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UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI, GHANA

HERBAL MEDICINE CENTRE, TECHIMAN

UNIVERSITY OF SCIENCE & TECHNOLOGY

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A Design Thesis Dissertation Presented in the Faculty
of Architecture, Department of Architecture, University
of Science and Technology in Partial Fulfilment of the
Requirements for the Post-Graduate Diploma in Architecture.

By

SETH KWABENA YEBOAH B.SC.(DESIGN) HONS.

JUNE, 1986.

Finally, my praises and thanks to my Lord and God for His divine
direction, guidance and my spiritual upliftment. To Him be the glory
now and for ever more.

ACKNOWLEDGEMENT

I acknowledge my indebtedness to Mr. A.N.K. Laryea for his tutorship which contributed immensely to the success of this project.

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Finally, my praise and thanks to my Lord and God for His divine direction, guidance and my spiritual upliftment. To Him be the glory now and for ever more.

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PREFACE

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Two centres have already sprung up at Nsawam and Mampong-Akwapim, in Ghana, where efforts are being made to rectify the above situation. Techiman, a fast growing market centre in the Brong Ahafo Region of Ghana abounds in traditional healers who offer valuable services to the local Catholic Mission Hospital. This indispensable role of the healers as far as health care is concerned in the area, has set in motion a project aimed at uplifting traditional medicine to an acceptable strata.

It is the view of many that, the time has come for the African scientist to concentrate on his own research which is relevant to the needs of his own people. Africa now should be innovative and not imitative.

P R E F A C E

It is an undeniable fact that, the time has come in the history of medicine for developing countries like Ghana to find alternative for posterity is usually deficient in one thing - protection of traditional medicine. One often wonders why many of our ancestral exchange spent on orthodox drugs, and also reduce their incidence of could live as long as 120 years in an era when scientific promoting further diseases instead of curing them. developments had not reached such high levels as now. This situation Thus, the idea of some individuals and certain Health however, is contrary to present day affair where, despite the great Organisations in seeking to promote the research and development of strides made in medicine, man rarely lives beyond 70 years. This herbal or plant medicine is something worth embracing. trend of longevity has partially been attributed to the contemporary This thesis sets out to examine the concept of healing by the use methods of medical treatments.

Most of the African culture because it was not documented the design of the proposed centre. The content of the dissertation resulted in its condemnation by white missionaries and traders as is briefly outlined as follows: primitive. This had held back efforts to intergrate traditional The first chapter deals with a general introduction, the problems and modern medicine. Attempts are being made to bring about some of at stake with respect to traditional medicine and the clients' understanding between the two cultures. development intentions.

Two centres have already sprung up at Nsawam and Mampong-Akwapim, Chapters two and three looked at herbalism as an aspect of in Ghana, where efforts are being made to rectify the above situation fringe medicine and also traditional African medicine in its totality, Techiman, a fast growing market centre in the Brong Ahafo Region drawing out certain distinctions in the latter. of Ghana abounds in traditional healers who offer valuable services The fourth chapter considers the case for the intermarriage of to the local Catholic Mission Hospital. This indispensable role of traditional and orthodox medicine, citing the merits and demerits the healers as far as health care is concerned in the area, has set in each, and typical experiences in other cultures. in motion a project aimed at uplifting traditional medicine to an Case studies to guide evolve a comprehensive Design brief is what acceptable strata.

It is the view of many that, the time has come for the the fifth chapter deals with; the detail design brief followed in the next chapter. African scientist to concentrate on his own research which is As a guide in spatial determination and planning, some relevant relevant to the needs of his own people. Africa now should be areas of technical studies and design considerations were looked innovative and not imitative. into in the seventh and eighth chapters.

A B S T R A C T

It is an undeniable fact that, the time has come in the history of medicine for developing countries like Ghana to find alternative drugs from local materials so as to cut down on the huge foreign exchange spent on orthodox drugs, and also reduce their incidence of promoting further diseases instead of curing them.

Thus, the idea of some individuals and certain Health Organisations in seeking to promote the research and development of herbal or plant medicine is something worth embracing.

This thesis sets out to examine the concept of healing by the use of herbs. The outcome of the findings will serve as the basis for the design of the proposed centre. The content of the dissertation is briefly outlined as follows:

The first chapter deals with a general introduction, the problems at stake with respect to traditional medicine and the clients' development intentions.

Chapters two and three looked at herbalism as an aspect of fringe medicine and also traditional African medicine in its totality, drawing out certain distinctions in the latter.

The fourth chapter considers the case for the intermarriage of traditional and orthodox medicine, citing the merits and demerits in each, and typical experiences in other cultures.

Case studies to guide evolve a comprehensive Design brief is what the fifth chapter deals with; the detail design brief followed in the next chapter.

As a guide in spatial determination and planning, some relevant areas of technical studies and design considerations were looked into in the seventh and eighth chapters.

CHAPTER ONE

Chapters nine and ten contain an evaluation of the survey area, site selection and planning, followed by eleventh chapter which is devoted to the actual design process. This chapter has description of the various units required at the proposed centre for the research and production of prototypes of herbal medicine - A clinical unit with an adjacent Administration block; Research Laboratories and production unit tucked away and welfare block centred in the developments. Supporting units are so located close to areas they are functionally needed.

Due to the nature of the project, a programme of development has been drawn out on phasing in the last chapter. The conclusion and recommendations of the author's view of the thesis research are also stated in this chapter.

However, it is a sad indictment of our "switched-on western society" that any therapy which is not in complete harmony with an orthodox view point is labelled quackery and tragically disregarded. Vic Ramsey, in his book "Healing and the Vitamin Factor" had this to say "in our desire to be scientific and to aschew mumbo jumbo and superstition, we should not make the mistake of throwing the baby out with the bath water; valuable healing methods should not be cast away".¹

1.10 The Problem

In Ghana as in most West African countries, traditional medicine continues to play a valuable role in the health needs of the people especially in the rural areas and in the cure of certain diseases which western medicine has proved to be incurable or ineffective.²

1. Vic Ramsey, Healing and the Vitamin factor, Marshall Morgan and Scott, 1963 p.14.

2. Dr. Oku Ampofo, First Aid in plant medicine, Watervill Publishing House, Accra, 1983 PV.

CHAPTER ONE

INTRODUCTION

Throughout history, in almost every part of the world, herbs have played a very important part in human development; providing us with rich foods, medicine and decorations.

Lovers of animals know that, when sick, these creatures instinctively choose herbs which will help them recover. Herbalism in itself is basically an advanced form of dietetics. Thus man, before he learnt to hunt animals, depended very much on plants for both food and medicine.

For hundreds of years, herbalists have achieved remarkable success in treating people with non-poisonous plants or herbs.

However, it is a sad indictment of our "switched-on western society" that any therapy which is not in complete harmony with an orthodox view point is labelled quackery and tragically disregarded. Vic Ramsey, in his book "Healing and the Vitamin Factor" had this to say "in our desire to be scientific and to eschew mumbo jumbo and superstition, we should not make the mistake of throwing the baby out with the bath water; valuable healing methods should not be cast away"¹

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1. Vic Ramsey, Healing and the Vitamin factor, Marshall Morgan and Scott, 1983 p.14.
 2. Dr. Oku Ampofo, First Aid in plant medicine, Waterville Publishing House, Accra, 1983 PV.

This method of healing is in the hands of illiterate herbalists who practise in an empirical and unhygienic conditions yet with much success. For instance, there is no properly organised methods of collecting and collating all information on herbs with respect to description, standard of preparation, dosage etc.

Besides, the practice is normally associated with magic - religions or supernatural systems resulting in a barrage of unwarranted and unscientific assertions against this type of medical practice. The importance of traditional medicine has consequently been rejected by the medical world on the grounds that its contribution towards the treatment of medical cases has been one of unreliable and suspicious efforts.³

Despite these "drawbacks", a visit to the healing shrines reveals that people continue to patronise the services of traditional healers.

The questions that we have to pose ourselves are: must traditional medicine remain in its age-long condition? Should a country surrounded by curative medicine thirst for drugs? Should the Government continue to spend huge sums of foreign exchange on drugs of which close and effective substitutes could be produced locally with indigenous materials?

The conclusion to these questions is that, traditional medicine should not be left in the doldrums. A stock taken of the role of this medical practice since ages will support this assertion.

For instance, antibiotics was introduced into modern medicine in 1940's. Have we dare to ask ourselves the fate of those Africans who had diseases like gonorrhea before the advent of this discovery?

3. Henry E. Akonor, Centre for Scientific Research Into Plant Medicine, Thesis 1974, UST, P.3.

Besides, the pioneering role of some individuals to research into herbal medicine including the efforts of some western medical practitioners to use western medicine side by side traditional medicine goes to reinforce the above conclusion. Mention is due here to be made of the late Dr. Adjaben of U.S.T. hospital who was one of the advocates of such inter-marriage of orthodox and traditional medicine in treatment of diseases.

The above are clear manifestations that there are real values in traditional medicine which when blended with modern methods, can be a boon to mankind. Thus the need for its development to a generally acceptable standards.

1.20 Scope

In pursuance of the above problems, this thesis will set out to look into the general concept of herbalism; conduct research into the practices of traditional medicine in Ghana with the objective of exploring the problems that hinder its progress; bringing out its advantages in the light of modern science in order to maximize useful and effective practices and discourage harmful ones. Finally, proposals that will seek to promote the intergration of proven valuable knowledge and skills in traditional and western medicine will be made - thereby making the best of both worlds.

It is worth stating here that, the magico-religious aspect (psychic or spiritual) of traditional medicine is beyond the scope of this thesis and thus not in the main domain of the design although mention will be made of it in order to arrive at logical deductions in

some of the chapters.

Upon this basis, a design proposal will be made for the **HERBAL MEDICINE CENTRE** at Techiman in the Brong Ahafo Region of Ghana.

1.30 Methodology

The execution of this project consisted of the following: With check lists data were assembled by means of interviews, sketches, visual surveys and case studies. There was also general reading on the subject-matter from books by social scientists as well as other writers who have worked in the Ghanaian cultural setting.

These accumulated data were then systematically analysed and synthesised for the sketch design and presentation drawings, 3 - dimensional presentations.

* 1.40 Clients intentions

The intentions of the clients (THE ROMAN CATHOLIC MISSION - HEALTH DEPARTMENT and the TECHIMAN DISTRICT TRADITIONAL HEALERS ASSOCIATION) for the project have the following basis.

Techiman district abounds with many traditional healers coupled with a strong attachment of the people to traditional medicine. In 1980, out of this concern, the Catholic hospital at Techiman started a programme of collaboration with traditional healers in furthering the availability of health care in the Techiman and its environs. The indigenous healers are taught the western concepts of health care, improved methods of collecting, preparing and storing of herbal medicines. The doctors on the other hand became familiar with the traditional practices and curative herbal preparations and can depend on the healers for the treatment of many ailments. The healers are

now able to unashably refer patients they cannot treat to the hospital and the western doctors also recommend patients back to the traditional practitioners.

To provide effective medical service to the people more economically, safely, efficiently and meeting their cultural needs, the clients needed a design complex for a HERBAL MEDICINE CENTRE where the activities of western doctors and traditional healers will be under one umbrella as follows: Production of herbal medicine; a clinic for trials of prototype drugs and training programme for traditional healers.

1.50 Financing

The importance of the project with respect to its envisage contribution to the health needs of the people, has aroused the interest of many organizations and drawn them to help make it viable. Contributions are in various forms: funds, equipments and expertise. The following are taking up the project:

- National Catholic Secretariat
- World Health Organisation (W.H.O)
- World Vision International
- Scientific, Technical and Research Commission of the Organisation of African Unit (O.A.U)

1.60 Assumptions

The proposed centre will collaborate with the following in its function:

- Holy Family Hospital, Techiman
- Ministry of Health

- Faculty of Pharmacy, U.S.T. Kumasi
- Centre for Scientific Research Into Plant
Medicine, Mampong-Akwapim
- Pharmacy Board
- Ghana Standard Board
- Forestry Department

1.70 Justification

Developments on both the local and international scene with respect to medicine and health care are undisputed evidences of the long overdue of a project of this nature.

The last three decades have seen considerable upsurge in serious research into plant medicine. Russia and Eastern Europe have 45 per cent of all drugs used coming from plants, and in China 50 percent.⁴

Moreover, international bodies like the World Health Organisation (W.H.O) Christian Medical Commission of the World Council of Churches, the Organisation of African Unity etc. have stressed the need for research into and development of traditional medicine. (Fig.1.70a). For instance, the World Health Assembly has officially recognised the role that Traditional medicine can play in achieving a basic level of health for all by the year 2000. Its resolutions support the use of traditional practitioners in primary health care programmes. Resolution 30-49 specifically urges member states to utilize and promote their traditional medicinal systems; and Resolution 31-33 calls attention to the importance of medicinal plants

4. Dr. Oke Ampofo, First Aid in plant medicine, waterville Publishing house, Accra, 1983 P.V.

in the health care systems of developing countries.⁵

On the local scene in Ghana, there are numerous cases to support the feasibility and viability of the project. These are as follows:

The process of healing by plants still goes on among 70-80% of the Ghanaian population especially in the rural areas.⁶

Records of attendance, obtained from some places where plant medicine is used for curing diseases and the high attendances of patients to these places with various types of diseases, seeking treatments goes to prove the inability of scientific medicine in dealing effectively with certain types of diseases (See Table 1a)

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5. Dr. Oko Ampofo, First Aid in plant medicine, waterville Publishing House, Accra. 1983 P.V.
 6. Dr. Oko Ampofo, First Aid in plant medicine, waterville Publishing, Accra. 1983 P.V.

