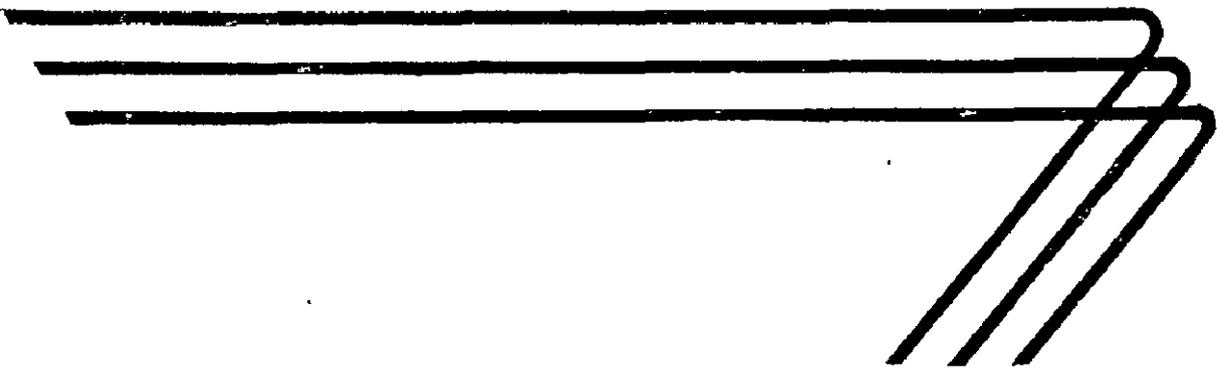


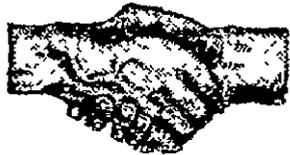
Hospitals, Medical Care and the Community

A Report to the Government of LIBYA



AGENCY FOR INTERNATIONAL DEVELOPMENT

April, 1964



UNITED STATES OF AMERICA



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A Report to the Government
of Libya

Agency for International Development

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Report Prepared by Endre K. Brunner, M. D.

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F. F. Aldridge
Chief Public Health Advisor
Ministry of Health/USAID
Tripoli, Libya

Dear Mr. Aldridge:

In compliance with the basic request for consultant's services in the field of hospital operations, as defined in the PIO/T No. 670-AA-54-AG-3-30030, dated June 29, 1963, AID/Washington has assigned the writer to make a study and prepare proposed recommendations.

This report is the result of the study conducted between 15 January 1964 and 13 April 1964. The report deals in some detail with many aspects of the Medical Care problem of which hospitals form only a part. The report should be considered more in the nature of a preliminary study and early guideline to a second phase which will be based on more accurate and detailed statistical information that were unavailable to the writer. When the hospital audit forms which were distributed to all medical care institutions during the past two months are returned to the Ministry, for study and evaluation, a clearer picture of the hospital performance and needs will become apparent.

Reports and recommendations are sterile without follow-up action on them: The next steps are envisaged in these terms:

1. The A.I.D. Mission will recommend to the Government of Libya the recruitment of a group of three technical experts in the Medical Care and Hospital field.
2. The Mission will assist the Libyan Government with the recruiting or contracting through a University to provide the consultation service.

3. The team leader should have a high level Libyan physician counterpart to take over the functions of planning and coordinating the program, after a reasonable time of apprenticeship, and a year formal training leading to a Master's degree in health administration. The other members of the team will also work with counterparts. They will be primarily concerned with the training of Libyan personnel in and for high administrative positions.
4. In the initial association, or for an estimated four years, the counterparts will be working in a training capacity, therefore the technical advisors must be assured adequate authority to function on an operational level. The team leader should in essence function as the Executive Officer of the Minister of Health in all Medical Care matters.
5. Depending upon the time required for the training of the Libyan counterparts, the host government must be prepared to continue contracting for the advisory services. This service is envisaged as quasi-operational for an estimated four years and purely advisory for not less than two years.
6. It must be foreseen that the composition of the team may change in light of experience and development.
7. The Government of Libya must be prepared to support the team's effort with budget to permit the contracting for special services of technical experts in allied fields, on a short-term basis.

8. The team's first priority will be to establish a base line that involves the gathering and interpreting of statistical material. Staffing, equipment and planning of new facilities constitutes the second priority. The management procedures and the actual furnishing of medical services are to be delegated to an "Operational Group", to continue its functioning, under the Director General for Curative and Preventive Medicine.
9. An active program will be developed to guide and accelerate para-medical personnel instruction. For the operation of this program the services of another group of technical experts will have to be obtained. A close relationship between the latter, the Medical Care Program and Medical Care Operation group, is essential.
10. To assure the cooperation, a Committee on Integration must be organized, to function under the chairmanship of the Minister of Health. The senior consultants of the Ministry should have participation in the committee's deliberations.

I want to express my appreciation to the A.I.D. Mission Director, Mr. Donald B. MacPhail, who has given generously and fully of his time, knowledge and experience. Mr. Hamilton E. Loving, his Deputy Director, and Mr. W. R. Templeton, the Program Officer, were also ever willing to assist the writer in every way.

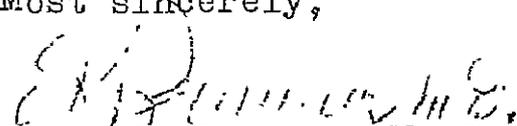
Special thanks to you and your staff for opening your files and sharing with me the considerable accumulated knowledge of the local scene, past and present. Miss I. Marguerite Perry with her wide knowledge on the medical care program was immeasurably helpful. Mr. George Inada

kindly accompanied me on many of the field visits and gave much valuable assistance in preparing the questionnaires.

The writer appreciates the fact that his needs at times may have interfered with the normal routine of the Division's work, and is grateful for having been made to feel a member of the staff.

The completion of this report would not have been possible without the excellent services provided by the Division's secretary, Miss Dorothy Jacobson, and in the final stages by Miss Beulah Smith and Miss Catherine Swindell.

Most sincerely,


Endre K. Brunner, M. D.

EKB:dj:cs:PHD
April 8, 1964

PROJECT AGREEMENT
BETWEEN THE AGENCY FOR INTERNATIONAL DEVELOPMENT (AID)
AN AGENCY OF THE GOVERNMENT OF THE UNITED STATES OF AMERICA, AND
THE MINISTRY OF FINANCE

AN AGENCY OF THE GOVERNMENT OF THE UNITED KINGDOM OF LIBYA

PROJECT NO: 670-AA-54-AG, Agreement No. 63/6

Project Title: MINISTRY OF HEALTH
dated May 31, 1963, specifies under:

UNITED STATES CONTRIBUTION

A Hospital Administration Consultant for 60-90 days to provide special consultation to Ministry of Health on the organization, staffing and administrative procedures for existing hospitals and hospitals proposed in the Five Year Plan.

CONSULTANT SERVICES

The consultant services requested by the Ministry of Health was provided by Dr. Endre K. Brunner during a 90-day TDY assignment from AID/W. The scope of technical services was the same as originally provided for in the Project Implementation Order (PIO/T) which were as follows:

US AID has agreed to provide a short-term Hospital Administration Consultant to give "special consultation to Ministry of Health on the organization, staffing, and administrative procedures" of Libya's hospital system as it presently exists and as a basis for continued improvement of this system under the development plans. Thus, it is requested that AID/W provide the services of a consultant who will:

1. Review the existing hospital system in Libya and the planned organization for the new Division of Hospitals.

2. Provide advice, as the principal consultant, to the Ministry of Health on making recommendations on the organization of the Division and on the policies and practices to be followed.
3. Prepare recommendations on the administration of a national hospital system including the procedures to control and coordinate hospital services, the personnel requirements of a coordinated system and the development of sound, national standards of hospital administration and service.

I N T R O D U C T I O N

His Excellency the Minister of Health of Libya, Dr. Ahmed Bishti, has requested the following broad survey to be made of his country's hospital and health needs.

Based on the present picture, what, he asked, will be the best directions for future planning and growth? Most especially, what are Libya's greatest hospital needs of the future?

In search of the following answers, I have traveled far and deep. I have seen a uniquely historic yet burgeoning nation, and met a proud people restlessly ready for prouder years to come. It has been an experience with profound rewards. Let me here thank every single one of the many Libyans or their helpers from other lands who have opened their doors and thoughts to me, along the exciting way.

* * *

A hospital, in the modern concept, is an institution staffed, built and equipped to render, to the community it serves, advice and care in the prevention of disease, and treatment of the sick

and disabled.....continuing after the patient's discharge from the hospital until he is again an effective part of his home life and his community.

The hospital must also provide facilities for education and training. All hospitals are teaching institutions at some level or other. Some of them teach physicians, or future physicians, some teach nurses, technicians, kitchen helpers or janitors. But besides these professional and vocational types of education, all hospitals have the high responsibility to educate the patient, his family and the community as a whole.

Finally, a hospital records and safeguards its precious data in the clinical, social and administrative fields, and utilizes all findings for investigation and research.

* * *

Health is not a God-given attribute of man and his environment. It has to be worked for -- and all knowledge cherished and handed down from generation to generation.

Health can be purchased. It is not a private concern of the individual. It is a national asset. Only a healthy child is a successful student. A sick or undernourished child is an unsuccessful student. He cannot focus his attention for long, he cannot learn or retain facts, or reason well. He will become a sickly or undernourished adult who cannot work well, or work the hours that are necessary in modern society.

An uneducated worker, too, is not capable of delivering complicated skills, or of meeting the demands made upon him by today's modern techniques. This is true of the agricultural and the industrial worker alike.

For economic development, a country needs skilled workers and educated managers. Only a colonial society can depend forever on imported talents.

Malnutrition and disease not only result in physical weakness and mental retardation, but these conditions will in the long run affect the individual's germ cells, resulting in turn in miscarriages and weak offspring, and thus the omissions and sins of the fathers will be visited upon the children.

* * *

It follows logically that one would be remiss in discussing hospitals in Libya merely as places where treatment is provided. Five elements should be represented in the hospital program of the future:

- 1) Prevention;
- 2) Treatment;
- 3) Rehabilitation;
- 4) Education; and
- 5) Research.

Just what the proper balance is or what must be emphasized or given priority depends on experience, judgment, availability of human and material resources, the culture of the people, the existing endemic diseases, and finally the experience or prejudice of the men in

charge of the program.

1) Generally speaking, preventive medicine will produce the greatest but by no means the most impact-making results for a given expenditure. In the long run it will most benefit the community and the country.

2) Curative medicine is closer to the hearts of the people. When a member of a family is sick, they all desire medical attention, treatment and drugs for him. This attention to the obviously urgent needs is easily observed and appreciated by everyone, therefore, the impact is great. When one considers that in most instances the disease would not have occurred if preventive measures had been attended to, curative medicine is an expensive program that benefits the individual more than the community.

3) Rehabilitation, as an individual discipline, is relatively new and perhaps is the result of the experience gained especially during World War II. Its practice can prevent invalidism, i.e., the continued dependence of a patient on his family or community. It is a sophisticated program, often requiring the exclusive attention of a technician to a single patient or at best to a small group of patients. Although it produces at times a self-sufficient individual who otherwise would be completely dependent upon the community, this cost can be exorbitant.

4) Education and training are very much a part of every physician's mission. The meaning of the word "doctor" is that of "teacher." The physician's responsibility includes the

teaching of his patient and patient's family how to remain well, regain health, and after illness how to re-assume all functions within his capacities. The doctor must apply himself also to drawing the attention of the community to its responsibilities for health and its benefits. Only a healthy community can keep pace with modern life. The cost of sickness may be disastrous. Since the time of Hippocrates, the oath of the physician includes his responsibility to teach and train the would-be physicians and younger colleagues in the art and science of medical practice so that there will be ever-available, continuous replacement in the brotherhood of Esculapius.

5) Research and investigation in which every hospital can engage may be limited to the careful classification of the data obtained from its study and care of patients and from the administrative functions of the hospital. Such data when assembled and compared with similar data in other institutions will strengthen the statistical value of what is learned in the individual, smaller activities. The facts thus obtained may shed new light on our conception of the incidence of disease or the clinical course of a disease in a given community. It may show up deficiencies in administrative procedures, or how to use available funds better. The sophisticated, basic-science investigations are not, as a rule, part of a general or small hospital's research program, but rather, are the responsibility of special institutions of research.

