allergen	(also called antigen) a foreign body that causes an allergy, most commonly pollen, house dust and cigarette smoke.
Allergy	any abnormal reaction to an allergen. Some allergic reactions occur immediately, others appear later.
Amenorrhoea	absence of menstruation in women.
Amoeba dysentery	a type of diarrhoea caused by the parasites *Entamoeba histolytica*; second to malaria the most widespread tropical infection.
Anaemia	lack of red blood cells, the patient is pale and weak.
Anaesthetic	a drug that produces insensibility to touch or pain.
Analgesic	a substance that relieves pain.
Antiseptic	a substance that prevents infection by destroying bacteria.
Anti-spasmodic	a substance that relaxes cramps.
Arthritis	inflammation of the joints.
Ayurveda	a traditional system of Indian medicine which means “a knowledge of how to live”.
Bacillary dysentery	also called shigellosis, a serious infection of the bowel that causes diarrhoea. It is caused by hand to mouth contact with the faeces of affected individuals.
Bacillus	a genus of bacteria that produce spores in the family bacillaceae. Of 33 species, 3 cause disease.

Beri-beri	a disease of the nerves of the arms and legs caused by a deficiency in thiamine.
Bile	(also called gall) a bitter, yellow-green secretion of the liver. Bile is stored in the gallbladder, and is released when fat enters the first part of the small intestine to assist in the digestion of fats.
Bilharzia	also called schistosomiasis, a worm disease caused by parasites (schistosoma); one becomes infected by swimming in infected lakes or rivers, or by drinking infected water.
Blackwater fever	a severe side effect of using quinine to treat malaria.
Boil	a swollen inflamed lump with a pocket of pus under the skin.
Bronchitis	inflammation of the mucous membrane inside the bronchial tubes.
Candida	A white yeast-like fungus that occurs sometimes in the mouth of babies. With adults who have low immunity it can sometimes get out of control, leading to white lesions in the mouth, vagina, digestive tract or on the skin.
Carminative	medicine that remedies colic and flatulence.
Cold sores	small, fluid-filled and irritating blisters (sometimes caused by the herpes virus).
Colic	spasmodic pain in the abdomen, or severe pains in the intestines.
Colitis	inflammation of the large intestine (bowel).
Conjunctivitis	inflammation of the mucous membrane of the eye.
Contagious disease	spread by direct contact of one person with another.
Cramp	a painful tonic muscular contraction.
Delirium	state of mental confusion (mainly caused by drugs or high fever).
Dermatitis	inflammation of the skin.
Dehydration	severe lack of water in the organs.
Diabetes	disease of the pancreas which prevents sugar and starch being properly absorbed.
Diarrhoea	frequent watery stools, caused by anxiety, microbes or toxins.
Digestion	the process of breaking down food into simple components that can be absorbed.
Diuretic	a substance that causes an increase in the flow of urine.
Dysentery	inflammation of the bowels, causing severe diarrhoea.
Dysmenorrhoea	difficult and painful menstruation.
Ebola virus disease	serious virus infection with a sudden fit of high fever and bleeding from several body sites, including the eyes. It is passed on through contact with the victim's blood or body fluids.
Eczema	skin disease causing redness, severe itching and scaling of the skin.
Emetic	a medicine that causes vomiting.
Enema	liquid injected into rectum for the purpose of emptying the bowel.
Enteritis	inflammation of the bowels.
Enzyme	protein formed in living cells that assists chemical changes.