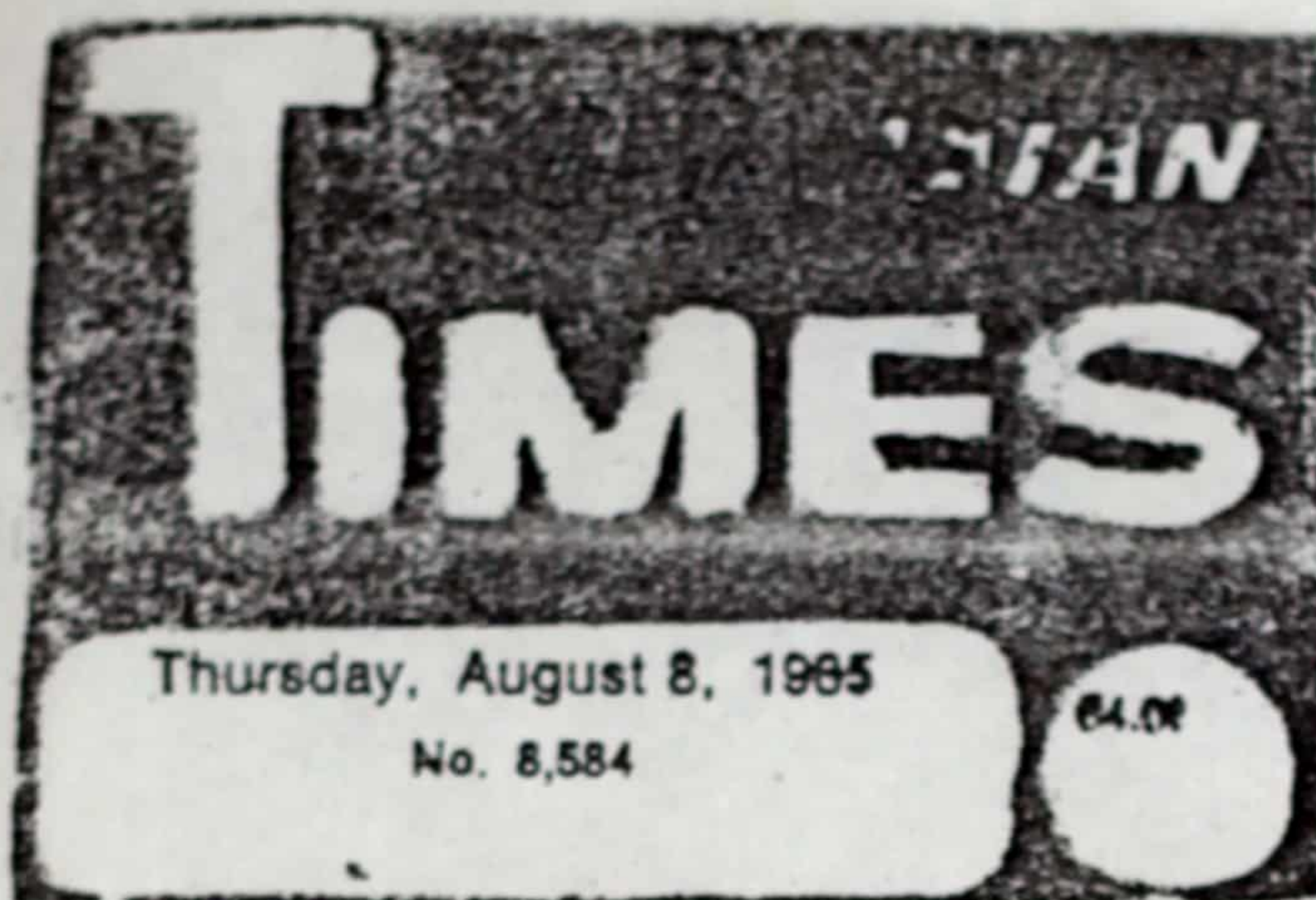


FIG. 1-70a.
(page 7b)

W.H.O. TO AID LOCAL DRUG MANUFACTURERS

By 'Times' Reporter

A WORLD Health Organization (WHO) official currently attending the international workshop on quality control of essential drugs has emphasized the need for developing countries to manufacture their essential drugs locally to cut down on their annual budgets.

The WHO, said Mr. G. C. Chelemu, would lend its support and supply the needed machinery and raw material.

Local manufacture of drugs, he noted, would not only mean transfer of technology but would also go a long way to improve the quality of life of the people.

Mr. Chelemu made these observations during a familiarization tour by delegates to Phemco Limited, a drug manufacturing firm at Nsawam.

Conducting the delegates round the factory, the managing director, Mr. Abdul Kebbaze,

said most of the drugs manufactured by his factory, were channeled through the Ministry of Health, mission hospitals and clinics in the rural areas.

MON. OCTOBER 28

DRUG ABUSE

By Janet Quartey

MEMBER states of the West African Health Community have been urged to strive hard to fight against drug abuse which is a menace to society, in their respective countries.

In a communique issued at the end of the 14th Ordinary Meeting of Health Ministers of the Community in Accra on Friday, member states were called upon to re-double their

efforts to pay their contributions promptly to ensure smooth and efficient operations of the community.

The communique which was signed by the chairman of the community, Mr E. G. Tanoah, who is Ghana's Secretary for Health asked member states to do everything possible to ensure the success of the Primary Health Care programme.

The ministers expressed

their gratitude to governments of member states, the World Health Organisation (WHO) and the Commonwealth Secretariat for their continued support despite the financial and economic difficulties they were facing. They also pledged to utilise resources available in the community to further the objectives of the community.

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Table 1a. Records on some reported diseases from 1980-1985 at
Centre for Scientific Research into plant medicine, Mampong-Akwapim.

Year	Asthma	Hyper- tension	Mala- ria	Diab- etes	Sickle Cell	Skin dis.	Ana- em.	Pil- es	Rhe- uma- tic pns.	TOTAL
1980	24	140	66	12	40	85	40	120	280	802
1981	100	110	90	10	30	60	87	94	300	887
1982	120	135	180	25	75	300	100	475	400	1835
1983	80	200	195	38	96	205	265	462	500	2885
1984	96	245	200	25	60	328	500	450	270	2196
1985	48	400	401	40	48	193	100	206	294	1756

Source: C.S.R.P.M. - Mampong-Akwapim

Another justification is derived from the effects of man's search for healing on the environment. A cursory glance at the environment shows that most trees (e.g. *Alstonia borneior* - *Nyamedua*) are losing their barks by the activities of individuals who use them for their healing properties.

Besides this fact is openness and publicity accorded with traditional medicine. Traditional healers who hitherto worked quietly on their own have now come out into the open to form their own Healers Association and even some to the extent of advertising in the mass media and putting up sign posts. Also, the sprawling activities of traditional medicine peddlers at lorry parks in public transports coupled with the high patronage from the general public go to confirm the adherence of many Ghanaians to traditional medicine.

Our panel from ASAMANKESE continue

THE ROLE OF TRADITION



**MISS SUSSIE KORANTENG, 41,
MIDWIFE.**

I WILL say that traditional birth attendants are working to complement the efforts of certified maternity homes.

My reservation, however, is on the number of people who can now help pregnant women to have babies. Even some churches, especially the spiritual ones, have assumed this role.

What I know is that traditional and community health workers are to provide first aid facilities to people in the rural areas. Such cases are to be referred to competent health workers after first aid treatment but this is not done.

Certain people have accused scientific health workers of being selfish. They claim doctors and nurses will not like to share their experiences with traditional health workers. Our concern is that people who are sick must report to the hospital for their sickness to be diagnosed. Self-medication is very dangerous.

Long before the advent of orthodox medicine in Africa, our forebears relied on herbs. Even now, drugs are produced from herbs, barks and roots. But our herbalists are not producing the herbs under very hygienic conditions.

I think that we have gone a long way as a nation now, and our herbalists must know that we cannot rely on the unhygienic drugs they produce. If they cannot improve upon their services individually then they should form

of herbalism as well as psychiatric and other related diseases.

And since the formation of the association, its membership has increased tremendously, exchanging professional ideas and working towards the attainment of success in the Primary Health Care (PHC) programme.

There are a lot of diseases which traditional medicine can cure which baffles the skills of the scientific medicine practitioner. I think the time is ripe for the authorities to support the development of traditional medicine.

It appears certain unscrupulous people are trying to tarnish the image of traditional herbalist. We are trying to remove those charlatans from the association. To achieve this we intend to seek the support of the Standard Board to ensure that members produce standard drugs.

I wish to emphasize that traditional medicine is not inferior to the scientific one. The World Health Organisation at a conference in Botswana in 1979 called for the intergration of traditional medicine with scientific medicine.



**MR JOSEPH KOJO NKUMAH, 45,
HIGHER EXECUTIVE OFFICER**

Traditional medicine is earning a bad name because certain people have taken to that profession just to make ends meet

Their problem is to be solved with modern tools which will be accepted.

This handicap, however, are complementing health workers. In serum in the hospital last hope for people.

Another problem of storage. Some of be kept anywhere potency. This is not

Some hospitals integration of herbs directed by the WHO are beyond the cur referred to herbalist must be encouraged Primary Health Care



MADAM JULIA

Nobody can challenge traditional medicine we very much depend from herbs.

Herbalists, if given reduce our continuing medicine and its outfits should assist their products for, them are contributing Primary Health Care

services individually then they should form co-operatives to enable them get financial support to establish centres like the one at Isawam.

Many of the herbalists are illiterates and they fear to approach qualified health workers for advice. To remove that mistrust regular workshops should be organised for doctors and herbalists to discuss common problems.



DR. JOHN ACRIPPA NARTEY, DIRECTOR, COMPLEX HOSPITAL FOR THE INSTITUTE OF HERBAL MEDICINE AND THE ALLIED NATURAL THERAPEUTICS

TRADITIONAL medicine is a system of healing diseases both body and mind by means of herbs, bark, roots, seeds, flowers, fruits and vegetables including child care and maternity problems practised by our forebears before the advent of scientific medicine.

Traditional medicine has never been a branch of scientific medicine. It differs from it by philosophy and practice. It plays a useful complementary and alternative role to scientific medicine.

It is the duty of every government in developing countries to explore all avenues to protect the health of its people so as to have strong and able-bodied citizens both in mind and body, well fitted to play a useful role in the national reconstruction programme.

It is in keeping in line with this useful objective that Ghana Psychic and Traditional Healers Association was formed by the late first President of Ghana. Its objectives, among others, is to co-operate with the Academy of Arts and Sciences, the Universities and other interested bodies for the scientific development

of traditional medicine is earning a bad name because certain people have taken to that profession just to make ends meet.

Some of them are producing herbs which cannot cure any disease. These people can be found everywhere especially on buses and at lorry parks. And the commonest disease that their drugs cure is piles in the anus, eyes etc. These are the people who should be weeded out from the herbal medicine profession.

Sometime ago, it was suggested to the health authorities to employ herbalists in the hospitals. We know that scientific medicine has not yet found a cure for certain diseases but herbalists have achieved this feat. A second look should be taken into the proposal, because it will yield fruitful results.

The practice whereby most herbalists can be found in buses and lorry parks marketing their drugs should be stopped. If this is done, nobody can produce unhygienic drugs as he can be traced to his store if the drugs are found to be injurious to the health of the people.

And to make sure that herbalists do not produce drugs which are not injurious to people's health, the Ghana Standards Board must get manufacturers to produce the standard items. The law states clearly that no product can be sold without Standard Board certification mark but personnel of the board and manufacturers have ignored this rule.



MR. SAMUEL OHENE MANTEY, 64, MEDICAL ASSISTANT.

I THINK that we can improve upon the quality of traditional herbs by applying research results into plant medicine.

Every drug we buy from recognised drug stores is produced from herbs, roots, flowers etc. This is exactly what our herbalists are doing

them are cost Primary Health

Even people medicine turn to certain diseases cure for: e.g. such a complete the hospitals.

There is the carried out an produce drugs The Standards those selfish pism only to m

ALHAJ TA

It is rather ple including that has its satanic and

But if we need to look and traditions

Some of us very much, for areas to achieve country where health service on herbalists, he

If the assessments, it

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People's Daily Graphic

SAT. SEPT. 25, 1985

Move to cut down on imported drugs

By Wendy Asiamah

PHARMACEUTICAL companies operating in the country have been urged to team up with herbal medicine practitioners to go into the commercialisation of local herbs.

This will shift the country's over-dependence on imported drugs and also cut down on her import bills for drugs.

Speaking at the National Planning Council (NPC) meeting of the first Ghana Industry and Technology Fair (INDUTECH) in Accra yesterday at which ₵100,000 was presented by DANAFCO Manufacturing Ltd and Dumex Limited, Dr. Francis Acquah, Secretary for Industries, Science and Technology, said "if we depend on imported drugs all the time without taking the initiative to start something on our own we shall face difficulties in the future."