* * *

The hospital is truly a community center. It can be the center of all health activities. Within it the physician is the

leader. A public health program with its conventional basic divisions of environmental health, communicable disease control and maternal-child health activities, without curative medicine is like a man with his arms cut off. On the other hand, a hospital where the patient care is limited to curative medicine, ignoring the public health and teaching aspects, wastes the time and money of the staff and the community. To give an example, a patient with pulmonary tuberculosis is hospitalized and his hemoptysis is cured; he may be sent home with his sputum still full of tuberculosis bacilli, and without instruction in the use of a mask, or proper disposal of sputum. The expression of his love for his family, caressing and kissing them, will spread the disease to the people he most loves and, through them, to the entire community. Instruction of him and his family, on the control of tuberculosis, is indispensable.

For a country to establish separate and individual organizations for community medicine, for curative medicine, for training of personnel, for education and research, is an impossible undertaking. Not only would there be duplication in expensive material resources such as buildings and equipment; but each activity requires the same type of technical personnel who are scarce and hard to obtain.

Therefore, in the following discussions, there will be reference to "community health center - hospitals."

Above all considerations is the fact that health is not just an absence of disease; it is the physical, mental and economic well-being of the individual. A patient must be looked upon as a whole person in his environment and not as one suffering from some malfunction or disease of his body or an organ. In other words, a patient with

heart disease has problems not only as to how to live within his functional capability but also how to train himself to remain useful within that capability -- living within his possibly reduced income, and knowing what his life expectancy may be, so that, within it, he can provide for his family.

It is not intended to imply here that every Libyan health center - hospital have a full spectrum of the activities above set forth; but the point of view -- the realization of the existence of these elements in a complete health program -- must be instilled in all who engage in health work.

It was with these concepts in mind that the health activities in Libya were studied. With this point of view, the following comments and recommendations are made.

LIBYA'S HEALTH NEEDS

A. Climate and Population

Libya has a favorable climate. There is no great variation of temperature or of height. But out of its total area of 17,660 square kilometers, the greatest portion is desert land. Only scattered fertile oases are adequate for human habitation. Most of the population lives within a narrow belt along the Mediterranean Coast where the average rainfall is 200 millimeters per annum. The great variability of the rainfall subjects the country to droughts and crop failures. The population density is probably the lowest in the world: an average of 62 in every 100 kilometers. Within these areas, however, are pockets of population where crowding is intense. There are also many groups of nomads and semi-nomads. The wandering of these groups constitutes a public health problem distinct from the areas of stable population. The discovery of oil and the exploitation of it will further complicate the picture.

The last census of Libya was completed in 1954. The population at that time was counted to be 1,089,000. Census information in Libya does not classify the population by agglomerations or clusters. Only 6 urban communities are listed:

Tripoli	129,728
Benghazi	69,718
Agedabia	16,336
Derna	15,891
El Marj	9,982
Tobruk	4,995

The yearly increase is probably not much over 1%, according to Mr. George Inada, consultant in biostatistics, Ministry of Health. There exist no reliable vital statistics for the country.

Libya is a Moslem country where men dominate the society. Women live behind veils and are excluded from the national economy. This cultural fact has great bearing upon public health considerations. Because of it, the providing of medical care is made considerably more complicated than in western countries.

A medical care program must provide for all the different varieties of Libyan humanity within their own individual social system. Minimal public health coverage in Libya's area, sparsely populated by an ever moving population, presents a formidable challenge.

The people living in given areas or migrating to them are subject to special health risks. They require even more protection from health hazards than a stable population.

The discovery and exploitation of oil in Libya augurs well for progress but progress will depend upon the provision of adequate, safe water; roads; other means of communications; health; education; and other social services.

Any health plan must take into consideration the present population with its foreseeable growth; the pattern of diseases; and the many broad problems arising from its socio-economic change.

B. The Leading Diseases

Libya has a large number of diseases that could be eliminated or controlled, no longer to be a drag on the national progress. No accurate figures or even estimates exist on the mortality and morbidity of these diseases. Tuberculosis, smallpox, typhoid fever,

measles, whooping cough, cerebro-spinal meningitis and poliomyelitis, bilharziasis, amebiasis and a variety of intestinal parasites are widespread. Virus diseases are often epidemic and cause serious mortality. Trachoma and its complications are responsible for much blindness, vaccination is undertaken only against smallpox - and that only haphazardly. Now that absolute and permanent protection can be secured against measles, a serious killer of young children (40% of those between 6 months and 5 years), a vaccination program against measles is a national must. Recently, there was a poliomyelitis epidemic in Libya; recurrences must be anticipated. This disease, too, is subject to prevention.

When an epidemic exists, it is too late to immunize, and it is also too late to set up control measures. A standing organization within the Ministry should be created to take the routine preventive measures and limit the outbreaks, furnish experts to make early diagnosis, search for the source of an epidemic, and take the necessary steps for control. Tuberculosis and parasitic diseases because of their chronicity may be less dramatic but they are quite as important as the acute infections. In fact, they are more important, from the point of view of debility of the sick, his removal from the rolls of wage-earners, his lessened attention span. Deaths occur and certainly among children the mortality figure is high. Although malaria has been controlled and perhaps eradicated, there is still bilharziasis and other parasitic illnesses that keep the population from fulfilling their great destiny.

These diseases are causing a general malnutrition and anemia. This is in addition to the poor nutrition that is the result of inadequate food intake, caused partly by poverty and partly by national customs.

While the poverty will undoubtedly be overcome with the coming of general betterment of the country's economy, the trouble-making food customs will require active health education.

Here it might be suggested that the oilcake, by-product of the edible oil processing, is a rich source of protein. A small expenditure on a processing plant could provide adequate daily protein for children for less than two cents per child.

Libyans are subject also to all the common ailments that incapacitate and kill people elsewhere. The relative importance of these will not be known until morbidity statistics are available. Perhaps heart disease is not the important killer it is in the United States, but diabetes seems more prevalent and serious urinary infections are common, cancer will increase with the aging of the population; and psychic disturbances will probably increase. Without statistics, planning for the future is like navigating in an uncharted sea without compass. Therefore, any precise assessment of priorities among Libya's health needs is impossible. The best one can do is to make an educated guess.

My visits to the various hospitals, and discussions with the health personnel of Libya, have given a good indication of what patients consult the physicians for, and for what conditions they are hospitalized. But in the absence of vital statistics and morbidity tables, one has no knowledge of the undiagnosed, serious or fatal diseases. A broad epidemiologic and population study is urgently needed.

C. Population Trends

In order to plan for future health needs, we must have information about the population trend. Children and old people utilize health services differently than young adults.

<u>Age Group</u>	<u>Percentage of Total Population</u> *
0-4	14.7
5-14	23.7
15-24	16.9
25-34	14.9
35-44	9.8
45-54	8.1
55-64	5.6
65 and over	6.1

* Population Census 1954

Better than one third of Libya's population is below the age of 15. This means that Libya has a young population; it also means that the producing adult population has to share its economic resources with a larger segment of the whole - the unproductive children, women, and old people. Contrast this with the United Kingdom, where children make up one sixth of the total.

The population pyramid tapers rapidly after young adulthood. This is probably due to poor environmental sanitation and deficient nutrition.

Infant mortality is said to amount to 40 - 50% in the first year of life, and probably another 10% between one year to six years. Deaths in later years may run higher than in the more advanced countries, but not dramatically higher.

D. Infants and Children

Infant mortality is largely due to respiratory infections during the first six months of life. It is said that birth trauma and tetanus of the umbilical cord are also substantial causes of death in the country as a whole.

Since children are breast-fed for an excessive period of time and are given no supplementary feeding, malnutrition is present before weaning, usually between one - two years. Children immediately receive adult diet and no special care is exercised in its preparation, nor is it safeguarded from contamination; hence the already undernourished child is subjected to gastric irritation, bacterial infection, parasite invasion, and protein and vitamin deficiency, with the obvious result of further malnutrition, secondary anemia, acute gastro-intestinal infection and high mortality.

The incidence of Mediterranean anemia is unknown, since adequate hematologic investigation is not generally carried out; but it is my impression that it is high.

There is probably a 40% mortality between the ages of six months and five years from the endemic measles that become often epidemic. Whooping cough is another serious disease which, complicated by pneumonia, kills a large number of children, especially in the very young age group. Although some indication of the problem is gleaned from hospital records, these are unreliable and most of the children receive no hospital or medical care, but are cared for at home, their death remaining unreported, hence no real evaluation of the importance of these cases is possible.

E. Manpower and Health

It requires no great imagination to draw a conclusion, however, as to what impact all these conditions have upon the future of the country. Libya requires skilled labor, and professional workers and administrators, to develop her great economic resources, and give full scope to the natural talent and intelligence of her people toward achieving independence from foreign technical assistance. The public health solution will

depend upon many and varied factors: the use of scientific knowledge within the health field; wider general education than is presently available; improved and diversified agriculture; the exploitation of the rich oil wealth; and the development of industry.

A discussion of the available health resources and the various problems is presented in other chapters. The health services that need to be developed must meet the special needs of the country; within the milieu of Libya, they must be as indigenous as circumstances permit. Western experience should be used only as a guidepost and should be adapted to the realities of the country. There are expensive mistakes that can be avoided in Libya, since the program is still close to the starting base line.

Priorities must be carefully decided, on a scientific analysis of the needs and the available resources. The great difference that exists between the health conditions of Libya and the western countries is not because of a Libyan proneness to disease or an inherited weaknesses of the Libyan people. It is because of the environmental handicaps they face. In the absence of trained health manpower and indeed an available reservoir of manpower from which the health workers can be recruited, Libya will have to depend for a long period to come on imported health personnel.

To build a national health service that will bring the greatest benefits to the population as a whole, with the most economic use of the scarce nationally trained skills available, combined with those obtainable from other countries is the challenge that must be met.

F. The Philosophy of Community Sharing

Health in the modern sense of the word is a state of physical, mental, social and economic well-being. It is not merely the absence of disease. Thus it follows that the achievement of health for the public is not

limited to the control of diseases but, rather, includes dealing with all problems in the environment - the community in which the individual lives.

Community and social development is inseparable from the health program. This concept may require both governmental and community education before general acceptance. The participation of the community with understanding, voluntary work and financing can be achieved by vigorous educational efforts. No civic pride exists where the community does not contribute to the creation and maintenance of its own institutions. If this vital contribution is lacking, the benefits received are momentarily appreciated but soon forgotten, and only the shortcomings are remembered.

Every community should have a voice and participation in its own health activities, so that the people may become familiar with the responsibilities, difficulties, successes, frustrations and cost of the program. Community vigilance also is a good deterrent against irresponsibility in the handling of funds, work contracts and purchases, and finally it is a great stimulus for the young people, focusing their attention and attracting them to careers in the health field, so that health-oriented and health-related technical and administration schools will have suitable applicants in adequate number.

G. Toward a Healthier Society

Statistics on births, deaths and morbidity are essential if a base line is to be established against which progress can be measured. Otherwise, there can be no effective and detailed planning of health activities, or rational distribution of resources to the

three Regions of the country, with their dissimilar problems. Without statistics the result of health measures taken simply cannot be evaluated. For the initiation of obligatory registration of births and deaths, the country will require no additional expert personnel, although the registration of the medical causes of death may have to be omitted where no physicians are available.

The Ministry of Health is responsible for providing complete public health service, including medical care for all the population who are unable to pay for these services. In the Fezzan, even those who are able to pay receive free medical care and free medications.

During the past two years a compulsory health and social insurance system has been evolving. This organization is now in the process of organizing treatment clinics, with independent staff and expensive equipment. Although at present they do not operate hospitals but pay hospitalization cost to the Ministry, the next step will probably be the building of hospitals for the insured population. I cannot too strongly emphasize that this competing organization, with a pay scale and standards of its own, greatly endangers the orderly development of a good national health organization. There are only two kinds of medical practice, good and bad. The aim should be to provide an environment in which a healthy society develops, without the crises of epidemics and in which all individuals can survive, unhurt by preventable diseases, and all can obtain the best medical attention available in the country. The resources of the National Insurance system and its equitable contribution to the resources of the Ministry of Health could immeasurably improve all existing facilities and hasten progress toward the

optimum at a much lower cost to the population.

To meet the health needs of the country, some steps are within the responsibility and authority of the Ministry of Health, while others are broader in character and overlap into the spheres of other Ministries or independent organizations.