Expectorant	A substance that helps one to cough up mucous and other fluids from the lungs.
Filariasis	a disease caused by filaria, threadworms living as parasites in humans, animals and plants.
Flavonoid	yellow colouring matter in plants.
Furunculosis	a serious skin disease marked by a rash of boils.
Galenics	the science of processing an active substance into a medicine.
Gall	see bile
Gangrene	decay and death of body tissue when the blood supply fails.
Gastric	relating to the stomach.
Genital	relating to reproduction.
Gonorrhoea	sexual disease caused by the bacterium *Neisseria gonorrhoeae*.
Guinea worm	threadworm up to 1 metre long, living under the skin.
Haemostatic	substance that stops bleeding.
Haemorrhoids	"piles", an ailment of the blood vessels around the anus.
Hepatic	related to the liver.
Hepatitis	an inflammation of the liver. It causes a yellowing of the skin, an enlarged liver, loss of appetite, stomach discomfort, clay coloured stools and dark urine.
Herpes	a viral infection which causes cold sores on the skin and mucous membranes. Different herpes viruses cause infections around the nose and mouth (herpes labialis), around the hips (herpes zoster or shingles) and around the genitals (herpes genitalis).
Insecticide	an insect killer.
Insectifuge	an insect repellent.
Jaundice	Yellow discolouring of the skin, mucous membranes and eyes, caused by too much bilirubin (a component of bile) in the blood.
Kwashiorkor	protein-calorie-malnutrition.
Lactagogue	medicine stimulating the production of mother's milk.
Lactation	the production of a mother's milk after giving birth
Laxative	a substance that stimulates defecation.
Lesions	sores caused by a particular infection, e.g. candida or herpes.
Marasmus	wasting, emaciation, a type of malnutrition.
Menstrual	relating to menses (the periodic discharge of blood of the uterine mucous membrane).
Nephritis	inflammation of the kidney.
Neuralgia	coming and going of sharp pain felt along a nerve, usually in the head or face.
Oedema	swelling of tissue due to the accumulation of fluids.
Oral rehydration	"filling up" of lost body liquids by drinking a special solution.
Paralysis	loss of power in muscles through injury or disease in the nerves.
Parasite	animal or plant that lives on or in another animal or plant and gets its food from it.
Pectoral	relating to the chest or breast.

Placental retention	failure to expel the afterbirth by the female body.
Prostatitis	inflammation of the prostate gland (a gland in men that surrounds the neck of the bladder and urethra).
Psoriasis	an inborn skin disorder, with red patches with thick, dry, silvery scales.
Purgative	a substance that causes evacuation of the bowels.
Pyrogene	a bacterial substance that causes fever.
Renal	relating to the kidney.
Rheumatism	acute disease characterised by painful inflammation of one or more joints.
Rickettsia	small parasites that combine features of bacteria and viruses.
Scabies	contagious skin disease causing scabs and itching, caused by a mite.
Schistosomiasis	see bilharzia.
Scurvy	disease caused by a lack of vitamin C.
Sedative	a medicine having a calming effect.
Shingles	see herpes zoster.
Sores	wounds, ulcers or any other open skin lesion.
Spasmodic	relating to spasms, periodic sharp attacks.
Syphilis	sexually transmitted disease, caused by the organism *Treponema pallidum*.
Tuberculosis	disease affecting the lungs and sometimes the bones, caused by a bacillus, *Mycobacterium tuberculosis*.
Typhoid	gastro-intestinal disease, caused by *Salmonella typhi*, spread through unclean water supply.
Typhus	an acute infectious disease caused by species of *Rickettsia*, carried from infected rodents to humans by the bites of lice, fleas, mites or ticks. Marked by high fever and great mental and physical depression.
Venereal disease	disease transmitted by sexual contact.
Vermifuge	a drug which expels parasitic worms.
Volatile oils	aromatic oils which evaporate in the air.