The Secretary therefore appealed to pharmaceutical industries to team up with research development institutions to see what products they can commercialise.

Redoubling drug

From Kwaku Nehemia,
Kumasi

PHARMACISTS and scientists must redouble their efforts in identifying the abundant medicinal plants in the country and make optimum use of them to formulate and manufacture local drugs to

the competitively hostile global economic climate of protectionism which makes it imperative for Ghanaians to be self-reliant and sufficient in the development effort.

The PNDC member expressed the government's commitment to ensure effective health service in the

• (Contd. from P. 1)

tions to the problem of importation of foreign drugs.

The PNDC member further called for a blend of orthodox medical practices and traditional and plant medicine and advised the participants to address themselves to the evolution of mechanisms to unearth all the potential herbal medicine.

CHAPTER TWO.

FRINGE MEDICINES

2.10 Definition and Types

Fringe medicines are healing methods that fall outside the

scope of modern orthodox medicine. They are also known as

alternative medicine. A common phrase among people practising

these therapies is "treat the person not the disease". Most

fringe practitioners have no orthodox qualification.

The various types include the following: Herbalism, Acupuncture,

Naturopathy, Chiropractic, Osteopathy, Homeopathy etc.

Herbalism is the use of herbs or plants in healing. By

this, plants substances are introduced internally or externally

into the body to build it up by restoring it and strengthening its

natural defences.

Acupuncture is a common Chinese traditional medical practice.

It is healing by inserting needles into various points of the

body, along the "mesidrans" of energy which travel through the

body. By this, it is possible to normalise or balance the flow

of energy and restore the person to health.

Naturopathy is a form of therapy which excludes medicinal

and surgical agents and depends entirely on natural forces, such

as light, water, air, fruits, heat massage etc.

Chiropractic is a system of healing based on the principle

that produces cures. It involves manipulation of the bone.

Osteopathy is also a system of treatment of disease by

manipulation. It is based on the belief that disease occurs when

misplaced bones press or obstruct nerves and arteries and that the

resulting pains can be healed by manipulating the bones back into their correct positions.

For the purpose of this thesis, only the system of healing by herbs and plants - Herbalism - will be considered in detail.

2.20 Herbalism - History and Development

The art of using medicinal plants (herbs) for healing is a practise that may be as old as man. For example in the Old Testament tries of the Holy Bible the Prophet Isaiah told King of Judah, Hezekiel's servant to prepare an ointment of fig and spread it over Hezekiel's boil. This was done and he recovered.⁷

According to the Encyclopaedia of herbs, one of the earliest known records of the use of herbs is on an Egyptian Papyrus dated about 2000 B.C. This made mention of the following:

- the existence of herb practitioners
- the use of Garlic for embalming the dead
- the use of Garlic in feeding the builders of the pyramids to keep them healthy.⁸

Famous Greek philosophers and physicians such as Aristotle and Hypocrates showed a tremendous knowledge of the botanical nature and medicinal use of herbs.

In the 2nd century A.D., Galen who became influenced by the Greek philosophers and physicians, taught that proper herbal mixtures could be used for all conceivable health defects.

7. The Holy Bible, Isaiah 38 : 21

8. Vic Ramsey, Healing and the Vitamin Factor, Marshall Morgan and Scott., 1983 p.122.

With the passing of time the use of herbs for medicinal purpose became very popular with the Romans. Their armies carried herbs in their luggage on all their journeys. They gradually introduced the use and planting of herbs in every part of the Roman Empire.

In the British Isles, the use of herbs slackened off after the collapse of the Roman Empire but herbalism was revived, on the advent of Christianity. For instance, in the monasteries that sprung up, monks developed large herbal gardens from which plants were used to treat the sick and assist in the diet of the poor people.

With time, people started documenting information on herbal medicine. The Greek physician, Dioscorides, compiled a book called "De Materia Medica" which described the properties of over 600 herbal plants. An Englishman, John Gerard also compiled the most famous of all herbal encyclopaedias. In 1649, Nicholas Culpepper published a book on herbal medicine which was used especially by poor people who could not afford medical treatment. Culpepper became an advocate of the system of natural healing called the Doctrines of signature. The system worked like this, "like cures like". He stated that: Yellow plants cure liverish conditions such as jaundice which tinges the skin yellow; plants with heart-shaped leaves are good for the heart and plants with red flowers or blotches of red on their stems or leaves are good for blood etc.⁹

In the course of time people involved in occultish practices began to use herbs as magical potions resulting in herbs being linked with superstitious practices. For instance, leaves of lavender, rosemary and hysop were supposed to protect people from witchcraft

9. I b i d P.122

and satanic powers; other herbs like artemesia were used to make love potions and charms.

3.10 Definition

In 1820, pure quinine was isolated from the bark of the cinchona tree.

The use of herbs for medicine later found its way into other civilizations like India and China. Russia now concentrates its studies in the pharmaceutical industry on herbal remedies.¹⁰

Herbs are now the source of many of the drugs and medicines which are used in modern remedies. Most drugs used in orthodox medical practice are either of plant origin or have been synthesised or imitated in the laboratory based on phytochemical property and biological activity exhibited by a "parent" compound unit from plant source.

Examples of orthodox drugs obtained directly from plants with widespread clinical use in both developed and developing countries include atropine (*Atropa belladonna*), cocaine (*Erythroxylon coca*), morphine and codeine (*papaver Somniferum*), quinine (*chichona succirubra*), reserpine, yohimbine, ajamaline (*Rauwolfia sp.*), Digoxim (*Digitalis*).

The above are developments in herbal medicine in general. The next Chapter will be looking into traditional medicine which involves herbalism in the African context.

10. I b i d p.69

CHAPTER THREE

TRADITIONAL AFRICAN MEDICINE3.10 Definition

Traditional medicine is the system of healing of diseases, including child care and maternity problems by means of herbs and other traditional methods. All over Africa experts in traditional medicine, often called "healers" "herbalists" or "native doctors" who have a stock of remedies for treating ills, some of which may have scientific validity.

To understand the extent to which orthodox medicine can reach as far as intermarriage with traditional medicine is concern, it is expedient to delve into traditional African medicine and have some insights of a traditional African's conception of disease.

3.20 Concept and causes of Disease.

A sine quanon of traditional African medicine is that, the cause of disease is explained in terms of natural and supernatural events; and the treatment by use of physical means and magico-religious acts.¹¹

Thus traditional healing falls into two categories: (a) psychic and spiritual (b) physical.

(a) Spiritual and Psychic Aspect

The Ghanaian, like other African, adopts a philosophical approach to disease. He therefore finds it difficult to abandon his traditional view of the concept and causes of disease. In his thought therefore, disease do not have only physical causes but they are also the result of spiritual forces as follows:

11. P. A. Twumasi, Medical Systems in Ghana, Ghana Publishing Corporation, 1975 p.9.

iv. Disease caused by sorcerers and witches. Traditional
 1. Disease caused by God - God is believed to inflict by
 medicine has never been completely divorced from these
 spiritual and divine means punishment in the form of
 because of the role they are believed to play in inflicting
 disease on people who persistently offend Him. In such
 diseases on people.
 situation, people believe that the remedy, similarly, has to
 Sorcerers are bad magicians who use tangible objects over
 be be spiritual and divine.¹²

ii. Disease caused by Divinities. These are believed to be
 spells are physical. Their activities are often called
 causes of illness in several ways
 "juju" or spiritual poisoning. Diseases caused by them can
 - when somebody offends a devotee of a divinity
 be cured by a powerful divinity or good healer.
 - when a person who has placed himself under a divinity
 Witches on the other hand work entirely psychically and it
 breaks the laws of the divinity
 is believed that diseases they cause can only be cured
 - when a person offends the divinity like disrespectfully
 mystically, and not scientifically in the hospital.
 use of its name; such diseases are spiritual and the
 v. Influence of Fate. This is another means by which diseases
 remedy likewise.¹³

iii. Disease caused by Ancestral spirit. The traditional African
 that before one is born, one is destined to suffer from a
 believes that ancestors are the originators of most of the
 disease for a given time of which nothing can be done
 laws, taboos and customs of a traditional community observed
 about it in terms of cure.
 by the living. For example: fitting funeral rites for a
 dead relatives; selling of ancestral land etc. A breach
 The above portray the magic-religious beliefs associated with the
 of any of these injunctions results in punishment in the
 causes of various diseases. The remedy to any ailments therefore
 form of disease. The situation can only be averted by a
 depends upon what spiritual agent is thought to have caused that ailment.
 "healer" or "priest" who makes sacrifices on to their
 Where a cause is found but the remedy does not work, the family of the
 shrines to the ancestors and implore for forgiveness.¹⁴

12. Rt. Rev. Dr. Peter Sarpong, Ghana in Restrospect,
 Ghana Publishing Corporation, 1974, p.12.

13. I b i d p.17

14. I b i d p.39

(b) iv. Disease caused by sorcerers and witches. Traditional

The medicine has never been completely divorced from these natural (because of the role they are believed to play in inflicting diseases on people. and administration of plant medicine use

the leaves Sorcerers are bad magicians who use tangible objects over which they make incantations, but the results of their spells are physical. Their activities are often called

These "juju" or spiritual poisoning. Diseases caused by them can be cured by a powerful divinity or good healer.

Witches on the other hand work entirely psychically and it is believed that diseases they cause can only be cured mystically, and not scientifically in the hospital.¹⁵

v. Influence of Fate. This is another means by which diseases are believed to affect people. By this, it is believed that before one is born, one is destined to suffer from a disease for a given time of which nothing can be done about it in terms of cure.

CONCLUSION

The above portray the magico-religious beliefs associated with the causes of various diseases. The remedy to any ailments therefore depends upon what spiritual agent is thought to have caused that ailment. Where a cause is found but the remedy does not work, the family of the sick person then considers the disease to might have occurred naturally and the patient is finally rushed to the western doctor most often at point of death.

15. I b i d p.47, 48.

(b) Physical (Natural) Aspect:

The traditional African healer also knows that some illness have natural (physical) causes. Expert herbalists with an elaborate tradition in the procurement and administration of plant medicine use the leaves, seeds, barks or roots of medicinal plants to treat certain illness and diseases which orthodox medicine has proved to be incapable.

These cases include complicated fractures and dislocated bones, gastric ulcers, rheumatic arthritis, chronic anaemia, infertility, impotence, asthma, chronic skin diseases and piles.

A visit to the shrine of any famous healing centre in Ghana will reveal that sufferers of the above-listed cases call there for treatment and they do get cured. For example, at Kofi Donkor's centre at Techiman, attendance per week is about 250.

The same picture is given at Alhaji Biney's centre at Mampong-Akwapim.

An outstanding feature of this aspect of traditional medicine is the sole use of plants in the cure of diseases. However, a herbalist may surround his practice with magical devices in order to win the admiration and respect of the people. The demands for chicken etc. are in most cases purely for psychological reasons.

CONCLUSION.

From the foregoing, the concept and causes of disease categories traditional medicine into two broad therapeutic areas similar to groups for western medicine as shown in Table 3a below.

3.30 Some Traditional Medical Centres in Ghana

The centres may fall in any of the following categories:

- (i) Entirely psychic or Herbal (ii) Both psychic and Herbal

(Table 3b)

Table 3a: Comparative therapy types in two cultures

Culture	THERAPY	
	Natural	Supernatural (spiritual)
Indigenous	Herbal (plant) medicine	Fetish cults
Western	Orthodox medicine	Occultism, etc.

5. For the purposes of scientific analysis and validity, this thesis will be centred on the physical (Natural) aspect of Traditional medicine. That is, healing by means of herbs.

8. The reasons for the isolating herbal from psychic aspect of traditional medicine are as follows:

10. In the first place, as far as a witch could not be tried in a law court because his operations are not subject to the senses so the spiritual or psychic aspect of traditional medicine cannot be subjected to laboratory analysis for international use. This is beyond the scope of this thesis.

Besides, the psychic aspect of traditional medicine is a speciality in itself although in most cases, there is a measure of the use of herbs. For instance, the use of certain herbs to cause sleep in patients with mental problems who go wild and beserk.

With this broad distinction made, let us now consider some of the traditional healing centres in Ghana and their organizational structure.

3.30 Some Traditional Medical Centres in Ghana

The centres may fall in any of the following classification

- (i) Entirely psychic or Herbal (ii) Both herbal and psychic.

(Table 3b)

Table 3b : Some Traditional Medical Centres in Ghana.

Centre	Category	Region
1. Larteh, Akonnedi	Psychic and Herbal	Eastern
2. Adweso (near Koforidua)	Herbal (Fractures)	Eastern
3. C.S.R.P.M. Mampong-Akwapim	Herbal Clinic	Eastern
4. Senya Breku	Psychic and Herbal	Central
5. Agona Asafo	" " "	Central
6. Ho, Kwofi's Clinic	" " "	Volta
7. Nsiakrom-Konongo	" " "	Ashanti
8. Yirenkye (near Nkawkaw)	" " "	Ashanti
9. Techiman, Kfo Donkor	Herbal Clinic	Brong Ahafo
10. Techiman, Taa-Mensah	Psychic and Herbal	" "
11. Nsoatre, Seidu Sabbi	Herbal	" "

The continual functioning of these centres shows that despite the efficiency of our western medical doctors and the efficaciousness of scientific medicine, people continue to patronise the services of traditional medicine practitioners.