H. Ten Important Steps

The Ministry of Health, within its own authority, should decisively take the following 10 steps:-

1) Let it develop an organization within the Ministry itself that defines individual responsibilities and authority. Essentially, three divisions should be organized. One would be concerned with the preparation of standards or norms for all aspects of the program. A second would concern itself with the operation of the various professional activities; this would be a supervisory and coordinating organization. The third would be responsible for the administrative functions of the Ministry and the national health services. A small organization attached to the Minister's office could sustain liaison with the other Ministries, the international and the independent organizations; could suggest drafts of needed laws; and investigate possible irregularities. The licensing of professional personnel and of activities such as hospitals, pharmacies and laboratories could be part of the first division here suggested - the one concerned with program and standards.

2) It is my conviction that the health program must be an integrated system and all its elements - prevention, medical care, rehabilitation, investigation and training - must be considered together, therefore, unless overwhelming reasons exist to the contrary, all such activities should be located together in Health Center-Hospitals. These should be closely integrated with all community activities.

3) Extension of health care to ambulatory patients is the coming feature of good public health practice. Early diagnosis and treatment lead to cure in many cases where neglect will mean disability or death. Diagnosis should be established, as a rule, before hospitalization. Definitive treatment should be planned before admission to a hospital, and patients should be discharged to outpatient departments for continued treatment and follow-up. By this means the period of hospitalization will be greatly reduced, saving money for the state and the individual. More important, the scarce facilities can be utilized by many more people in need of hospital care.

4) Coordination between health facilities should be broadened by making special consultation, laboratory and x-ray facilities easily available to each, not only through existing centers and their own satellite institutions but in a horizontal relationship. Transfer of patients to take advantage of special facilities or vacancies should be made easy. By this means the number of hospital beds can be limited.

5) In light of the tremendous loss by maternal and child mortality and morbidity, special emphasis should be laid upon the establishment of additional mother-and-child-care activities to deal with these problems.

a) The Ministry of Health deserves credit for its efforts to cope with the problem. The clinics in existence are the best in the country dealing with preventive medicine. The schools for the training of assistants for this work need a greater central support and efforts should be made to assign the graduates to rural health centers.

- b) Pre-natal clinics and home delivery services should provide a minimal program of pelvic measurement, blood pressure determination, weighing, urine examination and hemoglobin determination, with records kept.
- c) Post-partum examination, combined with a healthy baby clinic, should be organized. First vaccination could be given here to the infants. At these clinics the staff could give some essential health education on maternal and child care.
- d) Pediatric clinics where sick children could be attended are also needed. At present there is often no way to obtain care for diarrhoeic infants; and for lack of drugs and hydration, infants die unnecessarily.
- 6) Campaigns for specific disease eradication can be organized, as has already been done against malaria. These campaigns should not be independent of existing health center hospitals, but should form an integral part of their daily work.
- 7) A health education program is needed for the teachers in elementary schools, for the students in all schools, and for the parent who come to health center-hospitals; also, to be a part of community programs, through audio-visual education.
- 8) A vital environmental sanitation program should be developed with a full-time trained personnel attached to health-center hospitals, but with separate budgets and with ample connection with community development organizations.
- 9) Schools for the training of para-medical and auxilliary personnel are greatly needed.

10) United investigation and study of health problems in Libya are needed. The Ministry of Health should take the initiative in inviting other interested Ministries and independent organizations to cooperate with its own efforts to:

- a) Establish a compulsory vital statistics program.
- b) Develop an epidemiologic section with sufficient police power to effectively control the reporting, follow-up and control of communicable diseases.
- c) Develop sanitary inspection of markets, slaughter houses, houses, hotels, and restaurants.
- d) Build sewerage systems.
- e) Develop garbage disposal.
- f) Extend community water supply, and control by law its continued development and safety.

I. The Economics of Health Planning

Any plan undertaken to bring about improvement in health services must be made with an eye to the future. Besides a steady increase in population, there will be changes in culture. As part of a general surge for fulfillment in life, there is an ever-increasing demand on the part of the population for health services for the individual and his family. This demand might be referred to as a "felt need," and is by no means identical with a scientifically established need. Psychologically the felt needs must be considered and if feasible, should be satisfied.

I shall attempt to reconcile these two considerations in this report and its recommendations.

In any health planning, the first thing to consider is the availability of resources, both at present and in the reasonable future.

It is a well-known saying that "public health is purchasable." I have been assured that Libya's economy will permit a generous support of its health program. Indeed, this advisor was asked to recommend a Hospital Development Plan and meet the felt needs of the country rather than stay strictly within some established budgetary structure. It would, however, be a disservice to the country if the global point of view were sacrificed upon the altar of expediency.

It cannot be disregarded that even in spite of economic plenty, a developing country has many needs, conflicting interests and a keen competition for the available manpower. In Libya the women are, at this writing, excluded from economic and vocational consideration. According to the last census, only 3% of the male population over the age of 15 years or some 11,000 were reported as professional, administrative, technical or clerical workers, and only 30% of the 15-year-old males were literate. Out of such a reservoir, what proportion of the population can be recruited for health activities? What future can one guarantee for them? With the available health personnel, what program is most important: preventive medicine, environmental health, curative medicine - and where? - in the urban areas or in the rural communities? On the answers to these questions will depend not only the number of workers needed, but also the training of the future worker.

There is no information as to the present total number of people in the Libyan population. Estimates vary, according to special interest or wishful thinking. Mr. George Inada, USAID biostatistician, assigned to

the Ministry of Health, says that there are not much in excess of 1,000,000 Libyans at present requiring health services. He considers the future growth rate will be between 2 - 2½% based on this and estimates the population in 1985 or in 20 years to be 1,957,000.

Total in Thousands:					
	<u>1-4 yrs</u>	<u>5-14 yrs</u>	<u>15-24 yrs</u>	<u>25-34 yrs</u>	
1954	1.089*	14.7%	23.7%	16.9%	14.9%
1964	1.259)	}....Not Estimated			
1974	1.259)				
1984	1.957)				

* Includes foreigners, nomads and semi-nomads.

About 25% of the entire population could be considered urban.

There is a Libyan Five Year Development Plan in its second year. In this, a generous total of funds have been tentatively allocated to health. In general terms, equal resources are devoted to all the geographic subdivisions of the country; but this must be tentative only, since the needs are not dependent on geography alone, or even on the numbers in the population.

Another plan - "The Economic Development of Libya," prepared by a mission of the International Bank for Reconstruction and Development - considers a capital expenditure of L£ 3,700,000 over a five-year period, of which about L£ 1,000,000 would be spent on construction. Since this program took into consideration and assessed the whole economy of the country, and defined the part that health services are to play in the national development, it can be assumed that at least the funds therein suggested will be available for the improvement program. Additional funds are also allocated for current expenses of the Ministry. The

national health insurance, and the few private and semi-private patients, make the Ministry of Health reasonably solvent.

The economy of the country and the improvement of the living standards of the people depend upon the production of consumer goods, which in turn depends on both the availability of raw material and the number and skill of the producers. Malnutrition and disease disabling the workers, tremendously reduce their activities and their national output. While deaths are most numerous in unproductive childhood, those who survive receive training and are at the height of their production capacity in adulthood, and must not be allowed to suffer disability. Such losses are doubly costly since they reduce economic output, and cost a great deal in medical facilities. All this is unnecessary since it is preventable.

I will not further discuss the general economy of Libya, or speculate upon future economic development. The report by the International Bank for Reconstruction and Development, above quoted, is widely available for reference on the subject.

J. Budgeting for the Future

It appears to me that health looms as one of the most important concerns of the Government of Libya. Health policy, as at present constituted, seems static. As far as I can determine, no plan has been formulated for an orderly increase of the regular health budget to take care of the increase in facilities and of the growing population. This is not a lack of foresight but rather inexperience in budgeting procedures and control. Based more on experience rather than scientific calculations, I would expect that a yearly increase of 5% of the budget will be required for the next twenty years, if the health services are to meet the challenges of changing times.

Other Ministries of the Government will participate in the educational development of the population, the community development, the housing and other related social improvements. Funds for capital development of the health services now contemplated will not, it is assumed, be considered as part of the estimated 5% yearly increase in the Health Ministry's budget.

K. Psychologic Benefits to be Gained

Services gratuitously received are rarely appreciated. When something is obtained at some effort, its value is better recognized. For this reason, it is suggested that the communities be required to contribute labor, materiel or funds toward the development of any public health activity or construction undertaken for their special benefit should it be a water system, or a clinic, or a hospital. It is also recommended that consideration be given to the introduction of a modest graduated scale of charges for all services rendered or medical supplies issued. Even if the administrative cost of determining the amount to be charged and the bookkeeping on the income will absorb a large part of the revenue, the psychologic benefit gained is so considerable that it is worth doing. It will eliminate for most patients the onus of being a "charity" patient and will also put the staff on notice that they serve a paying public.

The National Insurance system, if my recommendation is accepted, will utilize the Government clinics and hospitals, or the services of private physicians, for their ambulatory and hospital patients; and pay a standard fee for all services in accordance with a pre-established scale that could be adjusted at yearly intervals to take care of changing cost of medical care. This might be a substantial additional revenue for the Ministry of Health.

It is understood that members of the police force, army, government employees, and the families of these groups receive free medical care in government hospitals. It is recommended that the parent organizations should be billed for the services rendered, since without reimbursement their care really comes out of the budget provided for the patients not capable of paying for their own hospitalization. The public, when the family income is similar to the income of these government employees and similar accommodations in hospitals are assigned, should be charged for these services a fair amount with the scale of the charges known to the public. An increasing number of Libya's population is going to work for large oil and other industrial companies. These companies are now providing medical care for their employees and, I understand, some are planning to build their own hospitals. It would be far preferable if the government of Libya would provide the kind and caliber health services which would satisfy these industrial concerns and their employees, on a reimbursable basis. As duplications make no sense in relation to the National Health Insurance, the police force and the army, it also makes no sense in relation to the industrial firms either.

L. The Private Practice of Medicine

There are virtually no private practitioners in Libya, although a great many of the government and insurance company physicians practice privately in their free time. It is desirable that the pay of the government physicians be sufficient so that a private practice would be unnecessary. It is always difficult to serve two Masters. Usually the salaried government job suffers in this dual role. I believe there is a reasonable place for the purely private practitioners, and

there should be no hindering of the setting up of private practice by well-qualified physicians. I also believe that some critical review of the qualification of all practitioners in the health field should be undertaken by the Ministry of Health.

I am told that there are a few private hospitals, laboratories and roentgenology clinics in Libya. They, too, fill a need; but the standards they must maintain should be determined and controlled by the Ministry of Health.

The same criteria should also apply to the pharmacies or any other activities dealing with the health of the people.

M. Libya's Need for More People

One hears a great deal about the population explosion, and it is generally thought that the explosion is most violent in the African countries where the average yearly increase of the population is estimated at 2.5%, making it practically impossible to maintain the needed infra-structure for workers. In Libya, the current estimated increase of population is probably half the above figure, therefore, no such problem exists. This, with the high infant mortality rate and low life expectancy, makes a vigorous maternal and child welfare program important. Every effort must be made to prevent premature deaths from occurring.

It is anticipated that with better nutrition and more preventive measures, there will be a gradual increase in fertility and survivals; also, there will be a greater rate of population growth in the country. It is, however, also true that with less time lost to disease, the population will become better motivated, better educated and will produce more goods and services.

Fortunately, there is every hope that there will be a steady increase both in social and economic development, to the improvement of the present situation, since employment opportunities are now amply present and these in turn are the best possible stimulus to greater effort.

That Libya needs to make substantial efforts in other than health fields goes without saying. The infrastructure of development is made up of many building blocks - agriculture, water development, communication, industry, education. The cost of all this goes up with the increase of population.

In later chapters, more specific discussions and recommendations on many of these points will be presented.

STRATEGY FOR BUILDING HEALTH FROM THE GROUND UP

In the previous chapter the health problems were briefly discussed. A forecast was also made as to the future population, for which health services will have to be provided. Information indicates that the economic growth of Libya is assured and funds will be available to keep up with the growing population's increased demands for all kinds of social services.

The health program must consider, besides the "felt need" and the funds, also the available human resources, the goals that can be achieved on short or long term, the trend of public health practice in its broadest sense, and the culture of the nation. Priorities must be set within this framework, defining the achievable short term goals and finding the proper balance of the projects in order to create a well-integrated program.

By far the most critical need is for qualified health personnel on all levels of preparation. While the immediate goals will have to depend on recruited foreign technical personnel, the long-term solution depends upon the planned training of Libyans for the health professions.

The number of young Libyans who will be available for training depends upon the population growth, currently greatly slowed by the exorbitantly high infant mortality; the competition of other occupations; and the success of the general educational program.