Index

BIBLIOGRAPHY

1. Agence de coopération culturelle et technique, *Medecine traditionnele et pharmacopee, acct 13,* quai André Citoen, 75015 Paris .
2. Braun/Frohne (1987), *Heilpflanzenlexikon für Aerzte und Apotheker*; Gustav Fischer Verlag, Stuttgart.
3. De Wildeman (1938), *Plantes medicinales du Mayumbe Congo Belge,* Memoire Inst. Royal Colonial Belge.
4. DIFÄM (1979) *Auf der Suche nach Gesundheit*, Studienbericht des Dt. Instituts für Ärztliche Mission, Tübingen.
5. Fortin, Daniel et al (1989), *Plantes medicinales du Sahel,* 23, Rue de la Folie Regnault, 75011 Paris.
6. GTZ, Schriftenreihe, *Arbres et arbustes du Sahel*, GTZ.
7. Hutchings Anne et al. (1996), *Zulu medicinal plants; an inventory*, University of Natal Press, Pietermaritzburg.
8. Kambu Kabangu, Prof. (1988), *La medecine traditionnelle Africaine,* Centre de Recherche Pharmaceutique, Kinshasa.
9. Kokwaro, J.O., *Medicinal plants of East Africa*, Kenya Literature Bureau, PB 30022, Nairobi/Kenya.
10. Leonardo, L. et al. (1989), *Common medicinal plants of the Cordillera Region (Philippines),* Chestcore, Baguio City 2600, 113 General Luna Road, Philippines.
11. Müller Markus (2003),*Medicinal plants in tropical countries*, DIFÄM, Tübingen.
12. Neuwinger, Hans-Dieter (2000), *African traditional medicine*, Medpharm Scientific Publishers, Stuttgart.
13. Oliver-Bever, Bep, *Medicinal plants in tropical West-Africa*, Cambridge University Press.
14. Sengbusch, Volker von (1975), *Das Entwicklungspotential afrikanischer Heilpflanzen*, IFB Möckmühl.
15. Watt, J.M. and Breyer-Brandwijk (1962), *The medicinal and poisonous plants of southern and eastern Africa*, Livingstone LTP, Edinburgh.
16. World Council of Churches (1987), *The use of herbal medicines in primary health-care*, Christian Medical Commission, Geneva.
17. World Health Organisation (1998), *The use of artemisinin and its derivatives as anti-malarial drugs*. Report of a joint CTD/DMP/TDR informal consultation. Geneva.
18. World Health Organisation (1999), *Monographs on selected medicinal plants*, Vol. 1, Geneva.

anamed: Publications

Schafweide 77, 71364 Winnenden, Germany Email for orders: info@anamed-edition.com

ENGLISH

Order number Item

105 Hirt/M'Pia, "Natural Medicine in the Tropics I: Foundation",
106 This book together with colour posters (403)
109 Hirt/Lindsey, "Natural Medicine: II Treatments" Seminar handbook
113 "Natural Medicine: III Seminar Leader's Resource Kit"
114 Lindsey, "Making peace: Biblical principles"
115 Natural Medicine IV "AIDS and Natural Medicine"
116 Document: "Four ULOG solar ovens and one drier: Construction plans and uses"
117 Document: "Neem in medicine and agriculture"
403 Colour poster of 60 tropical med. plants (folded or as roll?)
419 anamed Moringa Reader
421 Seeds of Moringa oleifera + stenopetala with anamed Moringa Reader
107 Lindsey/Hirt "Use Water Hyacinth!" (inc. instructions for solar oven constr.)
201 Report "Mercury Soaps: A Modern Day Scandal"
204 Document 1"*Artemisia annua anamed*: Cultivation, harvest, and uses of A-3"
220 Document 2 "Malaria: *Artemisia annua*: From research to experience"

GERMAN

101 Hirt/M'pia "Natürliche Medizin in den Tropen I"
102 This book together with colour poster (401)
401 Colour Poster, 70x100cm, "Heilpflanzen in den Tropen" (folded or as roll?)
303 Information re seeds of healing plants: purchase, preservation
202 Document "Malaria: *Artemisia annua*" with an illustrated cultivation guide

FRENCH

103 Hirt/M'Pia "La Medecine Naturelle Tropicale I"
104 This book with colour poster (402)
112 "La Medecine Naturelle Tropicale: II Traitements" Seminar handbook, 40pp
118 "La Medecine Naturelle Tropicale: III Guide du Formateur"
122 "La Medecine Naturelle Tropicale: IV Le SIDA et la Médecine Naturelle"
402 Colour poster, 70x100cm, "Plantes médicinales tropicales"(folded or as roll?)
420 Brochure informative *anamed*: le moringa.....
422 Seeds of *Moringa oleifera + stenopetala* with Brochure informative *anamed*: le moringa
206 Report "Mercury Soaps: A Modern Day Scandal" (French)
203 Document "Malaria: *Artemisia annua*" with an illustrated cultivation guide

PORTUGUESE

120 Hirt/M'Pia "Medicina Natural nos Trópicos I"
111 "Medicina Natural nos Trópicos: II Tratamentos" Seminar handbook
205 Information "Malaria: *Artemisia annua*" with an illustrated cultivation guide
405 Colour poster of 60 tropical med. plants (folded or as roll?)