CSRPM : Centre for Scientific Research Into Plant Medicine.

3.40 Organisation of a Typical Centre

A typical centre usually consists of a consulting room, herbarium and a ward.

Where the centre is solely herbal, the out-patient section comprises a room for both consulting and herbarium. Thus, the diagnosis, preparation and dispensing of herbal medicine take a place in the same area by the herbalist. Occasionally, there may be attendants serving as "nurses" who run on errands to bring plants and herbs from the bush. An in-patient department which consists of a few sleeping accommodation for the sick who need monitoring is not very common.

At centres where both herbal and psychic treatment is practised there is always a shrine for the priest or priestess which also serves as the area for consulting diagnosing and dispensing. Sleeping accommodation is normally for psychiatric patients and other specified cases. As in the former, there are trainees for shrine officials who help in routine work at the shrine.

3.50 Diagnosis and Method of Treatment

The way traditional healers diagnose is different from that of the western-trained doctors.

The healer who bases his concept of disease in natural causes diagnoses by interrogating the patients on the symptoms of his sickness in accordance to a test case. This is somehow similar to the situation in western medicine but in this latter one a more scientific approach is used.

The fetish priest on the other hand diagnoses by means of a medium like the use of mirrors, palm reading, prepared sand on the floor, cowries or the breaking of egg shells. The priest is believed to be able to communicate with supernatural beings or "healing deities"

by means of divination, possession and casting lots; he then prescribes as dictated from spiritual source.

Prescription may include a number of things that the patient may not eat or do depending on the taboos and regulations in a particular medical centre.

Once a particular illness has been diagnosed and the necessary prescription obtained, the method of treatment may, broadly speaking be either spiritual, herbal or both.

It is important to note that, the traditional healer does not treat specific diseases. For example, he does not distinguish between worms that settle in the stomach, the large intestine or the small intestine because he claims that his medicines deal with them all. He therefore relies on the effect of the wide range of herbs in the treatment of a particular disease.

Herbal treatment may take various forms: Decoctions, ointments, powders, ground herbs, suppositories, nasal and ear drops and dried parts of plants made into round hard paste like balls.

Decoctions are usually prepared by boiling curative herbs and roots with water in an earthen pot. Alcoholic extracts are also made by pouring alcohol on the curative herbs and roots to extract curative liquids from them. Both are taken orally but the former is at times administered as enema.

Unlike the western-trained doctor who determines exact dosage and even proportions for preparation, the traditional healer does so from age-long practice.

Ointments and smears of herbal medicine are used externally by local application. These are prepared from dry herbs which have been crushed into fine powder and mixed with some liquid, dried in

balls for smears and mixed with sheabutter for application.

Powders are obtained from burnt herbs and roots which are often applied to small incisions on the body particularly in cases of snake bites.

The herbalist diagnoses fractures by feeling the fractured part. Treatment is solely done by applying ground herbs to the fractured part which is then covered with leaves and bandaged. In the more serious cases sticks are used as stiffeners so that the injured part would not twist and turn.

A comparative treatment study of traditional and scientific medicine will be discussed below shows some differences.

The situation in a typical traditional centres is as follows: A patient arrives at the healers reception area, goes to the consulting and diagnosing procedures and is finally given prescription and treatment. As to whether the patient has been rendered fit or not depends on the individual patient who determines it by self satisfaction.

In the case of scientific treatment, after the formalities at the reception/records the patient goes for consultation, followed by diagnosis, prescription and treatment. Here, the treatment of the patient is by three means - medical, surgical or psychiatric - and unlike the former, the fitness is determined by examination.

The conclusion that can be drawn from the above two situations is that, the two system functioning together will be an advantage because whereas in the former a patient may by self-satisfaction considered himself fit, predically, he is not. In the latter too although the examination may prove negative, the patient may personally feel not cured.

3.60 Processing of Herbs - Traditional Method

This involves a simple process as follows: The healer goes to the bush to collect the medicinal plants and keeps them in baskets or dumped them on the ground in a room which serves as his herbarium.

From this herbarium, the plant materials are chopped into required sizes and washed. Some are dispensed in the form of dried roots, barks etc.

Alternatively, the same materials are boiled to obtain decoctions for enema and oral administration. Some are also pounded or ground for use in making trictures, syrups, ointments, powders, smears etc. before dispensing.

The study of this process is very important as it will form the basis of the production processes in the proposed centre although there will be some application of science in certain stages. For instance adding of preservatives etc.

3.70 Research and Developments in Ghana.

After independence in 1957, the Government of Ghana began to recognise the role of traditional medicine in the nation's health care system. Thus, by an Act of Parliament in April 1961, the Ghana Psychic and Traditional healers association was established to co-ordinate the activities of traditional healers in the country, eliminating the charlatans and issuing certificates to proficient ones.

The Association as at now has 29,747 registered members. The organisational set-up consists of a National Executive comprising a Chairman and Vice and a Secretary. Under the National are Regional and District branches with their executives.

The major problems facing the Association are (i) the promulgation of legal recognition so that they can control non-accredited members who hawk in traditional medicine at lorry parks etc. (ii) Another problem is the failure of District and local councils to subject prospective healers who approach them for practicing licences to proficiency test, which has resulted in all sort of quack healers peddling around.

In 1963, Dr. Oku Ampofo, a medical practitioner began a research programme into herbal medicine by collecting information from herbalists in list district and tried his preparations on patients in his clinic.

The Faculty of Pharmacy at the University of Science and Technology has also conducted a detailed research on a large number of medicinal plants. Many of the plants examined have proved to be pharmacologically active. For instance, a Ghanaian plant, cryptelepine, has been screened to possess anti-malarial, anti-inflammatory, anti-hypertensive and anti-microbial properties.

In 1973, the Government opened the centre for scientific Research into plant medicine at Mampong-Akwapim, the first of its kind in Africa. The centre was established to conduct researches into plant medicine.

At Nsawam, a bio-chemist, Dr. J.A. Nartey has also established herbal hospital where treatment of diseases is by herbal preparation but diagnosis is by western means.

A similar centre has been established at Hohoe in the Volta Region by Dr. G. K. Noamesi where research and development into plant medicine is undertaken. At the 1986 Industry and Technology Fair in Accra, he displayed his herbal preparations for curing

baldness (alopecia) produced from palm kernel, lime and pawpaw leaves.

There are similar efforts by some individuals in the field of herbal medicine prominent among them is Dr. Asiamah of North Suntresu, Kumasi of "Asiamah Bitters" fame.

These developments had led to a number of break-throughs in herbal medicine. Most of these centres and certain individuals can boast of preparations for snake bites, piles, worms, asthma, diabetes, hypertension, correcting vision, infertility and malaria.

It is worth stating that with the advent of some diseases causing parasites becoming resistant to western medicine, attempts should be made in the area of herbal medicaments to save the life of mankind. Take the case of malaria parasites which are now known to be resistant to all known anti-malaria drugs. Now, considering the fact that the environment of developing countries continue to offer breeding places to mosquitoes coupled with population increases and movement, malaria will persist all over the world especially in the tropics. Other remedies should therefore be seriously looked into - for instance crypolepine and a traditional Chinese herbal remedy known to be an effective anti-malaria.

3.80 Traditional Medicine and Primary Health Care (P.H.C.)

Primary Health Care is essentially a medical facility made accessible to everyone in a country at a cost the community can afford.

CHAPTER FOUR

CASE FOR THE INTER MARRIAGE BETWEEN TRADITIONAL AND ORTHODOX MEDICINE.

4.10 Drawbacks in Orthodox Medicine

Despite its great strides, orthodox or scientific medicine has some limitations when likened to traditional medicine. Some of these drawbacks are enumerated below:

- Some orthodox medicine only cures the symptoms of the without eliminating the cause
- Patients taking drugs are likely to suffer side effects resulting in many cases, in other illness requiring further treatment.
- There is the possibility of a patient becoming psychologically or physically dependent on the drugs.
- Orthodox medicine is comparatively expensive to the rural sick person.
- It appears foreign and socially unacceptable to most of the rural folks who are used to traditional medicine.
- It is effective in the treatment of diseases in chronic conditions.

4.20 Merits of Orthodox Medicine

- It is prepared under aseptic conditions so no microbial contamination
- The correct dosage is always specified
- Effective for prophylaxis and treatment under both acute and chronic situations.
- Their pharmacological actions and chemistry are known so that some drugs are normally not taken together with other drugs. For example, tetracycline and magnesium Trisilicate do not go together.

FIG 4.10 EFFECT OF ORTHODOX
MEDICINE

JUNIOR ASPIRIN NOT GOOD FOR HEALTH

DRUG companies in Britain has withdrawn children's Aspirin from sale and the government warned parents against giving any products containing aspirin to youngsters, Britain's Health Department has said in London.

"The decision was taken because of the risk of the rare condition, reye's syndrome", a Health Department spokesman said. It followed evidence from the United States linking Aspirin with the potentially fatal disease, which can cause brain and liver damage.

Aspirin, the most widely used drug given to young children for colds and influenza, would in future have warnings advising parents against giving children Aspirin sold for

adults, he said.

Children's Aspirin, often marketed as "Junior Aspirin", was being removed from pharmacies from last Monday, said the Aspirin Foundation which represents manufacturers of the drug.

Nick Varey of the foundation said other countries would be advised of Britain's decision, which would not affect sales of Aspirin to adults.

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DAILY
GRAPHIC JUNE 10, 1986

Traditional medicine

★ (Contd. from P.1)

ed the five-day session, stated: "If we are to achieve our aim of providing health-care by the year 2000 then we need to make good and efficient use of every resource that is locally available to us including traditional medicine."

The PNDC, he added, places a high premium on the practice of traditional medicine and actively supports research in that field.

Mr Tanoh observed that Africans have a wealth of experience relevant to their needs and must therefore, find solutions to

their peculiar problems.

The sub-committee would not only discuss and find concrete solutions to health problems but would also aim at establishing cordial and fruitful co-operation in health services between Ghana and Benin.

Dr Nii Ayikuma Adamafio, Deputy Director of Medical Services, (Public Health) was re-elected chairman while Dr Al Hadj Alimy Radji, Director of Research in Traditional Medicine of Benin, was elected vice-chairman of the sub-committee.

vised

- Their side effects are usually known unlike the crude preparations by traditional healers where the action places of the drug in the body are not known
- Contra indications of orthodox medicine are known. For instance, an Asthmatic patient is advised against taking Aspirin or an ulcer patient not allowed to take Aspirin.

4.30 Drawbacks in Traditional medicine

- It does not guarantee an accurate diagnosis, for it relies on symptoms only. For instance, two patients with "stomach-ache" are given the same decoction for treatment
- The traditional healer does not treat specific diseases. For example, he classifies worms in the small and large intestines as the same
- Some herbalists surround their practices with magical devices which ward off some groups like Christians
- Herbal medicines are prepared under unhygienic conditions
- Some of the healing methods, although are rational in terms of culture and belief of the people they serve, they can at times be harmful. For example, the use of unsterilized instruments in cutting umbilical cords; and the unhygienic mode of treating fractures often result in tetanus which are sometimes fatal.
- Dosage and formulation are not standardised so there is always the risk of over-dose for children and under-dose for adults.

4.40 Merits of Traditional Medicine

- Traditional healers are the only first-line health care delivery system available in places with no hospitals or clinics in Ghana.

- The system is socially acceptable in the rural communities where the art has been practised for generations.
- Herbal medicine is inexpensive compared to orthodox medicine.
- Herbal medicine cures and nourishes because herbs contain the natural vitamins and nutritive elements.

4.50 Proposals for the Interplay of the two Systems.

There are three major arguments usually proposed by a number of clinicians against the use of herbal treatment. These serve as the major hindrances that retard the integration of traditional and orthodox medicine. They are as follows:

- i. The inability of the traditional healer to diagnose scientifically and the empirical and unhygienic conditions under which he practices.
 - ii. The dosages are not standardised which may lead to over dosage.
 - iii. The active principles of herbal preparations used are not known and in some cases may be toxic.
- Toxicological profiles of plants are not available.¹⁶

According to the late Dr. R. H. Bannerman "there are real values in traditional medicine which, when blended with modern methods, can be a boon to mankind."¹⁷

Proposals

The following are suggested for the co-existence and functioning of the two systems:

- There should be an improvement in the diagnosis of disease by traditional healers so as to win public confidence in herbal medicine-clinical examinations recommended.

16. Prof. R. Ansah-Asamoah, Proceedings on First International Seminar on Cryptolepine, Faculty of Pharmacy, U.S.T. Kumasi, 1983.

17. Lee Nichols, Science in Africa, Voice of America, 1982 p.33.

- Herbalists should be trained. The practice to be regulated by law and only certified ones allowed to integrate.
- Public awareness of the role of traditional medicine in health care must be awakened. This will not be a problem because most Ghanaians have come into contact with the use of traditional medicine in one way or the other.
- There should be a complete revolution in the medical training system in Ghana. Colleges of medicine and pharmacy must be made to pay special attention to the effectiveness of herbal remedies in the treatment of properly diagnosed diseases and the need to utilize their scientific training in harnessing by practice and research the potentials of herbalism into the National Health Care Delivery System.
- Western trained medical officers should be made to undergo refresher courses in traditional medicine.
- School Certificate holders must be trained in the art of healing by herbs so that they replace the ageing healers.
- Herbal preparations used in traditional medicine should be made under hygienic conditions and various formulations and dosage forms should be standardised.