SMALL COMMUNITY HEALTH NEEDS

Libya's present population is a rural one. Seventy-five percent of the people live in small communities and there is an additional large nomadic population traveling from grazing land to grazing land without regard to established communities or even to national boundaries. In their migration they acquire and in turn spread new diseases.

Libya's established health facilities are providing dispensaries and health centers in many small communities, to meet the needs of first aid and medications. The Five Year Plan wisely expands these facilities. From personal observation, the impression is gained that a tremendous variation exists between similar facilities identically staffed and equipped. While one is clean and busy, another seems abandoned and poorly maintained.

COMMUNITY SELF HELP

I did not see one health activity to which the local population made any contribution by volunteer work or the provision of locally available material. Community pride in the health center, a sense of ownership and consequent assumption of responsibility for its good functioning will not develop without community participation.

CONDITION OF THE DISPENSARIES

The dispensaries visited also showed wide variation as to orderliness, availability of records and community acceptance. Some of the local employees, called "dressers," are experienced persons with initiative and sense of responsibility, but some had only a small amount of training. In all instances, their relationship with the Health Center Hospital was nominal and the physician's visit to his activity was only sporadic. One of the staff said he has not seen a physician for over nine months.

The need for regular medical supervision of the dispensaries and a program for giving the local dresser a sense of belonging to the Health Center staff should be immediately solved.

MATERNAL AND CHILD HEALTH

The best functioning clinic activities are the ones in the field of maternal and child health. Unfortunately there are too few such clinics in the country. Their need is for greater medical support, and professional nurses or midwives to give the necessary leadership to the few Libyan graduates of a Maternal Child Health Assistants' schools. The need for the graduates of the two Libyan schools that provide training for these auxiliaries is tremendous, and it is regrettable that many are diverted after graduation into other fields.

Outside the special maternal and child health clinics, women and children in the smaller communities receive almost no attention. Few women patients are seen in the dispensaries. The births are attended, in most instances, by local women without any training. Consequently the greatest number of infant deaths, during the first two weeks of life are from tetanus of the umbilical cord.

Assigning public health oriented midwives to health centers and community midwives to the dispensaries is to be urgently desired.

PREVENTIVE MEDICAL PRACTICE

Libya will never be able to build, equip and staff all the hospital beds needed to take care of the sick whose sickness could have been avoided by proper preventive medical practices. The medical personnel is not now public-health-minded, and even vaccination against smallpox depends upon parental choice. Outside of the maternal and child health clinics the staffs often indicated that preventive medicine is outside their responsibility and interest.

Preventive medicine is community oriented; yet unavoidably the physicians and other technical personnel recruited from many countries seldom can speak Arabic - therefore they encounter the almost insurmountable difficulty in establishing the community relationships so essential in this type of program. Many of the staff come from developed urban centers where the practice of medicine is quite different from the needs encountered in, for example, the Fezzan. I met one physician who came directly from his native city of Athens, and the only experience he has had was in a larger hospital there. (Incidentally, he seemed to be more part of his community than most, and is performing all his duties most creditably.)

CURATIVE ASPECTS OF COMMUNITY CARE

In a small health center hospital, its only physician has career interest in ophthalmology and he does a large number of elective eye operations assisted by the midwife. There is a qualified eye specialist in the nearby general hospital; and while ophthalmologic surgery is receiving this special assistance, this small health center hospital does in and out of the hospital only an average of four deliveries monthly. There is no well-baby clinic, no tuberculosis control is practiced, the school children are not given attention even to the treating of the prevalent trachoma.

Curative medicine and surgery are more dramatic than preventive medicine. Perhaps they are also more personally rewarding, since they fill a felt human need and the results are more easily seen and appreciated by the community. Judgment and self-discipline on the part of the physician assigned are essential to balance his efforts between the preventive and curative aspects

of his total responsibility. His vision and judgment are also tested in the manner with which he utilizes the few qualified personnel at his disposal. A midwife can certainly render greater service in a maternal and child health program than in assisting at one delivery a week and at several eye operations for pterygium.

The smaller health centers, with one to two physicians should be limiting their attention to preventive medicine, maternal and child care, the meeting of emergencies, the treatment of short term acute medical diseases. The problem cases, the elective surgery and long-term hospital needs are better handled in the larger general hospitals.

ORIENTATION OF PERSONNEL

It is recommended that all newly recruited technical personnel should be given a brief orientation before they are assigned to their respective positions. The orientation should be on three levels: 1) A brief introduction to the country's history, economics and culture; 2) A led discussion of the responsibilities and authority of the Ministry of Health, defining how much of these are delegated to the organizational elements into which the new employee is going to fit; and 3) An orientation into Libya's public health problems and the role that each employee will have to play in the public health program.

Part of good administration is the evaluation and control of compliance. This is particularly important at the outset of a new program and when the people involved in the work come from widely varied backgrounds. Therefore it is recommended that positions be made available for the tasks of interpreting the Ministry of Health's policies to the field activities and of obtaining the essential information from the

field stations, so that a dynamic and integrated National Health program on the Ministerial level may be planned.

HEALTH A VITAL PART OF COMMUNITY DEVELOPMENT

It is often forgotten that all development programs, economic or social, are for the benefit of the people. The program that is not people-oriented is sterile. Another point is that no program, directed towards a single facet, or considering a single discipline, is apt to make real progress. To combat malnutrition, the country must grow food or be able to import it from another country and pay for the cost by the proceeds from production or exploitation of natural resources. The country needs educated manpower for its economic and social development. A well-balanced community development program must consider health as well as housing, streets, utilities - and invite the participation of health authorities to contribute their special knowledge to the program.

Better nutrition, improved obstetrical care, attention to child health, prevention, control and cure of disease, may have a profound effect upon the rather low rate of population growth in Libya. Malaria is practically eliminated now from the country. A program, well-directed, is being developed in tuberculosis control - trachoma and bilharzia will be controlled, within the 'Five Year Plan. Even if complete elimination will not be possible, the incidence of these diseases will be greatly reduced. This in turn will affect the available numbers, within a healthy population, who can engage in useful and productive work. It will also change the demands upon the Health Center Hospitals.

HEALTH EDUCATION NEEDED IN SCHOOLS AND COMMUNITIES

In this report the great need for education and training has been shown many times. Libya with great foresight is devoting large funds for the development of a school system that will prepare the young generation to assume fuller responsibility in building a progressive, self-sufficient nation.

In this fine program the country needs, however, not only people who can acquire technical knowledge, but also community leaders who have knowledge and appreciation of the health needs and practices. It is in the schools that good hygienic and dietary habits can be acquired, and through the young that the parents can best be reached. Health education in the schools can influence the acceptance of immunization, health examinations, dental care.

It is not suggested that health education be limited to schools. Community health leaders can also render valuable help in all health centers and special drives, such as might be made for a mass vaccination against measles, or eradication of bilharziasis.

A great deal has been said in this report about the importance of a broad public health program and the emphasis that must be placed upon preventive medicine and the participation of the community in the programs for health. This is not in contradiction with the primary purpose for which this study was undertaken - namely, a survey of the Hospital Program. It cannot be too strongly emphasized, or repeated too often, that hospitals are part of a medical care program and cannot be considered without recognizing the role that prevention and rehabilitation play in the total problem. I feel strongly that dispensaries or clinics without beds, and hospitals without out-patient facilities, are

not whole institutions. Treatment without prevention and without regard to functions are insufficient, in the light of present concepts of medicine and public health. What use the hospitals are put to greatly depends upon the availability and functioning of the other elements of the medical care program.

HEALTH POSTS

Successful and better hospital care really depends as much upon the improvements outside the hospital as upon the care available within the hospitals. A health worker and preferably an additional midwife should be available to each community and they should be regularly supported by a visit from the health center physician. Libya's rural health services should have a change of name. A "Dispensary" is properly a place where medicine is dispensed; but this service actually provides a place where health is preserved or restored. The suggested name is "Health Post." Each Health Post should be assigned to participate in preventive medicine and not only in curative practice. Special attention will be given to the prenatal patients and the well babies; malnutrition will be looked for, especially in the children whose health will be followed up through the primary schools. Immunization and sight preservation are of primary importance in Libya.

The curative medicine copes with accidents, and the control of acute illness and infection.

The staff will be trained health auxiliaries, and/or trained community midwife.

HEALTH CENTERS

The Health Center is next upward in the echelon of health care. Besides the services provided in the Health Posts, its function is to supply continuous help,

guidance and supervision to its satellite Health Posts. The director should be a physician who will set a high standard for the Center as well as its satellite posts. He will have on his staff a Public Health Nurse or Midwife with whom he will regularly visit all the posts where patients will be scheduled for consultation. He will initiate and supervise programs of immunization, health education and on-the-job training.

The Health Centers will have beds for deliveries, accidents and short-term treatment of acute illness. More complicated cases, elective surgery and patients requiring long term hospitalization will be referred to the larger general hospital.

For a Health Center to function properly at least one additional physician will usually be needed; but where the dependent Health Posts are numerous, the population large or the communications with the district hospital cumbersome, even more than one additional physician may be needed.

There must be available a public health nurse, a qualified midwife and several trained nursing auxiliaries. There should be also included, when they become available, a laboratory technician, a health educator, and sanitarians.

For smooth administration it is essential to include an experienced Libyan administrator, with a staff of clerical and unskilled workers.

The number of Health Posts, Clinics and Hospitals foreseen in the Five Year Plan is as good a working figure as one can be had, on the basis of available statistical information. When the results of the new National Census will be available, and hospital utilization statistics will be prepared, a critical re-examination of the location, size, staffing and assignment of function for each activity should be made.

HOW THE SURVEY WAS CONDUCTED

To fulfill the mission it was necessary to acquire a great deal of background information. All the available written material on the health program, recent publications on the economic and social development program for Libya were read. Especially valuable information was obtained from: 1) The Economic Development of Libya, a report of a Mission organized by the International Bank for Reconstruction and Development; 2) Kingdom of Libya Five Year Development Plan; 3) Population Census of Libya 1953 and Statistical Abstract 1963.

Personal discussions were held with many members of the staff, of the Ministry of Health, the AID Economic Mission and with the individual members of the Division of Health of the AID Mission. A wealth of unpublished information was thus obtained.

Lack of Up to Date Information

It was apparent that certain statistical data necessary for the scientific planning and/or evaluation of the program are unavailable or are not up-to-date. It seemed essential that uniform data be obtained from all the medical care institutions, depending for their support, upon the Ministry of Health. Therefore, a questionnaire was prepared to gather the needed information. Since in many institutions the staff is unfamiliar with English, the questionnaire had to be translated into the Arabic language. The task of translation was time-consuming and difficult since many of the administrative and technical concepts used in hospital administration so far have

not found their way into the Arabic language.

Hospital Audits:

Desirable as it would have been to personally fill in the needed information, this was impossible to accomplish since the questionnaires were not ready at the time of my visits, and the available time was too short to permit the conducting a full and detailed hospital audit. Therefore, the questionnaires were left in some institutions, and sent by mail later to some others. In all Hospitals and Health Centers the visit included a complete tour of all the buildings, a random examination of the clinical and administrative records and a personal discussion with members of the professional, administrative and occasionally even with auxiliary staff. A considerable help was the fact that, with the exception of a single hospital, the writer was able to communicate with the hospital staff without interpreters.

Since the completed questionnaires are only now beginning to arrive at the Ministry, the data sought for staffing, professional performance, administrative practices, physical facilities, equipment, supplies, etc., are at this time of writing not ready to collate, and include in the report. The questionnaires, however, will be studied by the Statistical Department of the Ministry and can be later utilized by the Ministry's Planning section.

Resume of the Findings

It was intended to include in this report a detailed summary of findings and recommendations for each of Libya's three regions and within them comparable information for each hospital. The tardiness of the submission of questionnaires and the shortness of the

available time, three months in all, does not permit it. But based upon the notes made a summary of findings for the Fezzan is here given in some detail. Less complete data on some selected hospitals of the other two regions are also included.

THE FEZZAN

The Fezzan, Libya's large territory, 654 square kilometers, where an estimated 60,000 people live, is one of the world's most sparsely populated areas.

Mosquitoes and Vectors

Although the Fezzan is mostly desert sand, there are many small communities, in fertile oases. In these inhabited places there is water, and water overflow. Some of this surface water provides breeding beds for mosquitoes and snails. The Fezzan is one of the areas where malaria has been found; but now, after four years of an eradication program, the incidence of positive cases is 0.2 per hundred thousand population. Not one of the hospital physicians whom I met there recalls having seen a case of clinical malaria; and the incidence of spleno- and hepato-megaly is also low.