SPANISH

110 Hirt/M'Pia "Medicina Natural en los países tropicales - Part A" 160pp
121 "Medicina Natural" – Part B includes extracts from NMII, III & IV. 40 pp A4
207 Information: "Malaria: *Artemisia annua*" with an illustrated cultivation guide

SWAHILI

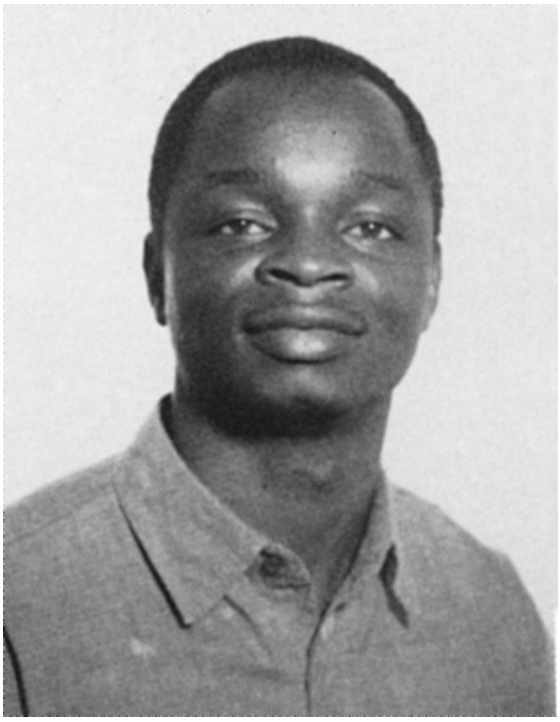
123 Hirt/M'Pia, "Madawa ya asili: I"
119 Hirt/Lindsey, "Dawa za asili katika nchi za joto: II Uzoefu" Seminar handbook

AMHARIC (Ethiopia and Eritrea)

125 Hirt/Lindsey, "Natural Medicine: II Treatments" Seminar handbook
126 Natural Medicine IV "AIDS and Natural Medicine"

OTHER MATERIALS

400 White sheet, 70 x 100cm, laminated on both sides for teaching with markers
404 Colour poster of 60 medicinal plants, no text, laminated for use with markers
408 Seeds of 10 different tropical plants (ready for germination)
409 Anamed Malaria Programme Starter-kit with 5000 seeds
412 Artemisia, refill pack of 5000 seeds, only for people who have already purchased 409
411 Dried artemisia leaves – raw material for scientific uses, 50g. .....



Bindanda M'Pia was born on July 27th, 1963 in Matamba-Solo, Zaire. From 1983 to 1986 he was a secondary school teacher. From 1986 to 1991 he was employed by the medical coordination division of the protestant church in Kwango, Zaire, where he organized numerous meetings with local healers. He transformed many indigenous plants into medicines which are now very popular in hospitals in Zaire. By responding to numerous invitations he encouraged and taught many people in the Tropics to make their own medicines, and thus to take more responsibility for their own health care. From 1991 to 1993 he undertook further studies in France. At present he is responsible for the "Natural Medicine Programme" in the Bandundu province of the Democratic Republic of Congo.

Hans-Martin Hirt was born in Winnenden, Germany on 25th January 1951. Following studies in pharmacy at Heidelberg University he was awarded the Doctor of Pharmacy for studies into "The Natural Strengthening of the Immune System" at the German Cancer Research Centre, on which subject he has published more than 30 scientific papers. From 1979 to 1985 he was the Head of the Department of Drug Production and Analysis at the Central Pharmacy of Heilbronn District. During 1985 he made visits to hospitals in Peru, Nepal and India. From 1985 to 1991 he was Medical Adviser in Matamba-Solo, Zaire, and from 1992-94 Adviser for Zaire in the overseas work of the Protestant Church in Germany. In 1986, he founded "***anamed***" (Action for Natural Medicines), for which he regularly leads seminars on natural medicines at home and abroad, and has established ***anamed*** groups in multiple countries.