It is worthwhile stating that, in this intermarriage, care should be taken not to institutionalise orthodox medicine by pushing the traditional healers to the background. They must be involved in the diagnosis and reports on patients made known to them.

4.60 Cross Cultural Experience

This section will deal with some countries where the integration of the two systems has been effectively achieved. Notably among these countries are China, People's Republic of Korea, India and Germany.

China. situation in Germany is not different. Pharmaceutical

This country experienced shortages in supply of medicine during the second world war which led to the promotion of traditional Chinese medicine and combining it with western medicine.

China today has 4 colleges, 6 schools and 23 refresher course centres for teaching traditional medicine alone. Many doctors of traditional medicine have been trained. About 4,400 doctors of western medicine have undergone study in traditional medicine. The Government employs 20,000 traditional doctors to man 144 hospitals and 453 clinics exclusively for traditional medicine.

All colleges of modern medicine and pharmacy in China are obliged to pay special attention to research in traditional medicine and pharmacy.¹⁸

Traditional medical men work side by side with the others in joint observation and joint clinical examinations and they decide which best treatment to give to the patients - traditional or orthodox

Medicines for herbs have been prepared in various forms: pills, powder, ointment, pellets, tincture, syrup, tablets etc.¹⁹

The result of this development in medicine is that the medical and health conditions of China's large rural population has been improved.

In other countries like Korea, there are traditional hospitals for traditional medicines as in Pynogyang.

18. P. A. Twumasi, medical systems in Ghana, Ghana Publishing Corporation, 1975 p.126.

19. China Handbook series, sports and Public Health, Foreign Language Press, 1983 p.160

The situation in Germany is not different. Pharmaceutical shops have herbal preparations, commonly called "nature's cure displayed on shelves.

MEDICINE - HANPOONG-AKHARIN.

This Centre was established in 1973 to conduct and promote scientific research relating to improvement in traditional medicine.

The structure consists of reinforced concrete frame with sandcrete

CHAPTER FIVE

CASE STUDIES

5.10 CENTRE FOR SCIENTIFIC RESEARCH INTO PLANT MEDICINE - MAMPONG-AKWAPIM.

This Centre was established in 1973 to conduct and promote scientific research relating to improvement in traditional medicine.

The structure consists of reinforced concrete frame with sandcrete block in-fill. Due to the sloping nature of the site, the only completed unit - Out-patients Department and Administration - is in the levels. Other units are wards, production laboratories, stores, canteen, kitchen facilities, herbarium and dispensary.

Merits:

- The design allows for maximum use of natural lighting and ventilation
- The centre has proximity to the Tetteh Quarshie Hospital so receives referred cases
- The proposed wards block is sited away from the noisy areas
- The valley separating the research area of centre from the staff housing area has been utilised for the cultivation of medicinal plants (Aboretum).

Demerits:

- The administration block, placed in a basement makes it difficult for a visitor to locate
- The layout is too compact and does not allow for future horizontal expansion
- The location of the animal house and the laboratories in relation to the prevailing wind direction and the position of other units like the kitchen and canteen is not the best.

- Most units have been oriented with long axis facing the East-West thus much penetration of solar rays into rooms.
- The land for the aboretum is too small.
- The whole design of the centre lacks the traditionality attached to plants or herbal medicine.

5.20 COMPLEX HOSPITAL OF THE INSTITUTE OF HERBAL AND TROPICAL MEDICINES, NSAWAM.

Unlike the Centre at Mampong-Akwapim, this one at Nsawam is more concerned with the application of the medicine produced from claims of herbalists in the treatment of reputed cases. There is no scientific analysis of the potency of the plant materials.

The structure is a simple one storey construction of bricks and sandcrete blocks.

Merits - The areas needing quiet environment - wards are located away from the Nsawam - Accra Road.

Demerits:

- There are problems with natural ventilation and lighting because of the layout - a complete block with divisions for the various activities.
- There are also circulation conflicts points
- Unrelated activities have been located close to each other - production areas and conference room.
- The site is too small and thus affect the possibility of any future expansion
- The restrictiveness of the land has resulted in absence of space for an aboretum.

Merits:

- Satisfactory circulation although the layout is compact.

5.30 LABORATORY DESIGN - NATIONAL CHEMICAL LABORATORIES, LAGOS, NIGERIA.

The functions of these laboratories are testing of drugs, chemicals, manufactured goods etc.

Structure:

The main building is 2-storey high and contains administrative offices, laboratories, workshops, stores and sanitary facilities etc. all planned around a courtyard. The building is of reinforced concrete. Framework with sandcrete block in-fill. The roof is mono-pitched, sloping into the courtyard. The floor finish is polished terrazzo.

The Laboratories:

The Laboratory units measure 6m x 4m with windows on the shorter sides. Each has two island work benches and one or two wall benches which are supplied with electricity, hot and cold water, gas, vacuum and steam. The bench tops are covered with formica. Each laboratory is adjoined by an office, fume cupboard room and instrument room for equipments like scales, balances, ultra violet lamps, PH metres, chromatographs, research microscope etc.

Service pipes to the laboratories run in service ducts in the ground floor, covered with concrete slabs. The pipes are taken up into the false ceiling for distribution to the upper floor laboratories.

Each fume cupboard has hoods unit of about 1300mm wide, 600mm deep of plywood but with a glass shutter at the working level which can be opened or closed when required. The height is about 3150mm and the top is connected to a pipe which is in turn connected to a large exhaust fan on the roof.

Merits:

- Satisfactory circulation although the layout is compact.

- The design allows for natural ventilation and lighting
- There is good relationship among the laboratory units and associated rooms.

- Fume cupboard is enclosed in separate rooms.

Demerits:

- Placing of laboratories on East and West sides
- No changing rooms facilities for the laboratories.

5.40 LESSONS FROM CASE STUDIES

The following are deductions from the case studies for the general design of the centre:

- Segregation of unrelated activities for efficient circulation system
- Provision for adequate natural ventilation and lighting where needed
- The layout must allow for future horizontal expansion
- Public areas to be located close to main entrance.
- Units needing quiet environment to be sited distance away from noise sources
- Siting of production areas to be related to prevailing winds
- Orientation in North-South axis

Lessons for laboratories design

- Need for efficient internal circulation
- Adequate natural lighting and ventilation for laboratory work.
- Processes generating dangerous and obnoxious fumes and gasses to be contained in an enclosed ventilated area
- Fire fighting and other emergency devices to be installed for the safety of workers
- A good laboratory building should not necessarily be of expensive construction.

CHAPTER SIX

DETAILED BRIEF.

6.10 DEVELOPMENT OF CLIENTS' INTENTIONS

An appraisal of the clients preliminary brief brings out the following aims and objectives for the proposed centre:

AIMS:

- To integrate herbalism into the scientific orthodox way of practice.
- To promote and encourage research into traditional pharmacy/herbal medicine so that medicinal preparations obtained from local source could be used in place of imported orthodox drugs.

OBJECTIVES:

- To conduct scientific analysis into the efficacy of Ghanaian medicinal plants as claimed by herbalists
- To process these medicinal plants into various dosage forms: aqueous extracts, tinctures, tablets, pills, powders, ointment etc.
- To undertake the treatment of specified cases of diseases with traditional medicine after diagnosing by the orthodox means.
- To document information on medicinal plants for future research and also place at the disposal of the general public.
- To undertake training programmes for traditional healers in the locality.
- To establish an Aboretum for the cultivation of different species of existing and extinct indigenous medicinal plants.

6.20 UNITS REQUIREMENTS FOR THE PROPOSED CENTRE.

From the foregoing, the proposed centre will be organised and run on the following broad outline with units required for each outlined section:

i. INVESTIGATIVE SECTION

- Clinic: with out-patient department capacity of 200 per day and in-patient department of 50 beds.
- Production (formulation) unit for: liquids, tablets and pills and ointment
- Research laboratories with branches for: pharmacognosy, pharmacology, and pharmaceutical chemistry

ii. DOCUMENTATION SECTION

- A Herbal pharmacopoeia (library) and herbarium

iii. ADMINISTRATION

- Offices
- Training/Conference Room

iv. ANCILLARY

- Welfare facilities: kitchen, dining, recreation, laundry
- General stores and maintenance
- Staff housing.

6.30 PROPOSED ORGANISATIONAL STRUCTURE

The centre will be run by a governing council body of 9 members as follows:

- A Chairman - appointed independently
- The Director of the Centre
- The Administrative Secretary
- Medical Officer at Centre
- A Research Officer at Centre
- A representative from the Ministry of Health
- President of the District Traditional Healers Association
- A representative from the Holy Family Hospital, Techiman

The hierarchy of organisation of the Centre will however be as shown - Page 44.

Director

Research personnel	Production personnel	Clinical Staff	General services	Administrative
• Research Officers • Technicians • Herbalists	• Production Officers • Technical Assts. • Machine operators • Factory hands	• Medical Officer • Nursing Sister • Ward Assts. • Technicians • Herbalists • Pharmacist	• Kitchen staff • Store keeper • Matron • Security Offc. • Drivers • Pump Operator	• Administrative Secretary • Private Secret. • Typist • Receptionist • Accountants • Clerical Offices.

6.40 PROPOSED LABOUR FORCE

The total working staff of the proposed centre is 87.

The breakdown is as follows:

<u>Research Personnel</u>	<u>Number Required</u>
Pharmaceutical Chemist	1
Technical Assistants	6
Pharmacologist	1
Herbalist Assistants	2
Bacteriologist	1
Factory Hands	12
Medical Artist	1
Silviculturist	1
<u>Administrative Staff</u>	
Herbalist	1
Director - Chief Executive	1
Technical Assistants	2
Administrative Secretary	1
Technicians	6
Private Secretary	1
Herbarium Keeper	1
Accountants	2
Animal House keeper	1
Clerks	16
<u>Clinical Staff</u>	
Medical Officer	1
Pharmacist	1
Nursing Sister	1
<u>General Services Staff</u>	
Ward Assistants	3
<u>Kitchen Staff</u>	
Dispensary Assistants	2
Matron	1
Herbalists	3
Labourers	3
Laboratory Technicians	2
Water Pump Operator	1
X-Ray Attendant	1
Power Generator Attendant	1
Drivers	13
Security Officers	3
Stereographer	1
Auto Mechanics	1

CHAPTER SEVEN

Production Staff

TECHNICAL STUDIES.

Production Manager	1
7.10 <u>General Requirements for the Production Unit</u>	
Technicians	2
Drugs are manufactured, processed, packaged, labelled and	
Machine operators	6
tested in isolated areas which should	
Technical Assistants	6
- not to be utilised for any other purpose	
Herbalist Assistants	2
- be well lighted and ventilated except where there is the	
Factory Hands	12
need to control environmental conditions for certain purposes	
	<u>29</u>
- the areas should be suitable for their intended use	

Administrative Staff

Director - Chief Executive	1
orderly placement of equipments and materials.	
Administrative Secretary	1
7.20 <u>Environmental and Service Requirements</u>	
Private Secretary	1
The environmental requirements are natural and artificial	
Accountants	2
lighting, natural and artificial ventilation, temperature control,	
Clerks	2
humidity control and dust control.	
Receptionist/Telephonist	1
The provision and control of each depends on the type of activity	
Typist	1
performed in an area. However, in all the production areas, there	
Library Assistant	1
the need for adequate illumination for the work to be carried out	
	<u>10</u>
for vision.	

General Services Staff

Where artificial lighting becomes very crucial to be provided	
Kitchen Staff	5
in the filling section of ointment production, care should be taken	
Matron	1
not to create unduly bright sources of light which causes discomfort	
Labourers	3
through glare.	
Water Pump Operator	1
The solution here is to provide fittings with lower individual	
Power Generator Attendant	1
intention screening the light source from the eyes.	
Drivers	2
Security Officers	3
0.10.10. Illumination levels required for a visual task in	
Storekeeper	1
production in the tropics is not very critical as in the	
Auto Mechanics	2
temperate regions; An illumination level of about 30 lux for	
	<u>19</u>

CHAPTER SEVEN

TECHNICAL STUDIES.

7.10 General Requirements for the Production Unit

Drugs are manufactured, processed, packaged, labelled and tested in isolated areas which should

- not to be utilised for any other purpose
- be well lighted and ventilated except where there is the need to control environmental conditions for certain purposes
- the areas should be suitable for their intended use
- have adequate working place and adequate room for the orderly placement of equipments and materials.

7.20 Environmental and Service Requirements

The environmental requirements are natural and artificial lighting, natural and artificial ventilation, temperature control, humidity control and dust control.

The provision and control of each depends on the type of activity performed in an area. However, in all the production areas, there is the need for adequate illumination for the work to be carried out and for vision.

Where artificial lighting becomes very crucial to be provided as in the filling section of ointment production, care should be taken not to create unduly bright sources of light which causes discomfort through glare.