It is the general medical opinion, unsupported by laboratory and statistical data except in the Sebha Hospital, that Bilharziasis is widespread and much more important than malaria. According to the clinical laboratory director in the Sebha hospital, a survey of hospital and clinic patients indicates the presence of *entameba histolitica* in 100% of the tested patients. Many of the cases are asymptomatic, but acute amebiasis is common, and liver abscess is also occasionally seen. Other intestinal parasites are commonly seen, but no survey of the incidence or types has been made.

Dysentery

In Murzuk I was told, "This is the season for the dysentery epidemic, and everyone is going to have bloody stool like water." The diarrhea is accompanied by fever and prostration. No bacteriologic determination has been made on the etiology. There are few fatalities.

Smallpox

In Brak, at the time of my visit, there were two clinical cases of smallpox. (There were also cases of infantile diarrhea with symptomatology similar to the cases described in Murzuk).

TB

Tuberculosis is widespread throughout, but relatively few cases are hospitalized. The patients are treated ambulatorily. There is no laboratory confirmation of diagnosis. Only a fluoroscopic examination of the chest can be made. There is no case-finding or vaccination program in effect at present. At one time, an abortive program was started in Sebha.

Malnutrition

Malnutrition of the entire population is generally commented upon. It seems that malnutrition is both quantitative and qualitative. Severe protein malnutrition is common among children. It is noteworthy that infants are breast-fed up to two years. They receive no additional complementary feeding, and upon abrupt weaning they are immediately given the highly seasoned Libyan diet with excessive starches. Consequently, while infant mortality is usually due to respiratory infection during the first six months of life, death is thereafter due mostly to intestinal causes.

It was sad to see about a ton of powdered milk in the storeroom of the Brak hospital, where it has lain unused for years. The Director of the hospital stated that powdered milk is unacceptable to the population. The French physicians in Sebha said the same. I was told that meat consumption in the average family is only occasional -- and then, minimal. Native tomatoes are available but "Only the rich can afford them". The main diet is grain, oil, and dates.

Eye Diseases

Eye diseases are responsible for a large patient load both in the clinics and in the hospitals. Trachoma is very common and while in its acute stage it is treated in the out-patient departments, the sequelae -- scarring, pannus and secondary glaucoma -- are in-patient surgical problems.

A large number of pterygiums are seen, which is to be expected in a population with chronic exposure of the eyes to dry sandy wind. An unusual number of strabismus is also encountered.

Since there is no professional obstetrical care, the newborn infants receive no prophylactic treatment for prevention of the ophthalmia of the newborn.

Maternity Care

There is no pre-natal care in any of the established institutions. In the hospital and clinic of Sebha an occasional pregnant woman may receive a single examination, but no systematic program exists. The rare patient who comes to the hospital to be delivered will have obstetrical attention by the staff midwife, who will also do home

delivery if called. The midwife will apply forceps. In Kurzuk the midwife told me that she can even use a Kelland forceps.

The physician is called in case of a Caesarian section only, which in some instances is done in the small community hospital. Where the local physician is not prepared to do surgery, he refers the patient needing surgery to Sebha.

The community hospital midwives do an average of five deliveries a month, and have no contact with the practical midwives of the community who do the bulk of the deliveries. There is an unknown high incidence of preclampsia. Post-partum hemorrhage is the most common complication of the deliveries. Sepsis is rare. One of the physicians said that the largest number of maternity cases coming to the hospital is because of retained placenta.

I could get no information on stillbirth and maternal mortality from hospital staff. Since no vital statistics are kept, it is impossible to arrive at a reasonably accurate estimate.

Child Care and Children's Diseases

Only one of the midwives said that she gives advice on the care of the newborn infant. There is no well-baby clinic, no pre-school or school hygiene program. There is vaccination against smallpox, but there does not seem to be any system for seeing that every child gets vaccinated. Exanthemata are universal, but rarely seen in the clinics and hospitals. Measles is a serious disease with high mortality in the young age group. No vaccine has ever been used against measles/ ^{in Libya.} Tetanus of the newborn is rarely seen by the hospital staffs.

Special mention must be made of the observation that every hospitalized child has his mother, and at times his father also, with him. In Sebha I saw several mothers, each sitting cross-legged in a bed alongside her child's bed. They did not contribute to the care of their infants, or help in the chores of the hospital. The doctors say "No woman is willing to turn a hand outside her own home.....in fear of losing status." This practice requires two beds, at least, for every pediatric patient.

A Variety of Ills

Typhoid fever is endemic and generally not severe. Typhus fever is rarely seen; but an unidentified -- probably rickettsial -- disease, with symptomatology similar to Rocky Mountain spotted fever, is seen. (Camels are covered with ticks.) Pellagra is not seen. Coronary disease is very rare. Diabetes is common and serious, but coma is rare. Leprosy is common. Cases are isolated in the hospital, but no community follow-up is practiced. I was unable to gain a clear-cut impression of the social or economic importance of this disease.

Venereal disease is not common, although gonnorrhoea is seen; but contacts are not followed up. Syphilis is now almost never seen; but tertiary complications, cardiovascular and nervous system diseases still come under observation.

Mental disease is not numerous, although psychoneurosis in both sexes is common; but brief hospitalization, in the Sebha General Hospital, is adequate for the handling of most cases. The physicians feel that there are two hysterical women to one man; and the

segregated social position of the women is the major cause of the cases, they observe.

There is one single dentist available in the Fezzan. He is attached to the hospital clinic at Sebha. The equipment is minimal and his drill out of order. The scope of his work is limited to extractions, silicate fillings. He does no prophylaxis or prosthesis; nor is he involved in the treatment of fractures of the jaw.

In Brak last year 40 cases died of scorpion bite. The doctor complains that he has no antitoxin and no working refrigeration, with which to preserve antibiotics.

Hospitalization

Since statistical data on hospitalization was unavailable to me at the time of my visit, my impressions on bed utilization are based on the information of the moment, and the comments of the staff.

Male patients predominate; there are few obstetrical or pediatric patients; eye cases are surprisingly high. Patients stay in the hospital considerably longer than is customary in western countries, although the patients are not kept in absolute bed rest any longer than in hospitals where the patients' stay is much shorter.

The explanation may be that patients, none of whom pays for his care in the Fezzan, are reluctant to leave the comfort and food of the hospital; and that distances, and the lack of easily available public transportation, delay discharge.

There is another professional administrative factor. Definitive care is often delayed by the slowness in gathering scientific information such as laboratory data and x-ray examinations upon which a diagnosis is established, the treatment started, and results evaluated.

Each hospital physician in the smaller community health-center-hospitals, and a designated member of the Sebha hospital staff, make periodic visits to a number of satellite health posts, each manned by pragmatically trained health workers. All health care is given by these latter persons. Some are quite well trained by former French health authorities. They may send problem patients to the hospital, or ask for an emergency visit of the physician or midwife.

Drug and Nursing Supplies

All institutions visited were well supplied with drugs, including antibiotics; and the ordinary nursing supplies. It is impressive -- the amount of obsolete and useless material that has accumulated in each activity. I was told by each person interviewed that they are often supplied with items they do not require, and that the drugs critically needed may be issued in small or inadequate quantity and at times with undue delay.

The Hospital Budget

There is no participation of the hospital staff in the preparation of the budget.

A Clinic for Sebha

Currently the INAS is in the process of establishing a clinic in Sebha. There are two physicians in town, and equipment is being assembled. The physician who is to remain in Sebha says that so far he has seen no patients. His present work consists of filling out many forms and documents.

Out-Patient Activities

Utilization of the out-patient clinics is increasing in all parts. The recording of patients, and pertinent diagnostic and treatment information, are entered only in a ledger, and no continuity of observation exists. Each patient is given a new number every time he comes to the clinic.

Often a single physician has to see as many as 30 patients during a session of two hours. Add to this the problem of his shuttling between the male and female facilities (since the sexes must be completely separated), and it leaves hardly more than one minute of the doctor's time for each patient. Dr. Robert, a very knowledgeable French physician, says that most cases are so trivial he can devote enough time to the patients who really require attention.

Equipment in all clinics is scant and obsolete. In some instances, especially in Sebha, there are well-disciplined auxiliary workers, with years of experience, but these are being gradually drained away, since oil companies and the social insurance system pay much better wages. No replacement system has been set up.

Some Observations on Hospitals Visited

SEBHA HOSPITAL

Sebha Hospital was planned 10 years ago for 80 patients, and now has over 200. This expansion is due to the fact that Sebha

is now the capital of the Fezzan and that women are gradually beginning to seek admission. This is the only real general hospital in the Fezzan.

The buildings and grounds are generally well maintained and give a good first impression.

There is a Regional Health Director who is a Libyan, not medically trained. He has the responsibility for the administrative coordination of the territories medical and public health activities. He does not call upon the Medical Director of the hospital to assist or advise him in his work.

The Director of the hospital is a French government physician, Dr. LeChat. He is assisted by 8 physicians -- 7 French and 1 Greek. Attached to his staff is the only dentist in the Fezzan. The staff members each have a two years' contract. Most of them intend to return to France upon termination of their present assignment.

In addition to the physicians, there are 3 European midwives, 2 professional nurses and 4 Libyan practical nurses. There is no radiologist but they have an excellent Libyan technician, trained on the job, who has been offered double his salary by the INAS and will probably leave. There is no anaesthetist; therefore much of the surgery is done under local or regional block anesthesia.

The laboratory is under the direction of a physician specialist who has trained his local staff and is carrying out both the clinical laboratory tests and the investigative work with relatively simple equipment. This is the only place in Libya where modern bacteriologic work is done. It is lamentable that no histopathology equipment is available for the study of the tissues removed at operations, and that no autopsies are performed.

The spaces assigned to patients' care are antiquated, and the housekeeping leaves much to be desired. The clinical charts reflect good medical attention, but only the most essential information is recorded.

The operating room is rather primitive; but I observed the techniques carried out and was impressed by the adequacy of the controls.

The sterilizing facilities are inadequate.

The delivery suite is extremely poor. There are only 10 deliveries performed each month -- but there are 3 midwives. There is no effort to train or in any way assist the empirical midwives who practice in the community.

They have two good diagnostic x-ray units with horizontal and vertical fluoroscope and spot device. The caliber of films is good. The interpretation is left to the clinicians.

Kitchen and laundry facilities are very poor and inadequate.

The pharmacy is small, equipment is poor, but the storeroom is quite large and contains a great quantity of drugs and material. There is no perpetual inventory. This activity distributes all medical stores to the outlying hospitals and health activities.

There is no organized maintenance activity.

BRAK HOSPITAL

Brak is surrounded by areas with collections of stagnant water; no mosquito larvae were observed.

The Director of the hospital is Dr. Chronopoulos. His wife is the hospital midwife. In addition there are 7 local nurses.

One has a good deal of practical experience and acts as chief nurse. There are two female "nurses," one of them very intelligent. I interviewed her. She is a child, 12 years old; has had third grade education; would like to go to Tripoli for further study, but her family will not permit it because "no girl of good family can work outside her home."

The dispensary is an old building with running water and electricity. Equipment is adequate only for the simplest general practice. There is a microscope, and elementary laboratory equipment. It appears that it is being used somewhat. The supply room is neat, and records are kept of the patients seen and drugs dispensed.

The hospital is comprised of a number of dark, windowless rooms, currently being painted. There is no toilet facility, no water. The kitchen and laundry do not deserve to be so named. The director is making every effort to make physical improvements. There was a recent smallpox scare and the entire population of the community received smallpox vaccination.

The Hospital in Hun is similar to the one in Brak in architecture, equipment, staffing, and responsibilities. There were no activities observed that indicated any effort to make improvements.

Murzug Hospital is a relatively new set of buildings, nicely maintained with excellent equipment and luxurious amount of supplies. It is regrettable that the laundry, kitchen, and laboratory equipment have been removed. The professional work done in this excellent physical environment was not impressive. The type of selective eye surgery that constitute the major portion of the

hospital's pride, in my opinion, would be referred to Sebha where a qualified ophthalmologist is available. The professional midwife, attached to the hospital, gave the impression of both professional and administrative conjecture. It is thought that with encouragement and guidance she could organize a prenatal delivery service and well baby clinic which are the functions for which she was contracted.

Tripolitania General Hospital

This is the country's largest hospital. It is a true hospital Center. The Acting Director is an extremely well informed and effective individual who knows this sprawling institution of a multitude of large and small buildings well. The hospital has some splendid buildings and equipment beautifully maintained and some so old and poor that they should be torn down. The Isolation Section falls in the latter category. In spite of enormous crowding of bed patients and difficulties, the professional and overall performance of the hospital staff is impressively high.

OBSTETRICS

The obstetrics-gynecology department is the worst crowded of any observed in Libya. A single well-equipped operating room serves to do an average of 10 operations a day and a single poorly equipped delivery room, into which are placed three delivery tables and little else, serves for the delivery of 900 patients a month. In each obstetrical bed there are at least two mothers and their newborn. In some beds there are three. It is urgent that an addition be built to relieve this dangerous crowding and at the

same time initiate training for midwives. At present student nurses from the Ministry's school for nurses are given practical instruction and experience on the wards.

ISOLATION

The isolation unit is also dangerously crowded and lacks all types of nursing and medical equipment. It is poorly staffed with an only physician and few nursing employees. No possibility exists to carry out the simplest treatment and nursing procedures. This section should be closed just as soon as provision is made for new and safe facilities.

PEDIATRICS

The pediatrics section is housed in an ancient building and its administrative and professional aspects reflect the environment. An entirely "new look" is desirable. It is hoped that current construction will ameliorate the "shocking" conditions.

RADIOLOGY

The x-ray department is carrying a large patient load with few personnel and with equipment that would improve by standardization and in some instances replacement. But in the diagnostic field, no urgent needs exist. However, the single therapy equipment was out of order at two widely separated visits, during a month of observation. These interruptions in the treatment of the cancer patients preclude good results. The equipment is not powerful enough and is ancient. I believe it is urgent that adequate deep therapy equipment be obtained. It would be desirable to build a special addition to the existing facilities to house a modern cobalt bomb equipment

with rotating head, with adequate screening, a physics laboratory, a shop for preparing protective shields, a patient's restroom, locker rooms and offices. Here also could be included a radio-isotope laboratory. Radio-isotopes are today used routinely in all modern hospitals for diagnosis and control of treatment in thyroid disease, bone tumors, neurologic diseases, polycythemia vera.

CLINICAL LABORATORY

A great hospital such as this must have an intramural clinical laboratory with a competent director who forms an integral part of the hospital staff, always ready for consultation of the staff physicians and thoroughly versed in the clinical problems, the solution of which is so dependent upon the availability of a reliable laboratory.

Finally, it is suggested that consideration be given to the establishment of a recovery room near the operating suite, where post-operative patients could be given constant professional attention. An intensive treatment section might also be given consideration.

THE EMERGENCY TRAUMATIC HOSPITAL, TRIPOLI

It functions as the busiest general surgical hospital in the city, assuming clinical responsibilities far beyond the purpose for which it was created. It is well-administered and has good patient control. It is extremely crowded with multiple-bed occupancy and many patients are accompanied by mattresses laid on the floor. There is an active in-service-training program for the nursing employees.

Perhaps the redefining of the services the hospital is to provide will lead to re-refining of the services the hospital is to provide will lead to reduce the crowding. I believe this hospital should be discontinued when the new General Hospital in Tripoli has been built. The fine staff and records could be transferred and form the basis for the new hospital's Department of Surgery.

Since, however, the hospital will have to function for at least three years more, urgent attention should be given to the establishment of a modern laundry or to obtaining laundry services from an outside source, by contract with a commercial laundry, or from the Tripoli General Hospital, and

Food service facilities are in need of additional space, equipment and personnel.

PSYCHIATRIC HOSPITAL - GAGARESCH, TRIPOLI

A splendid new institution directed by an enthusiastic and extremely well-informed psychiatrist. To make this an outstanding institution in all respects, the following additional facilities are recommended:

1. Build an out-patient department where borderline cases can be treated without the need of hospitalization.
2. Add a pediatric unit with facilities for schooling of the children.
3. Enlarge the scope of the occupational therapy to include the preparation of patients to follow some useful occupation both in the hospital and after discharge. In connection with this activity one might consider the establishment of a

4. Consider the utilization of some beds as a night hospital, permitting convalescent patients to work during the day in the community, but return to the sheltered environment of the hospital for the night until he accustoms himself to full independence without psychiatric supervision.

LEPROSARIUM

It is a nice building with pleasant grounds. The physical facilities are good. It has a splendid kitchen and excellent laundry with capacity many times greater than the size of this hospital warrants. The housekeeping should be improved.

The patients generally care for their own needs with a physician only periodically visiting. The hospital supply needs are reasonably met.

1. In keeping with modern trends, expansion of out-patient care is recommended.
2. Improvement on the availability of diversional activities, the inclusion of a library, with daily newspapers are desirable.
3. The present workshop is minute. Establishment of a sheltered workshop is recommended.

THE VENEREAL DISEASE HOSPITAL

Does not deserve the designation of a hospital. It is performing well the important and useful function of medically controlling the licensed prostitutes, but in-patient facilities are unacceptable.

It is recommended that the functions be transferred to the Gynecology Department of the Tripoli General Hospital or the new Police Hospital.

BUSETTA TUBERCULOSIS HOSPITAL

This consists of several detached buildings in a pleasant surrounding. The hospital is quite well-maintained and the patients look well cared for. There is instruction of student nurses in the care of tuberculosis patients and isolation techniques which are unfortunately not in keeping with western standards.

There is a 24-hour coverage by a physician and professional nurse. The calibre of professional work, including the clinical charts, is good. Plans are made for the carrying out of laboratory work, pulmonary function tests and Broncho-spirometry. The delay is occasioned by the slowness of procurement of equipment.

A laundry and an operating suite with surgical wards and administrative offices are being built, but even while awaiting these needed improvements, the hospital urgently and critically needs a good autoclave and dishwashing-sterilizing equipment.

MISURATA HOSPITAL

An excellent modern building with complete facilities for a small general hospital. Only a few weeks prior to the visits, a new Chinese group of physicians and nurses took over the management, their work cannot be evaluated. It is remarkable that a modern x-ray machine in good condition is unused for months. The Kitchen and laundry, under the able management of an order of Nuns, are excellent. The administrator had his records well in hand, and

shows initiative in providing new administrative services.

The tuberculosis, obstetrical and pediatric patients are housed in the old portion of the hospital which is dark, poorly ventilated, and crowded. Attention to housekeeping in these parts also needs improvement.

ZUARA

This community has a good Public Health Clinic, without beds, a maternal and child care clinic and a hospital. The clinic is attended by an average of 100 patients daily. Currently no preventive medicine is practiced outside of smallpox vaccination in schools. Polio vaccination was conducted in 1963, but only few persons received all three doses. The greatest public-health problem is tuberculosis. Summer diarrhea, trachoma, parasitosis, malnutrition, and hepatitis are very common.

The relationship with the newly opened hospital is good, but no pediatric cases are admitted to the hospital, therefore, sick children still have to be sent to Tripoli. No laboratory has been mounted and technician assigned.

Hospital

The building is a modern 40-bed hospital that has all the elements for developing into a good functional unit after it is fully staffed and equipped. Most glaring needs are for staff and laboratory. There is at present only one physician assigned who cannot possibly do all the work required. There are four trained and four untrained nurses, kitchen staff, an excellent maintenance man, and 70 laborers to support the doctor.

The x-ray equipment consists of a fluoroscope which is, in my opinion, a poor choice. The laundry machine has the excessive capacity of 100 kg. laundry per hour, but no dryer or flat ironer.

Most important, urgent steps required are: 1. To improve the staffing. 2. Provide facilities for the admission of children, 3. Install laboratory, and 4. Assign a laboratory technician.

Zavia: Is the population center for 36,000 (?) people. It is served by a Health Center and an 80-bed hospital. These two are located within a few minutes from each other. There is also a health post just outside the center of the community. There are additional dispensaries serving the area.

The Health Center physician, who is the district health officer, has on his staff an ophthalmologist, a chest physician and each a part-time pediatrician and dentist. There is an adequate number of nursing employees.

The public health problem, according to the director, is a 10% incidence of tuberculosis, trachoma, summer bloody diarrhea of children, almost universal amoebic colitis, rheumatism with heart disease, peptic ulcers. Infant mortality is estimated at 40% during the first year of life.

There has been a great and steady improvement in the economy of the community because of the added employment mostly in governmental positions. Also, there is a building boom in housing.

The patients are mostly treated by the nursing staff. Many patients are referred to the hospital for consultation. The dentist does only extractions. There is no preventive medicine practiced.

Vaccination against smallpox is available to those families who want it. The Mecca-bound pilgrims were being vaccinated by the Sanitary Inspectors at the time of my visit. It is not, in my opinion, the function of the Sanitarians to engage in vaccination when nursing employees are available. The polio vaccination of 1963 was started, but only the first of the three doses was administered. No school health program is carried out.

The physical plant is not well maintained, and a good x-ray apparatus is not in functional order.

Prefabricated Dispensary

One of the dispensaries is a prefabricated building that was recently erected. The outside appearance is excellent, but inside it gives the appearance of long continuous neglect. The arrangement of space, the medical equipment and furniture are good, and it is a disappointment to see them so little and so badly used. The floor should be covered by rubber tile or at least painted.

The Hospital

The hospital is a modern building quite well maintained, equipped and staffed. There is accommodation for 80 patients. The group of physicians has only recently been assembled, therefore, their work cannot be evaluated yet, but the impression is that patients here will receive good care.

A tuberculosis clinic has been started only a few days before the visit. It is gratifying that this activity is within the hospital.

Jefran Hospital is a modern structure in a beautiful location. At the time of the visit, Tuesday morning, there was only one physician, out of the seven on the staff, on duty. The administrative offices were locked and the secretary was unable to enter, since the chief clerk and almost all the professional staff were on their weekly trip to Tripoli.

The hospital beds are crowded into small spaces and there is hardly ever a vacant bed. The equipment is good and the clinic records indicate that the patients receive good medical attention. The patients seem to come from long distances to be taken care of by the medical staff.

There is a small recovery room, not near the operating room, with two post-laporotomy patients who were operated on the day before. One had an intravenous infusion that was clogged. There was no nurse in the room. The room had not the usual facilities expected in a recovery ward.

The Pediatrics service was unusual since no mothers were present and all the children looked well-taken care of.

The operating room was set up for an emergency operation. No surgery was foreseen.

There are good laundry facilities but the flat ironer is out of order and is used for storage.

The housekeeping leaves much to be desired.

Nalut

After arrival at this distant community at 6:30 p.m. it was a pleasant surprise to find the only physician at the "Ambulatorio" which is located in a good building about one kilometer from a new

hospital. The building is being painted and generally improved. There is a 24-hour watch kept in this dispensary. The equipment is adequate.

The physician is Spanish. He has an additional degree in dentistry. He considers parasitosis, malnutrition, trachoma, summer diarrhea and broncho-pneumonia, in the order named, the medical problems of the district. He visits the school and the few small outlying ambulatorios.

Although/^{he}receives monthly medical supplies that he in turn distributes to the dispensaries, these are inadequate in amounts for the material he most needs. He has been unable to obtain plasma, which in the absence of blood, is often needed.

The same physician is also responsible for the new hospital that was dedicated on 24 December 1963 and began admitting patients in February.

Prefabricated Hospital

The hospital is an elaborate prefabricated structure. It is to accommodate 57 patients. Much of the equipment is not yet installed. There is only a small boiling sterilizer in operation; no autoclave was seen. The director has no inventory of the equipment. There is a serious leak in the plumbing that will cause irreparable damage if it is not fixed rapidly. The equipment and the furniture now installed are excellent. The flooring, however, is untreated pine, that will be impossible to keep clean and already shows some splintering. It should have a suitable covering or at least be painted.

This hospital deserves the rapid assignment of at least another physician, a mid-wife, a laboratory technician, and adequate number of nursing employees.

Garian is 70 kilometers from Tripoli and is claimed to be the center of a population of 60,000 inhabitants. The people are poor, many living in earthen caves. There is a great prevalence of tuberculosis, trachoma, parasitosis and malnutrition, especially in children. Enteric infections are endemic, with great exacerbation when hot weather sets in. Drinking water is available, but not tested. Births are only registered when one of the two midwives attend at an estimated 30 births a month. Deaths are also only registered sporadically. In the summer of 1963 there was an epidemic of measles with "about 30 deaths," an estimated 6% of the sick.

In Garian, there is a Health Center. The building is good. The Director is the only physician. He has on his staff what is called there an adequate number of trained auxiliary personnel, of whom he speaks well. There is a trained attendant on call throughout the 24 hours. They see between 100-120 cases every day. There are many accidents. The Center sees at least one fracture a day. In addition, there are injuries resulting from fighting in boundary disputes. Patients are sometimes referred to the hospital for consultation.