The solution here is to provide fittings with lower individual intensity, or screening the light source from the eyes.

On the whole, illumination levels required for a visual task in production areas in the tropics is not very critical as in the temperate regions; An illumination level of about 30 lux for

capacity with a stirrer and heating elements at the base. After boiling, the extract is left overnight to "mature" and cool.

Preservatives such as alcohol and chloroform are added and then sent to the filling and capping section. Prior to this, the batch is for quality control. The products are then sent to the labelling and package section and then to the temporary storage area before finally sent to the finished goods store for despatch.

The process is similar to the other dosage forms, with the nature of the final product determining the peculiarity of the processes.

In the preparation of ointment the base used is petroleum jelly. Sheabutter when used grows mouldy after a long storage.

7.40 Machines and Their Functions

The whole production process is labour intensive. Thus the transfer of products from one production line to the other will be by factory hands. However, there are some machinery for the actual production procedure. Some of the machines are described below:

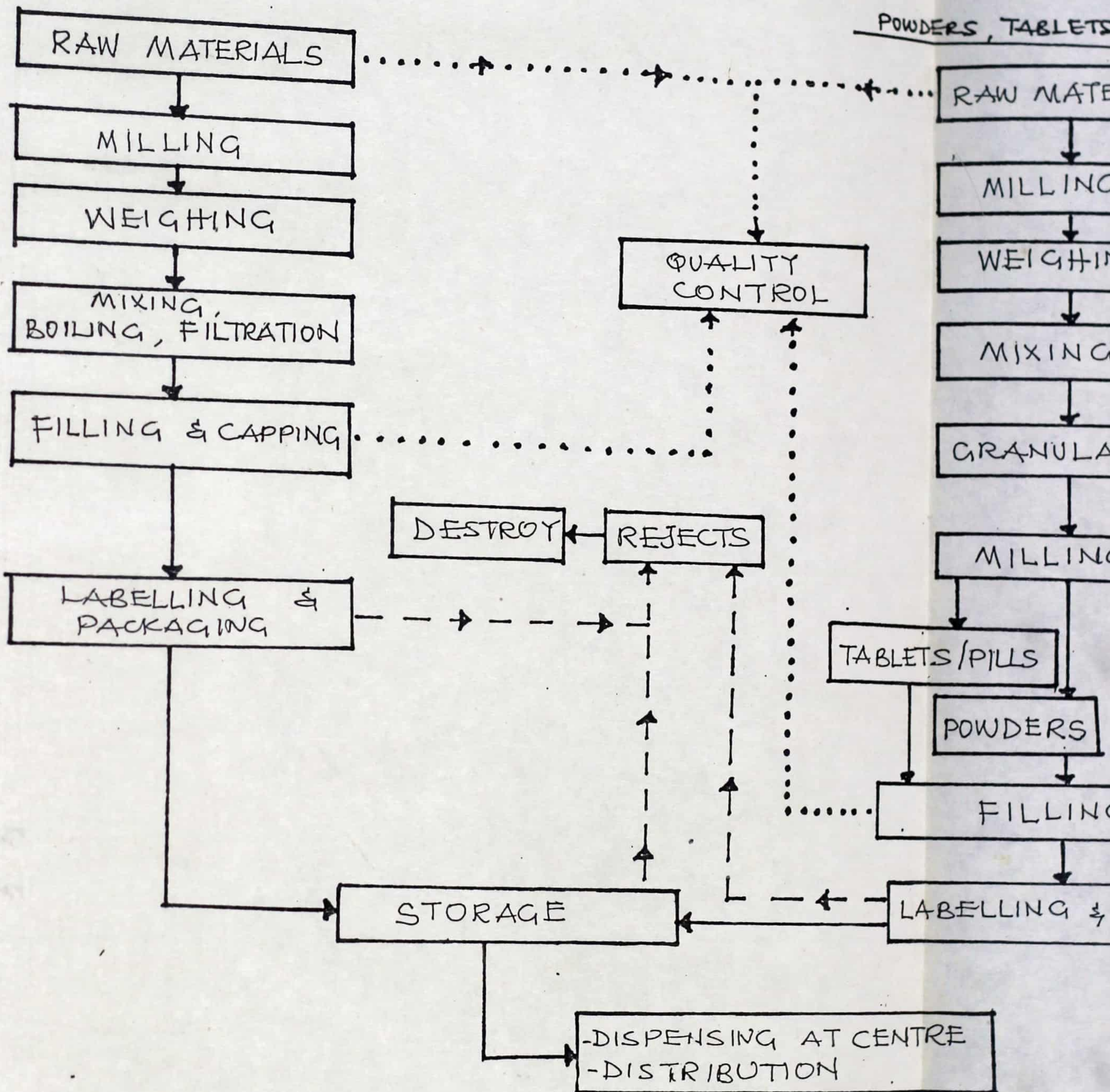
- Single punch tableting machines
 - used in compressing granules into tablets
 - has capacity of 40 tablets per minute
- Granulator:
 - for wet and dry granulation processes in tablet making.

The material is changed into granules

- Mixer
 - for intimate mixing of wet and dry materials prior to granulation
- Coating pan
 - for coating bitter tablets with sugar and later polishing them as round

LIQUIDS

POWDERS, TABLETS



- **Boilers:**

- these are stainless steel tanks for boiling in aqueous extract production

- **Filter press:**

- machine used for filtering solutions

- **Storage vessels:**

- tank for storing solutions after compounding process

- **Roller mill**

- machine for grinding raw materials

- **Pony mixer**

- for mixing processes in ointment manufacture.

- The planning grid used is 1.0m module, width of a typical unit is 4.0m. The depth should be such that natural lighting could reach the other end. A clear depth of 6.0 metres was used for all the research laboratory units.
- Types of benches (i) wall bench with arrangements along walls.
 - (ii) peninsular - with one end against the wall
 - (iii) island - free standing table.

The peninsular types is recommended for use because with greater depth of laboratory, the use of peninsular benches at right angle to the window is mandatory. Besides, they have low installation cost and it is easier. There is also minimum shadow when benches are

CHAPTER EIGHT

DESIGN CONSIDERATIONS.

8.10 Laboratory Design - Basis of Standards

The general laboratory space may be regarded as scientist's working base, and for the purposes of planning, it forms the centre of laboratory activities.

A laboratory room has other associated rooms as follows:
Office for writing, local storage room and special rooms like instruments room, darkroom and animal house.

Laboratory planning:

- The planning grid used is 1.0m module, width of a typical unit is 4.0m. The depth should be such that natural lighting could reach the other end. A clear depth of 6.0 metres was used for all the research laboratory units.
- Types of benches (i) wall bench with arrangements along walls.
(ii) peninsular - with one end against the wall
(iii) island - free standing table.

The peninsular types is recommended for use because with greater depth of laboratory, the use of peninsular benches at right angle to the window is mandatory. Besides, they have low installation cost and it is easier. There is also minimum shadow when benches are fitted with reagent shelves.

Benches should not be placed under windows as it makes working conditions intolerable.

- Width of Bench: It should be wide enough to provide space for centre troughs, pipes, drainlines and other services.

0.75 metres for wall bench

1.52 metres for peninsular bench

- Length of Bench: Uninterrupted runs to 4.60m.

- Space between benches: This is determined by consideration of convenience and safety. The ideal figure is 1.35 - 1.52m.
 - (i) 1 working, another bending; space should be about 1.45m
 - (ii) 1 working, another passing - 1.10m
 - (iii) 2 working, 1 passing - 1.60m.
 - (iv) 1 passing, 1 bending - 1.45m
- Laboratory offices for report writing and instrument room should be part of the laboratory. The latter must be shared as most of the equipment are very expensive.
- Fume cupboards: These are for fume generation to be carried out in them. They require exhaust duct with diameter of 203 - 304mm rising vertically to discharge fumes above the roof.

Design of Laboratory Building

- Orientation: To avoid sun shining on scientific equipment, building should have north and south windows (Long axis running East and West). Windows on East and West walls to be kept to Absolute minimum.
- Vibration: Some instruments are very sensitive so the need to eliminate or reduce vibration. Building should be located from possible vibration sources on site.
- Provision has to be made for additional accommodation in the future.
- Floor - ceiling height: A minimum of 3.0m is adequate for practical and aesthetic considerations.
The ceiling should be capable of supporting services and hanging apparatus; fire resistant
- Windows: For natural lighting and ventilation; as an escape way. Window height should be about 1.52m; with a sill height of 1.20m.

- Wall partitions: Should be fire resistant; demountable - brick, block, timber frame with plaster board. Wall finishes must be chemical resistant.
- Doors: Should allow easy passage and manœuvring of equipment. Must be fire and chemical resistant.
Clear opening of single doors is 950mm (minimum) Doors should afford a convenient means of escape.
- Floors: Covering materials should have the following properties:
 - (i) resistant to chemical attack
 - (ii) resistant to acids
 - (iii) more resilient
 - (iv) less slippery
 - (v) comfortable to work on.
- Furniture: Tables must have chemical resistant top or working surfaces; resistant under other laboratory conditions such as heating and cooling. There must be space for storage, sink, baths, hot plates, services (cold water, electricity, gas) and waste lines.
- Protective and first aid facilities: Provide at least a shower in toilet facilities for laboratory staff; a first aid kit at convenient location. The following fire fighting equipment must be provided for each laboratory unit:
 - (i) Fire hoses at suitable points along corridor
 - (ii) Water type extinguishers
 - (iii) Carbon dioxide extinguishers
 - (iv) Air mask and fire blanket.

8.2- Ventilation:

- Waiting • For safety and comfort
- Waiting • Ventilation must be natural by means of window openings; supplemented with mechanical means where the need arises.
- Waiting • Local exhausts to be used for withdrawing contaminants at point of origin
- Waiting • Some specialised rooms may require air conditioning (wall mounted unit type).

- Lighting:

- Waiting • Lighting should be integrated (both natural and artificial) to contribute to the efficiency and comfort of laboratory workers.
- Waiting • There should be uniform illumination to eliminate shadow
- Waiting • Spot lighting must be used for detail examination

- Services:

- Waiting • Cold water, electricity and gas will come from a central supply. Others like hot water, steam, distilled water will be produced in the laboratories when the need arises.
- Waiting • Distribution will be by a system of piping on 1 in walls, through floors and in furniture.

- Waste disposal:

8.40 Waiting • Evaporation of non-combustible chemicals

- Waiting • Liquid waste diluted with water and discharged into soak away pit.
- Waiting • Noxious fumes in fume cupboards are diluted with fresh air drawn from the room and exhausted into the atmosphere.
- Waiting • Service area: Ratio of service area to total area must be 25-50%
- Waiting • Net kitchen area: Ratio 15 - 25%.

8.20 Clinic Design

- Waiting Area $0.8\text{m}^2/\text{patient}$
- Wards: Small ward sizes offer peaceful atmosphere for resting patient and also give optimum privacy.
 - Area needed per bed = 40m^2
 - Beds to be placed parallel to window to reduce glare.
 - Nurse station - 14 to 16m^2
 - Cleaner 5 - 8.0m^2
 - 1-Bed ward for patient - liable to infection
 - needing special attention
 - or likely to disturb others.

8.30 Office Design

- Appropriate space allowances.

Director	- 30 - 40m^2 (including furniture)
Head of Department	- 18 - 23m^2
Senior executive	- 14 - 18m^2
Junior Clerk	- 6.0 - 9.0m^2
Typist	- 5.0 - 6.0m^2
Conference/Seminar room	- $1.0\text{m}^2/\text{person}$

- Depth of room: This depends on space requirements. Average depth is between 4.5m - 6.0m.
- Rule of thumb: Extent of natural light 1.5 HW (height of Window head)

8.40 Welfare Facilities

- Dining Area: For a square layout of tables (4 dinners at each) area required per table is 2.13m^2
Gangways = 1.0m wide
 - depth of dining area may be 16 - 20m if day lighted from both sides.
- Service area: Ratio of service area to total area must be 25-50%
- Net kitchen area: Ratio 15 - 25%.

CHAPTER NINE

SITE EVALUATION

9.10 Description of the Survey Area

Position : Techiman lies on Longitude $2^{\circ}51'W$ and latitude $7^{\circ}35'N$ in the Brong Ahafo Region of Ghana.

Population: According to the 1984 population census, Techiman has a population of 25,200; an increase of 108.4% over the 1970 figure of 12,068.

The inhabitants and those of the surrounding areas, occupationally, are mostly farmers.

Importance: Techiman is the capital of Techiman District. It is strategically located at an intersection point of 5 major roads which link all parts of the country. The area is noted for its marketing activities which have made Techiman an important trading centre.

Climatic Conditions: The survey area has a mean annual temperature of $26^{\circ}C$, an mean annual rainfall of 1298.5mm of double maxim and an average relative humidity of 72%.

Vegetation: Geographically, Techiman falls into two broad vegetational zones:

- i) semi-deciduous forest
- ii) Guinea savanna woodland.

These are also pockets of forest along river valleys.

Geology and Soil: Techiman falls within the Birimian formation.

This geological structure gives rise to soil that is mainly sand-loam, light textures, workable, well-drained and porous.