In the Center there are available two wards each with three beds. They keep patients for short stays or until they can be transported to Tripoli. The local hospital only opened recently.

The director of the Center is also the health officer responsible for sanitation, market and food inspection, water supply, epidemiology and vital statistics. He feels that the staff for these latter responsibilities is unreliable and he is not able to regulate or control their work.

Besides the work above described, he also has the function of coordinating and supervising the outlying 10 satellite dispensaries. Each of the dispensaries has a male dresser, but only four of them are experienced. The accompanying diagram indicates the approximate location of the dispensaries. Much of the road is unpaved desert. The physician is expected to visit each periodically. Garian also has a Maternal and Child Health Clinic. It is located in a separate excellent building, not far from the Health Center. A nurse is in charge, assisted by a trained Libyan midwife and a maid. The physical facilities are good. There is an average of 30 sick women and children who visit this activity each day. There is no organized pre-natal or well-baby clinic. No program of vaccination, no milk kitchen or demonstration of how powdered milk is prepared. The Health Center physician visits the clinic daily. Both the physician and the nurse claim that they would like to have pre-natal clinic vaccination and a school health program, but between the population's reluctance to accept and the "inability" to obtain vaccines from the Medical supplies, they are discouraged and consider the situation "unalterable."

Garian has a new hospital that was only inaugurated recently and a physician had only been assigned 9 days prior to my visit. The hospital is planned for fifty beds. At present only two wards

are operating, with a skeleton staff. The hospital is directly across the street from the Maternal & Child Health Center.

Presently it is also planned to inaugurate a very necessary tuberculosis clinic. The physician and staff will work in Garlan and Jefren, another hospital city, on alternate days.

Certainly all these health facilities, in existence or those projected, are badly needed. Even with optimum utilization of the now available staff, much of the work can only be accomplished in a superficial manner. Now there exists no formal organic relationship between the four elements that have much overlapping of interests and responsibilities. Fortunately personal friendship and resulting good will avoid complete isolation.

Can it be questioned that each of these activities renders needed medical care, that each staff has much the same basic professional background, that they need identical or at least similar equipment, drugs and other supplies? Do they not work for the same population and the same Ministry of Health? Does it not make good sense to place them in a single institution where they could assist each other by contributing their special knowledge and skill more fully; by using the equipment and supplies that are pooled; by reducing the travel time from one place to the other - not only for the health staff, but the patients also; by delegating the administrative details to one administrative staff instead of several? Can it be gainsaid that the patients would fare better or that the Ministry's function of dealing with a single instead of with four distinct organizations would be more efficient, simpler and cheaper?

CYRENAICA

In Benghazi there is still a regional organization. The Director was out of town during my visit, but I was given able and generous assistance by his staff.

There is a statistical office that is said to have vital statistical information from seven governmental hospitals and a summary of health reports from the Municipality of Benghazi. A quick inspection indicated a 34% infant death during the first year of life, and 47% in the first four years of life.

The regional office administration is in transition; changing from an independent organization into one depending upon central direction from the Ministry of Health in Tripoli.

PERSONNEL:

All personnel actions are centralized in Tripoli, although there is a branch office of the Civil Service, that could make routine local appointments more expeditiously especially in the unclassified and lower echelon employees. Except for the old personnel records; all others are now kept in Tripoli. Expatriates are not form part of the Civil Service System.

MEDICAL STORES:

There is a regional depot that maintains an estimated six months inventory and distributes an estimated three months inventory to the hospital. They bring the latter up to date monthly. The supplies are not issued against an established deposit of funds. Requests from the field are "critically" revised. Now they receive their own supplies from Tripoli. At present the system is not

functioning smoothly. For example, they received x-ray films for which the regional activities do not have proper equipment to use. They have L\$100 a month to make emergency local purchases. The depot seems well stocked, but there is a great deal of equipment and parts that are obsolete and should be "surveyed" out in order to provide space for needed stores. The budgetting is a central and not a democratic activity. There is great and urgent need for standardization.

The transportation, maintenance and repairs depend upon other ministries.

INAS AND THE MINISTRY OF HEALTH

Many of the Ministry's personnel also work for the National Insurance System (INAS) and the Ministry is using the services of one of the INAS Clinics for cardiology. The insured patients are hospitalized in the Ministry's hospitals and the INAS is billed, but if a patient goes directly, unREFERRED, to the hospitals, then no charges are made against INAS.

BENGHAZI

There are three well equipped Maternal and Child Care Clinics; a school for Maternal and Child Care Assistants; a school each for Nursing Assistants and Laboratory technicians; and a now not functioning school for Health Assistants. These were visited but no comments will be made here.

The Seventh Day Adventist Hospital was also visited. It is an impressive institution where the high standards are being improved by addition of new professional workers in many supporting fields.

The World Health Organization supports a pilot project on tuberculosis control. This group was visited and their work was briefly observed.

BENGAZI GENERAL HOSPITAL

It is a large, multi-building institution, ably led. Although the hospital is old and many buildings are obsolete, generally the hospital is well-maintained. There is an administrative office hidden from the busy part of the hospital.

The clinical work as well as housekeeping of the medical, pediatric and dermatology sections were impressive.

There is a newly appointed General Surgeon who says that without a blood bank and recovery ward with adequate nursing; it is dangerous to do major elective surgery; therefore, until such time that he will obtain these services; he will refrain from that type of work. I agree with him. There is a single anaesthesiologist who should be given assistance to organize a department. The other surgical services are under nominal chairmanship of the Director of Surgical Services. Ophthalmology is a remarkably well organized, busy service.

There is no intramural laboratory service. The central laboratory reports its findings quite rapidly, but only the routine laboratory tests are available. There is no histo-pathologist available which is a major shortcoming of the hospital.

TUBERCULOSIS

The tuberculosis department is across the street from the rest of the hospital. The buildings are old, but recently new services, such as a kitchen and storerooms have been added.

The department is headed by an Argentinian chest physician who is extremely well prepared to carry out psychologic studies based on broncho-spirometry, residual air and ventilation studies. Yet not only is equipment for these refinements missing, but all the equipment and nursing supplies are marginal. The acute and chronic patients are mixed in crowded spaces.

It is recommended that at least an additional physician be assigned to the staff and provide the department with the needed modern equipment.

Elsewhere, the need for additional beds and the solution on a short-term basis, is discussed.

RADIOLOGY

The x-ray department is ably led. There is also a very knowledgeable chief technician who does some preventive maintenance. This is the only place in Libya where the staff wears a dental film badge to check x-ray fallout. The caliber of film, the controls and filing are also good. The equipment is reasonably good, but soon there will be a need for replacement of old machines.

There is only a superficial x-ray therapy machine available and it is located outside the department. It is under the control of the Skin department which is also its exclusive user. No radium and no radio-isotopes are available. The director of the radiology is experienced both in deep therapy and the use of radio-isotopes.

OUTPATIENT DEPARTMENT

The outpatient department is located in a separate building that houses the admitting office and the emergency service that

has a twenty-four hour physician coverage. The space is inadequate for the busy service and is poorly equipped. Each medical specialty has a clinic that is covered in some instances by the staff that attends the inpatients and in other instances by physicians without hospital assignments. It seems that each patient receives a new number every time he comes to the clinic and in every new department he visits.

CLINICAL RECORDS

The hospital clinical records vary greatly in quality and completeness. Although there is a central record room it appears that the departments consider the charts as their private property.

PHARMACY

The pharmacy is the best equipped in Libya. It is well stocked and there is good stock control. There is also a good deal of manufacturing of the commonly used medications. This pharmacy could be used for indoctrination of aids for smaller hospitals.

FOOD SERVICE

The kitchen is small and poorly equipped. It is managed by Nuns and is reasonably well-maintained. There is no budgetary control. They are not prepared to serve therapeutic diets. The food distribution is a major problem.

LAUNDRY

The laundry is the most primitive in the country. The washtubs and the drying are in open air, some of the laundry was drying on the ground. There is no warm water. During some seasons the laundry

never dries.

There is a newly-built laundry building that does not seem to have a functional layout. The machinery is not yet installed. The hospital does not have an inventory of the expected equipment. The Nun who will be in charge of the laundry is completely unaware of the new construction. She has no experience in machine laundering.

NEW HOSPITAL IN BENGHAZI

I was told that a decision has been made to build a new general hospital in Benghazi. It is hoped that with the opening of a new hospital, the bed census of the present crowded hospital will be reduced 35%.

It was hinted that the new hospital is going to be built on the Baida hospital plans. This would be an irreparable error since the Baida hospital lacks even the semblance of a modern functional layout.

ADJADABIA

The district has about 30,000 population. The public health problems are tuberculosis, amoebic dysentery, gastro-enteritis, tetanus. There are also occasional cases of malaria.

HEALTH CENTER

Small isolated building with modest equipment, the amount of work is not excessive. Across the street is another building about equal in size for the maternal-child care program which was at the time of the visit not functioning. Also, in the same building were housed the sanitarians whose work and housekeeping

were not visible.

HOSPITAL

The hospital is a large building in the center of the town. It is a converted hotel that is programmed to accommodate 40 beds, but at the time of the visit there were 50 patients. There is running water, but it is not suitable for drinking. The potable water is carted from a deep well. The x-ray and the autoclave both are out of order. A new x-ray machine was recently installed, but the technician was unavailable and he has the only key, therefore, it was not seen. The general housekeeping leaves much to be desired. The primitive kitchen was preparing good food in relatively clean environment.

There is an out-patient clinic tent catering to the needs of men and women at different times. It is a busy place with 150 visits made daily.

The hospital tents are adjacent. There is severe crowding and many beds are occupied by two patients. In spite of difficulties there is obvious attempt at organization and patient care. Each patient has a clinical history.

The sanitation is difficult, but there is running water and septic tanks.

The food and laundry services are provided from the old psychiatric hospital which has been evacuated after the earthquake. The building was inspected and it is thought that it could be repaired to serve again as a hospital.

Much equipment was seen in the storerooms that could be made usable. There were several autoclaves that only need washers to

functional.

The old tuberculosis hospital, that has also been evacuated and is unused at present, was inspected. The damage caused by the earthquake is minimal. These buildings are, with some repairs, usable.

TOBRUK

The staff consists of three general practitioners and an otologist an eye specialist and dentist. There is a physician assigned also to one of the distant ambulatorios. The district has an estimated 40,000 population. Many Egyptians and emigrants come for hospital and clinic treatment from across the border.

The ambulatory clinic is adjacent to the hospital and it is attended by the same staff. It is well equipped and well run.

The most impressive is the dental clinic which is well equipped and apparently the entire spectrum of modern dentistry is available to the population. It is the outstanding dental clinic visited in Libya.

THE HOSPITAL

The hospital is spacious, well-converted from a school. But the hospital was planned for 135 beds, and the current census is 210.

Equipment, staff and clinical work are good. Community relations are also good. There is no laboratory but this need is met by the Derna Hospital.

It would be desirable if the excellent Director could be paid enough to devote his time exclusively to the hospital practice.

DERNA

The hospital is an old multi-pavillion structure. There is a new ward recently built and an operating room and suite is under construction. The facilities are antiquated, there is lack of much equipment. Kitchen and laundry are not adequate. The housekeeping and maintenance need attention.

The medical staff is good, but they badly need a general surgeon. At present surgery is done by general duty physicians. There are specialists in ophthalmology, urology and oto-laryngology who are not fully occupied. The nursing and supporting services are rendered by a group of Nuns who are said to be all professional nurses.

The professional work is manifestly well done, although the clinical charts do not reflect all the efforts that are expended. The clinical laboratory is excellent. It renders service also to the hospital in Tobruk.

The prevalent disease, everywhere else, is tuberculosis. They encounter difficulties in transferring these cases to Shahat where they do not admit cases that have already been treated. Amoebic dysentery mostly mild with rare liver complications. Bacillary dysentery, intestinal parasitosis are very wide-spread with multiple parasites. Prevalent is also "Q Fever" requiring an average two weeks of hospitalization. Typhus fever, tick and louse born, is quite common. Poliomyelitis is seasonal with residual paralysis. There is a mild endemic encephalitis that erupted into an epidemic in 1960 and again in 1963. In the last epidemic, there were 25 cases all occurring in children between

the ages of 2 and 8. There are occasional cases of clinical malaria. These cases are reported to the Malaria Eradication Service, but as far as the staff knows, are not followed up epidemiologically.