The soils are good for forestry purposes and can sustain a wide variety of plants that flourish in the forest region of Ghana

9.20 and that of the Savanna region.

9.20 Macro Location Factors

The location of the herbal medicine centre at Atechiman was considered along the following factors:

- Techiman district abounds with traditional healers from whom knowledge of plants with medicinal values could be obtained.
- There is a strong acceptability by the inhabitants of the use of traditional medicine as an important means of curing diseases
- Techiman has a bulk rural population who depend very much on herbal medicine for treatment of diseases.
- The town is accessible from all parts of Ghana by motorable roads.
- The position of Techiman in the overall context of Ghana, will afford wider area of influence especially in the Northern sector of Ghana. Mampong-Akwapim Centre, it is assumed, will cater for the southern sector of Ghana as far as herbal medicine preparation is concerned.
- The soil type at Techiman influenced for the location of the centre there. The soil will allow for the cultivation of both forest and savanna medicinal plant species.
- The survey area has the advantage of being at the verge of two vegetational zones. This implies that a wide range of plant species can be obtained from both zones.
- The already established cordiality between the traditional healers and medical staff of the Holy Family Hospital at Techiman in the use of both traditional and orthodox means in treating patients also accounted for the location of the proposed Centre at Techiman.

9.30 Site Selection - Micro Locational Factors

The selection of an appropriate site for the proposed centre was considered on the following micro locational factors:

- Town planning regulations
- Accessibility
- Proximity to other related facilities
- Availability of land for future developments and large scale cultivation of medicinal plants.
- Site conditions
- Services.

Two possible sites became obvious using the above parameters.

- i) the clients site along the Sunyani Road and
- ii) Author's own site along the Kintampo Road.

SITE 1: Characteristics

- Located at the west end of the town on Sunyani road.
- Area: approximately 9 hectares (22.5 acres)
- Has the following as borders: untarred Sunyani road, residential developments, river Tano and extension to Techiman market.

Merits:

- the site is that acquired by client
- has good drainage because of the slope
- accessible from the Sunyani road
- it is near an existing Primary Health Care Centre
- near a river whose bank can be utilized for the cultivation of medicinal plants.
- Location in relation to prevailing wind and industrial activities is very good.
- The site is close to existing low cost housing at Takoriano.

Demerits:

- Effective area for development including land for the aboretum is very small
- The site is very near the proposed extension to the market implying that there will be noise pollution to the proposed centre.
- The untarred Sunyani road will generate dust to the site.
- The site is hemmed-in by residential developments
- It is far from the Holy Family Hospital with which the proposed centre will collaborate in referral of patients.
- Prevailing wind blow onto nearby residential developments.

SITE 2: Characteristics

- The site is about 1.0 km from the Holy Family Hospital on the Kintampo road
- Area: approximately 15 hectares (37.5 acres)
- It shares borders with part of Techiman township (Takofiano); the first class Kintampo road on the east river Tano on the North and undeveloped land in the west.

Merits:

- It has been recommended by the town planning department.
- It has good drainage because of the slope.
- Accessible from the Kintampo road.
- Not far from the Holy Family Hospital
- A size of site can accommodate all the facilities needed at the proposed centre.
- There is no dust pollution from the surrounding.
- Location in relation to prevailing wind and industrial activities is very good.
- The site is close to existing low cost housing at Takoriano.

Demerits:

- Site is at the periphery of town so appears to be far from the central business district of the town.

Conclusion: Despite the disadvantage of site 2, it appears to be the appropriate site for the project if maximum locational advantage is to be derived.

9.40 Site AnalysisEnvironmental Conditions

- The temperature, rainfall and humidity figures are similar to that of the survey area, Techiman.
- Wind direction: South westerly from March to October, North easterly from November to February.
- Daylight hours: Between 5.0 - 7.2 per day.
- Pollution: Noise from the Techiman-Kintampo road.

Physical Characteristics

- Size: Total area of 15 hectares (37.5 acres)
- Topography: The site slopes gently towards the valley of the Tano River on the northern portion of site.

- Vegetation: There are tracts of woodland along the river banks. The actual site is covered with grass with scattered low trees.
- Peripheral developments: There are residential buildings on the southern part of the site forming part of Techiman township, Takofiano. This is also a low-cost housing developments here.
- Soil: It is sand-loam and well drained.
- Services: Access to site could be from the Kintampo road.

There are no water and electricity lines on site.

9.50 Implications of site for Development

- (i) The slope - will influence vehicular access to the site
 - developments to follow contour lines
 - drainage system on site will be simplified
 - will allow for interesting Architectural composition and landscaping.
- (ii) Shape - It will influence development to follow the northwards stretch.
- (iii) Noise and vibrations from the main road - affect the disposition of some units on site.
- (iv) Size of site - will allow for horizontal developments.
- (v) River bordering site - The banks suitable for the cultivation of medicinal plants.
- (vi) Residential development on southern part of site - public areas of proposed centre to be close to this area.
 - housing of personnel will be easy.
- (vii) Absence of service lines on site - The need to make proposals for alternatives.

9.60 Services on Site

Although the project area, Techiman, has electricity and water services, the site has no service lines because the supplies from existing plants are not adequate for the whole township at a time.

With respect to power, work is in progress on the extension of the Akosombo hydro electric power grid from Kumasi to Techiman - Sunyani and Techiman - Tamale.

Alternative Energy Studies

(i) Mini-hydro electric power project from the Tano River. 24 x 6m.

- This is not economically feasible for a small area like the proposed centre.

- That part of river course near site is in the upper course which contains very low volume of water for H.E.P. purposes.

(ii) Biogas Plant

- This is feasible

- Techiman is in an Agricultural Community so the acquisition of vegetable refuse (straw, grass, leaves) and cow dung will not be a problem.

- Biogas could therefore be generated for use in some of the units at the centre.

(iii) Wind Power

- has high installation cost

- site has no constant wind speeds

- has to be used in conjunction with diesel generator

(iv) Solar Power

- The use of solar cells (photovoltaic devices) to change light energy directly into electricity.

- The cost of generating electricity by this means exceeds conventionally generated electricity costs by a factor of 10.

- Flat plate heat collectors have to be manually tilted to follow sun's movements. The automatically controlled parabolic disc is very expensive.

- maintenance cost is very high - parabolic disc minor to be resurfaced on the average of every five years over estimated 20-30 year life span.

- large areas of space needed: 5 MW installation requires a 40 acre site whereas a 5 MW diesel generator power station will be 24 x 6m.
- Needs a back-up system e.g. Batteries.

Proposals

From the above studies, the following energy sources are proposed for the centre.

- The use of solar driers for drying of plants materials.
- This will be supplemented by bricks ovens using plants waste from the milling section as energy source.
- Production of biogas to be used in the research laboratories.
- The Design of the Centre based on the assumption that the 161 KV high tension electricity line will be completed by the end of 1987.
- As a temporary measure and as a back-up system, a diesel generator will be used at the centre for production processes and general lighting.

Water.

- Most institutions in Techiman like S.D.A. Vocational Institute, the existing Holy Family Hospital etc. use diesel water pumps which are very efficient and economical.
- Similar pump is proposed for the Centre with water drawn from underground, treated and pumped into an overhead reservoir for use at the Centre.
- Production areas and the Research Laboratories which are functionally related are to be located taking into consideration the prevailing wind direction. They are therefore placed at the Northern part of the site towards the Aboretum, which will serve as the source of raw materials for production.

CHAPTER TENSITE PLANNING10.10 Planning Objectives

- To achieve an overall efficient circulation system by providing a convenient access to the site; careful planning of service roads and limitation of possible vehicular intrusion into central areas of centre.
- Provision of space for anticipated growth in various units.
- Provision of adequate natural lighting and ventilation in all units.
- To achieve a good visual impact of development by a viewer from the main road.
- Planning of service lines (electricity, water, drainage etc.)

10.20 Planning Concepts

The basic planning concepts adopted in the planning of the site are as follows:

- To locate public areas of the centre (Clinic and Administration) within easy reach of the public. Thus these are sited close to the southern section of site where pedestrian and vehicular entry points are likely to be taken from.
- The Northern section of the site towards the river valleys is to be used for the Aboretum.
- Production areas and the Research Laboratories which are

10.30 Circulation

functionally related are to be located taking into consideration the prevailing wind direction. They are therefore placed at the Northern part of the site towards the Aboretum, which will serve as the source of raw materials for production.

- Service areas comprising the welfare facilities, general stores and maintenance, are to be located between the other two blocks of areas. That is, the public areas on one hand and production and laboratories on the other.
- Research work usually involves a wide range of apparatus and equipments, many of which are affected by vibrations. The Research laboratories are therefore located some distances away from the Techiman-Kintampo trunk road to reduce vibration impact from the said road.
- In the public areas zoning, prominence is given to the clinic over the Administration block in terms of location taking into account the high rate of the former's usage over the latter so the need to place it nearer the main entrance. The wards are located on the quiet zones of site.
- The proposed staff housing is located close to the existing residential development near site; on a higher ground and on the windward side of the site.
- To take advantage of the high water table, the proposed water pump station is to be located towards the lower part of the site, close to the river valley, and the overhead reservoir on the highest point of the site so that flow of water to the various units will be by gravity.

- The Eastern part of site is reserved for future developments.

10.30 Circulation

Two conceptual site planning alternatives were considered.

In the first one, the circulation system consists of a ring road

around the proposed developments, serving as the main circulation spine from which arterial roads connect to the various units. This resulted in many circulation lines on the site, leading to vehicular/pedestrian conflict points; thus the objective of pedestrianising the central portion of the developments became defeated.

The second circulation alternative therefore rectified the above anomalies. Here the ring system has been removed to cut down on the cost of road network. Instead, there is a traffic corridor running parallel to the main Kintampo road, from which arterial roads leads to the various units. A road connects the Aboretum and the production areas. A reflection of this traffic corridor is made on the western side for pedestrian movement in the centre with branches to the various units.

10.40 Structure Plan (Conceptual Layout)

The layout of the various units was influenced by the following factors: Climate and Orientation, Topographical adaptability, circulation; Flexibility and possibility for expansion/extension.

Almost all units have North-South axis orientation to reduce the incidence of solar penetration into interiors. Thus the shorter ends of walls are on the East and West with few or no openings. Toilets facilities are particularly placed on the East or West ends of Units to make advantage of the sunlight to contribute to hygienic environment needed there.

Blocks also follow the topography with structures aligned along the contour lines. Where the size of unit is such that it does not fulfill the above objective, the unit is stepped down and joined with a ramp.

The Layout makes circulation of people and services efficient and economical. Vehicular circulation limited to the eastern end and pedestrian routes placed on the western end.

Most buildings have been placed in such a way that extension could easily take place longitudinally independently of the others.

Traditional medicine on the other hand had potent medicine but its formulation is in a crude way.

The attempt being made at the proposed centre therefore is to incorporate the good drugs of traditional medicine into the efficient orthodox development with pleasant environment.

The design concepts therefore are as follows:

- . adoption of the courtyard concept typical of vernacular Chaman Architecture. This will help increase the amount of natural lighting and ventilation. Fresh breeze unpolluted will enhance quick recovery.
- . low spreading development to be used to achieve the following objectives.
 - . to conform to the Architecture of the townscape.
 - . To satisfy the psycho-social characteristics of the main user groups - patients, who are exposed to only moderate Architecture.
 - . For economy of construction.

CHAPTER ELEVEN

11.10 Design Concept

The problem at stake is that, herbal medicine is very potent in the cure of many diseases which orthodox medicine is not in absolute control but people despise it because of the healers' mode of practice. The attempt now is to intergrate the two systems, having the best in both.

The case therefore is that the structure environment, circulation etc. in a typical orthodox hospital, clinic etc. are very efficient but the methods of treatment - drugs - have some setbacks. Traditional medicine on the other hand had potent medicine but its formulation is in a crude way.

The attempt being made at the proposed centre therefore is to incorporate the good drugs of traditional medicine into the efficient orthodox development with pleasant environment.

The design concepts therefore are as follows:

- adoption of the courtyard concept typical of vernacular Ghanaian Architecture. This will help increase the amount of natural lighting and ventilation. Fresh breeze unpolluted will enhance quick recovery.
- Low spreading development to be used to achieve the following objectives.
 - to conform to the Architecture of the townscape.
 - To satisfy the psycho-social characteristics of the main user groups - patients, who are exposed to only moderate Architecture.
- For economy of construction.

Despite the above, the indispensable peculiarities of some units have been satisfied. For instance the industrial touch required for the production unit has been achieved by the roof system used.

11.20 Description of Design

There are four distinct building scales and this is an indication of the level of activities that go on in each unit. These are, the clinic and wards, Administration building, the production unit and laboratories and the welfare building. Besides, there are other areas like the general stores, maintenance, power house and pump station. All these are related by means of covered walkways and pavements.

The buildings are constructed with in-situ concrete for foundations, floor slabs, columns, beams and bricks. External wall finishes for all units are fair faced brick but depending on the activities, internal walls for the units have different finishes.

Clinic and Wards.

This is the first area of contact after the gate house, on arrival at the centre. An entrance canopy of the clinic leads to air entrance hall and waiting bay for 60.

To the left of it is the records/registration area. From here a covered verandah bordering an internal courtyard leads from one functional area to the other, ending at the dispensary which is on the opposite site of the starting point. Patients circulating terms is in a clockwise direction. This is so done to eliminate or reduce conflicts in circulation.

At the opposite end of the main entrance (east wing) is the staff entry point and staff toilets. The public toilet facilities are located opposite in the northern wing, adjacent to the dispensary

store.

Each functional area has a waiting area, the size determined by the expected number to be waiting.

The wards are at the western side of the clinic and is linked to the latter by a covered walkway which runs down to the Research Laboratories and the main pedestrian circulation spine.

Welfare Building.

These are three wards - male, children, female. The first and last have 18-bed capacity each and the children's ward, 11-bed.

The central theme in all these wards is the courtyard concept. The idea behind is to deviate from the conventional wards in orthodox hospitals, which tend to confine patient in his bedroom alone and does not allow for the sort of social interaction typical of Ghanaian social system.

The sleeping rooms are therefore planned around an internal courtyard with the nurse station and day space close to the ~~main~~

Ancillary Buildings.

entrance on the East. The toilet facilities are placed at one end (Western side of the wards).

In the children's ward, instead of day area, a play space was provided and another space adjacent it made for mother's waiting.

Administration Building.

This is located at the north-eastern park of the clinic and they are linked together by a walkway which leads to the reception area.

This area also contains a small show space where some drugs from the production units have been displayed. The reception opens into a covered verandah which encloses an internal courtyard, with various rooms surrounding it. The southern wing of the building contains the herbarium/library, the general office, typing pool, reception and

Administrative Secretary's office. The northern wing houses the conference/seminar room, the Accounts section, Secretary, Director's Office, photocopy area and toilet facilities. These two wings are joined by a W.C. and store on the east and an office and lobby on the west. A covered walkway leads from this lobby to the welfare building.

Welfare Building.

This as stated above is connected to the Administration building by a covered walkway. It is also linked to the wards, Research laboratories and production halls by a covered walkway. Basically, in form it appears to be in a block but has different units which runs horizontally as follows: the junior and senior staff dining and rest room after which are the kitchen and kitchen yard, then the changing rooms, stores, office in one block and the laundry area after this with a drying yard separating them.

Ancillary Buildings.

To the east of the welfare building are the service yard and other ancillary areas like the general stores, maintenance and the generator house. The maintenance houses a spare parts store, office for the supervisors, a general workshop, an outdoor repair yard and toilet and changing room facilities.

Production and Laboratory Building.

The two are functionally related and so are linked together by a covered walkway. Both are located at the northern part of the developments with the production unit being nearer to the main artery road. The two units are linked to the rest of the development by the central pedestrian spine, a covered walkway.

At the production area, this walkway ends at a security check area. Next to this are the changing rooms and toilets. These facilities are then linked to the production halls with covered walkways. The production halls are in two wings. The northern wing houses the liquid, tablets and pills section with the milling/grinding room and warehouse for raw materials adjacent with an open space separating them.

The southern wing contains the ointment section and office. The two wings have an internal courtyard separating them but are linked on the eastern side by the finished production store and a covered walkway. There is another covered walkway linking the southern wing and changing areas to the northern wing.

Area for solar drier and ovens for the drying of plant materials is located east of the warehouse.

The manufacturing processes in each production hall are done in isolated rooms of timber partitions to (a) minimize or eliminate the risk of confusion between drugs and their components (b) control the possibility of cross contamination by another drug that is manufactured, processed, packaged or labelled in the same hall. Partitions have openings with glass for supervisory view of operations

The various halls are well lighted with natural lighting from window openings and translucent perspex roofing sheets and

artificial lighting. Provision made for adequate natural ventilation but where there is excessive heat and dust generation, extractors have been provided.

The Research Laboratories are to the west of the production halls and are linked together by a covered walkway which leads to a

reception and library on one end and changing rooms on other side. From here, it opens onto an internal courtyard surrounded by covered verandahs. The various laboratory departments are located on the north, south and west of the courtyard. Each department houses two laboratory rooms, offices, stores, instrument room and fume cupboards. Behind the laboratories is the animal house and Biogas plant.

11.30 Structural Characteristics

The structural system consists of simple reinforced concrete columns and beams for spans up to 6.0m. Some units with simple forms are in cross wall construction.

The structural grid used for the research laboratory is 6m x 4m and that of the production halls is 8 x 4m. A general planning grid of 1m was used for the design.

The roofing system consists basically of timber trusses with corrugated aluminium roofing sheets.

11.40 Land Scaping.

This has been used functionally as visual and movement barriers to provide privacy, check erosion and provide shade. Landscaping has also been used aesthetically to achieve variety and colour, for example, retaining walls of marble stones.

Most plantings have some sort of medicinal use. This is to add to the character of the centre - herbal medicine centre.

11.50 Circulation

For reasons of convenience and economies services roads from the main artery road are taken direct to common parking areas. Three major common parking areas can be identified. operated generating plant and distributed to the various units of the centre by overhead cables.

- (i) that in front of the Clinic and the Administration block.
- (ii) a service yard for the welfare areas and stores
- (iii) parking area east of the production halls for research of the officers, production personnel and a large delivery and the big despatch yard for the production areas.

There is a small parking lot at the western side of the clinic in the vicinity of the wards for medical personnel.

The main vehicular access is via the Techiman Kintampo road. After the gatehouse there is distribution to the proposed staff housing and to the units at the centre to form the traffic corridor with service roads taken from it to the various parking areas stated above. The traffic corridor continues down to the aboretum where the supply of raw materials will come from.

The interior part of the centre has been pedestrianised with a circulation spine of covered walkway linking all units. A paved walkway with avenue trees on sides leads from the gatehouse alongside the main artery road to the centre.

Owing to the slope of the site, ramps have been introduced in the walkways but these have been incorporated into the landscaping and general design.

11.60 Services.

The main ones are electricity, cold water supply, gas supply, waste water disposal and storm water drainage. Other services like refuse disposal and fire hydrants located at vantage points for fire fighting were also considered.

Electricity. In the interim, power supply will come from a diesel operated generating plant and distributed to the various units of the centre by overhead cables.

- Water Supply

Water is pumped from a pumphouse located at the northern part of the site to an overhead water tank near the gatehouse. This is the highest point on the site. Water therefore, will descend by gravity to serve the developments. The tank has a capacity of 10,000 litres of water which can provide 2 days supply of all purpose water to the whole facility before the need may arise for another pumping.

- Gas Supply

This is needed in the research laboratories for burners. The gas is generated from a biogas plant located some meters outside the laboratories. Supply to the laboratories is by mean of a 30 mm diameter plastic pipe.

- Waste Water Disposal:

Waste water is discharged through soil-pipes to main septic tanks.

- Storm Water Drainage

Storm water drains have been provided either as covered or opened drains along the perimeter walls of structures. They join a main drain which is channelled into the river.

11.90 Schedule of Accommodation1. ADMINISTRATION

<u>ACCOMMODATION</u>	<u>AREA(m²)</u>
Director	36
Secretary	16
Administrative Secretary	24
Accounts Office	16
Utility Room	12
General Office	24
Stores	8
Duplicating Room	12
Typing Pool	16
Entrance Lobby/Reception	24
Library/Herbarium	48
Conference Room	64
Toilets	32
Circulation	92
TOTAL	424
Consulting 1 (40 people)	36
" 2 (30 ")	24
Laboratory (15 people)	12
Dispensary (30 people)	24
Treatment (15 people)	12
X-Ray (15 people)	12
Cleaner's room	8
Circulation	96
TOTAL	503

2. CLINICAL UNIT

- 2-Bed Unit (8)

20 (160)

- 1-Bed Unit ACCOMMODATIONAREA (m²)

- Nurse (a) OUT-PATIENTS DEPARTMENT

- Day space - Reception and Waiting Bay

64

- Treatment - Consulting and Examination Room (2)

36 (72)

- Cleaner

- Laboratory

36

- Toilets

- Dispensary

16

- Circulation

- Dispensary Store

12

- Court yard

- X-Ray

12

- Treatment

24

Children's Ward

- Secretary

12

- 2-Bed Unit (5)

- Records

24

- 1-Bed Unit (1)

- Office

12

- Nurse Station

- Staff Toilets

16

- Play area

- Toilets (Public)

24

- Treatment

- Waiting Areas :

- Toilets

Consulting 1 (40 people)

36

- Cleaner

" 2 (30 ")

24

- Court Yard

Laboratory (15 people)

12

- Circulation

Dispensary (30 people)

24

Treatment (15 people)

12

X-Ray (15 people)

12

- Cleaner's room

8

- Circulation

96

TOTAL

503

(b) IN-PATIENTS DEPARTMENT

Male Wards

- 2-Bed Unit (8)	20 (160)
- 1-Bed Unit (2)	15 (30)
- Nurse Station	8
- Day space	48
- Treatment Room	12
- Cleaner	6
- Toilets	36
- Circulation	108
- Court yard	120
	<u>528</u>

Children's Wards

- 2-Bed Unit (5)	20 (100)
- 1-Bed Unit (1)	15
- Nurse Station	8
- Play area	24
- Treatment	12
- Toilets	30
- Cleaner	6
- Court Yard	48
- Circulation	88
	<u>331</u>

Female ward (same as male)

528

Total

1,387

3. RESEARCH LABORATORIES(a) ACCOMMODATIONAREA (m²)

- 2 Pharmacological Laboratory Units	48
- 2 Pharmacognosy Laboratory Units	48
- Instrument Rooms	12
- 2 Pharmaceutical Chemistry Units	48
- Fume Cupboards Room	4
- Animal house	48
- Medical Artist Office	9
- Silviculturist Office	9
- Offices	8

(b) Chemicals Store	8
- Herbarium	16
- Reception	8
- Changing Rooms	24
- Circulation	104
Total	<u>394</u>

- Packaging	15
- Product Storage	12
- Circulation	12
Total	<u>128</u>

4. PRODUCTION UNIT

(a) <u>Liquids Section</u>	12
- Weighing	9
- Raw Materials Store	12
- Melting, Mixing	24
- Weighing Room	9
- Filling and Capping	15
- Preparation and Storage Room	24
- Labelling and Packaging	15
- Bottling Room	15
- Washing Room	9
- Washing Room	9
- Product Storage	12
- Labelling and Packing	15
- Circulation	32
- Product storage	12
- Circulation	32

(d) ANCILLARY ROOMS Total 128

(b) Tabletting and Pills Section

- Raw Materials Store	32
- Weighing and mixing	60 9
- Drying Room	24
- Granulation Room	12
- Compressing Room	12
- Packaging	15
- Product Storage	15
- Circulation	12
Total	532 32
Total	128

(c) OINTMENTS AND POWDERS SECTION

- Raw Materials Store	12
- Weighing	9
- Melting, Mixing	24
- Filling and Capping	15
- Labelling and Packaging	15
- Washing Room	9
- Product Storage	12
- Circulation	32
Total	<u>128</u>

(d) ANCILLARY ROOMS

- Production Managers Office	32
- Finished Goods Store	60
- Raw Materials (Processed)	32
- Raw Materials bulk storage	96
- Milling/Grinding	32
- Changing Rooms	72
- Security Check	24
- Circulation	184
Total	<u>532</u>

5. WELFARE DEPARTMENTCafeteria

Kitchen and Pantry	80
Store Rooms	44
Office	12
Servery	8
Senior Staff Dining	64
Junior Staff Dining	96
Senior Staff Common Room	32
Junior Staff Rest Area	64
Kitchen Yard	64
Changing Rooms	32
Circulation	52
Total	<u>488</u>

6. MISCELLANEOUS

General Stores	96
Gate House	20
Generator Room	60
Maintenance	72
Total	<u>248</u>

CHAPTER TWELVE

IMPLEMENTATION

12.10 Phasing.

The project is to be undertaken in four phases to spread over a period of time.

- Phase 1: The major problems in herbal medicine are unstandardised dosages and the unknown long term effect. This is what the proposed centre is set out to correct. This phase will therefore be mainly concerned with the construction of the Research Laboratories and the Administration Block. A small scale production will take place in temporary structures. Clinical trials of dosage forms will be as existing - in the Holy Family Hospital.
- Phase 2: This will involve the construction of clinic and wards. Work on the construction of the production halls will start at this phase. Welfare facilities will be housed in temporary structures.
- Phase 3: Construction of Production Hall to be brought to completion and that of the welfare facilities will begin.
- Phase 4: All units will be completed at this stage and full research work in herbal medicine will be undertaken.

12.20 Conclusion

On his visit to the Mampong-Akwapim Centre, the Benin Minister for Health, Co.Andre Atchade, described the centre as a break-through in Ghana's effort at research into plant medicine.

He admitted Ghana's lead in this field compared to the situation in Benin.²⁰

It is envisaged that when this similar centre is established at Techiman, the full benefits in plants and herbal medicine will be reaped and Ghana will be put in the forefront in traditional medicine research.

It is also the opinion of the author that, the problem of drug supply vis-a-vis the country's scarce foreign exchange will be lessened.

The country now awaits the time when other countries especially those in the West African sub-region will start importing herbal medicinal products from Ghana.

With respect to the activities of traditional healers, it is the view of the author that a method of ascertaining their proficiency must be evolved to eliminate charlatans.

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