There is need for surgical support and equipment. Better kitchen and laundry are needed. It is regrettable that no training of Libyan personnel is carried out.

I believe that the construction of a modern hospital, the kind proposed for Sebha, would be more advisable than the additions and modifications in the existing inadequate structure.

The two physicians are friends and do a prodigious amount of work which includes some for INAS. They feel that with the exception of the administrative assistant and the senior nurse, the staff is incompetent and unreliable.

A building quite far from the hospital was shown to me as a possible tuberculosis unit. In my estimation, this building is completely unsuitable for the purpose; nor could it be made adequate. I would consider it a grave error to put patients there.

MASA

The hospital is located in the town and occupies several old buildings. It was not built for a hospital. The pediatric section is on the ground floor of a school building which is hardly ideal. There is no school hygiene program. The obstetrical service is busy with a midwife in charge. There are 120 beds in the hospital with only few vacancies. Average patient stay is 8 days. The facilities of the hospital are limited, but what they

have is reasonably maintained.

The medical staff consists of three physicians. Until recently, there was only one. A young physician resigned on the day of the visit because the newest ~~addition~~ addition on the staff was given a yearly salary L1200 in excess of his own.

BAIDA

There is a busy clinic located in a rented apartment. The physician and the two nursing employees were fully occupied. The equipment available is only adequate for the simplest ambulatory work. No preventive medicine is practiced.

HOSPITAL

An impressive structure. At present unequipped, but completely ready for the installation of equipment. The impression I gained when I went through the building is that this is a 250-300 bed hospital. I was surprised to find that it is rated as a 500-bed hospital. There is no functional unity, no provision for nursing control. This will always be a hospital that will cost much to operate and will never give satisfactory service. Perhaps after it has been operating for a few months, one could begin to think of some modifications to improve the most glaring faults.

SHAHAT

The Shahat Hospital is an impressive structure in a beautiful setting. It is the only chest surgical hospital, at this writing, in Libya. It is well-equipped, except for the lack of multiple x-ray illuminators, dish sterilizers and an inadequate laundry.

It is disappointing to see a splendid hospital with good

patient care and control not have tissue pathology, pulmonary function tests and clinical records.

EL MARJ

About a year ago an earthquake destroyed the major part of the community and killed an estimated 400 people. The population moved to a tent community. Some 15,000 people still live in tents. Up to recently, there was only one physician available to care for the people, but now there is an additional physician assigned.

THE HOSPITALS OF LIBYA

Now: and the Immediate Future

In foregoing chapters, existing hospitals in Libya have been briefly described. The elements essential to intelligent planning for Libya's future hospital growth have also been discussed, in general terms, against a wide public-health background.

Now let us look more closely at the hospital picture.

At present, enormous demands are made on Libya's few hospitals. Their facilities naturally are limited by size and services. Yet patients with trivial complaints, that could be attended to in out-patient clinics, are currently admitted. We see long-term bed-occupants with chronic illnesses that necessitate no more than domicilliary care, since they cannot be bettered by hospital stay. Infectious cases, that should be treated only where special facilities exist, now get lumped with a hospital's daily patient load.

However, when the recommended extension of rural community health care takes effect and the good, existing Ministry of Health plan is implemented, a different picture of Libya's hospital needs will come into focus. The demands upon Libya's hospitals and doctors, and the character of the patient population will change. More patients will receive out-patient ambulatory care. Minor illnesses will not be treated in hospitals. Through the out-patient clinics, necessary preventive medicine will reach the people. The out-patient clinics will also do a diagnostic sifting of cases before they recommend hospital admission. These clinics too will be the places for follow-up

of a prescribed treatment, after a patient's discharge from hospital care.

The People are Demanding Modern Medical Science

At present, only marginal out-patient clinic facilities exist to cope with the important functions here envisaged. The physical facilities of most of these clinics are inadequate, and much of the professional work is done so hurriedly that no proper evaluation of the problems is feasible and no patient-doctor relationship can develop.

Without radical reorganization, community medicine cannot be developed. It is fully realized that few people in Libya possess homes where proper medical care is possible; also it is realized that distances and difficulties in communication make the rapid development of this concept difficult. Yet good medical care demands this type of medicine and the people of Libya deserve, and in fact demand, the best that modern medical science can offer.

Out-patient Clinics. Local and Regional Hospitals

It is erroneous to believe that medical care is an institutional practice. It tends to be so in Libya, perhaps, because no alternative now exists. The tradition that everyone -- for any complaints -- must be provided with a free hospital bed is beyond the economic and manpower means of any country. It is also a socially, psychologically and technically erroneous concept.

The hospitals should in the future have facilities for general care of patients who cannot be cared for in the out-patient department of a Health Center Clinic, or at home. Some of the smaller detached

hospitals may have limited facilities for dealing with the emergencies and routine problems, while large general hospitals-- Regional Hospitals --will serve as diagnostic and treatment centers for the more complicated cases requiring specialists and the use of complicated equipment. The referral of patients from clinic to Health Center Hospital and from there when necessary to a Regional Hospital must be made easy. And the referral back from hospitals to clinics to home should also be an easy, smooth operation. Adequate clinical and administrative records must accompany the patients in these referrals. Without such accompanying data, the continuity of treatment will be lost and no benefit accrue either to the patient and to the country.

Basic Hospital Standards

The in-patient facility is a continuation of out-patient or home medicine and an integrated part of a medical care and public health program. All elements of the program must be thoroughly interdependent upon each other.

A hospital, to deserve that classification, must have certain minimal facilities and must meet certain minimal standards. At present there are only a few large hospitals in Libya. The following table indicates the hospitals, the staffing, and the number of beds available:

A hospital must have the necessary facilities to care for the sick or injured, as bed patients. There must be available physicians who can deal with every illness and emergency. The physician must have support in the form of personnel, equipment, drugs and nursing

supplies. He must be able to depend on adequate supplies of food, laundry and hygienic facilities for the patients.

The Doctors of Libya Today

Many of the small hospitals visited have excellent staff and physical facilities while others lack the most modest requirements, or have them in such poor condition that they are virtually non-existent. It is realized that many of these hospitals are left over from colonial days. Even in these there is evidence of great effort to make improvements. But the shortcomings do exist and must be reckoned with.

The staff in most of these hospitals is made up of dedicated physicians who make good use of the facilities available to them. Many of the para-medical and administrative staffs are totally untrained and incapable of giving the needed support. It is truly a wonder, how in the face of the great difficulties, the hospitals function as well as they do.

Since Libya has no medical school (nor can one possibly be planned in the foreseeable future), it must rely on physicians trained outside the country. There are only 20 Libyan physicians; and out of that group 5 are taking graduate work outside the country and are not immediately available for work. Therefore, the medical manpower at present is almost entirely made up of foreign physicians, the majority of whom are recruited for a contract period of two years. They come from at least ten countries, bringing with them their national traditions and prejudices. Almost none speak Arabic and only a few speak Italian which is, at present, the most widely

known second language of the population.

Some of these physicians are contracted as individuals and are assigned at the discretion of the Ministry of Health as individuals; while others come in groups of varied talents and training, and are assigned to manage and operate a hospital as a specified group. While in the latter case, they can generally provide better patient care and more rapidly establish a better administrative control over the hospital, yet they are apt to remain isolated from the medical community and from the life of the people, and to employ Libyan personnel only for the unskilled menial tasks. With the exception of Sebha, where the French group does make an effort to train a Libyan technical and nursing staff, and in the Emergency hospital in Tripoli all other groups ignore the most needed and essential task of training Libyan personnel.

General Practitioners vs. Specialists

While the clinics, small dispensaries, health centers and community hospitals may have a single physician or few at the most, it goes almost without saying that these should be general practitioners. They must have enough training to meet the real emergencies and must have orientation toward a public health point of view.

The greatest need of the larger hospitals too is for general practitioners. Hospitals below those of fifty beds could function very well without specialists. Although a general surgeon would be

LIBYA'S REQUIREMENT
FOR PHYSICIANS

Clinical Pathologist	10	15		20	30
Radiologist	5	10		20	30
Public Health Physician	15	25		30	40
General Practitioner	187	235		305	530
Anatomic Pathologist	5	8		12	15
Gastro-Enterologist	3	4		5	6
Psychiatrist	8	12		16	20
Neurologist	5	8		10	12
Cardiologist	6	10		12	15
Phtisiologist	30	36		40	45
Dermatologist	3	6		10	12
Oto-Rhino-Laryngologist	2	3		4	5
Ophthalmologist	12	15		18	20
Orniopedist	4	9		12	15
Thoracic Surgeon	6	9		12	15
Plastic Surgeon	1	3		4	5
Neuro-Surgeon	2	4		6	8
Urologist	3	6		9	12
Obstetrician-Gynecologist	12	20		26	32
Pediatrician	15	20		26	32
Anesthesiologist	12	17		20	25
Internist	24	29		35	40
General Surgeon	24	29		35	30
Chief Surgical Services	12	17		25	30
Chief Medical Services	12	17		25	30
Clinical Director	15	45		50	60
Physician Hospital Administrator	4	10		10	10
Asst. Director for Curative and Preventive Medicine	3	3		3	3

1965

1970

1980

1985

a useful addition to the staff, other specialists, from the large Regional Hospitals, could periodically visit the smaller institutions to render diagnostic service and give definitive treatment to patients selected and prepared by the local staff for such visitation.

The services of highly qualified specialists should be reserved for the large Regional Hospitals. At present, and for short term planning, three such hospitals should suffice, one in each of the three capital cities, of Tripoli, Benghazi and Sebha. Smaller general hospitals in the major political sub-divisions of the country-- as is wisely projected in the Ministry's five year plan -- are also desirable.

Well Planned Recruitment and Assignment

I believe that the recruiting of physicians should be carefully planned, and physicians selected to fit existing and projected needs. Their reappointment or replacement also must be made in good time in order to avoid lapses in service. At present it seems that a staff is at times contracted and assigned without regard to real need or useful service. For example, an otologist was sent to the government hospital in Tripoli, though there was no request for such a specialist and no need for additional workers in this specialty. Another otologist has recently been sent to the Tobruk hospital where he sees trivial cases that are better handled by general practitioners. In Derna there is an ophthalmologist who is doing excellent and useful work but is occupied only about one third of the time; and a urologist whose patient load warrants about one work hour a day; but in the

same hospital there has been no general surgeon available for over a year. In the central laboratory of the Benghazi hospital a new director was assigned while the director who has performed creditably for several years is still working, now in a subordinate position. In Zavia, in a 40-bed hospital, there is a single physician; while in Zuara, closer to Tripoli, a hospital of 80 beds has seven physicians.

It is both uneconomical and ineffective to employ specialists to do the work of general practitioners. Specialists are reluctant to practice outside the defined limits of their professional specialties, and often are not competent to do so. The salary of an unnecessary specialist could pay for several qualified nurses or laboratory technicians, or be added to the salaries of staff physicians who now do not devote all their time to their hospital assignments, but could thus be freed to give up part-time private practice, to the greater benefit of the hospital patients and the hospitals.

Consistent and Dependable Personnel Policies

Another grave problem is the lack of a uniform pay scale for physicians. Those contracted some years back receive smaller pay than the ones recently contracted. A recent raise in initial compensations has not benefited the physicians already on the payroll. Thus, one in a supervisory position may have a newly hired physician assigned to his staff with a compensation larger than his own. One young physician informed his director, on the morning of my visit to the hospital, that he is resigning, effective immediately, because a newly arrived doctor with similar background and responsibility was getting an annual salary of L¹ 200 more than he.

A personnel policy is urgently needed, with an organization having responsibility to:

- 1) Define the qualifications of physicians and other professional staff for appointment to serve in the various professional assignments in Libya.
- 2) Examine the qualifications of each applicant and recommend to the Minister of Health and the Civil Service Commission the grade for which the candidate professionally qualifies.
- 3) Recommend for each medical care activity the professional staffing pattern.
- 4) Recommend re-appointments, promotions and separations.
- 5) Function and report on breaches in professional discipline, and personnel grievances.
- 6) Advise the Minister of Health and the Civil Service Commission on desirable professional pay adjustments.

The Pay Scale and Suggested Members of Board Responsible for it

Personnel of equal training and responsibilities deserve equal compensation. Only rare and non-classifiable positions justify a pay that does not adhere to the established normal pay scale. Participation of representatives of the profession in the Board membership will do a great deal to allay any possible criticism or suspicion of favoritism. It is suggested, therefore, that the membership of the Board be: the Libyan Director General for Curative and Preventive Medicine in the Ministry of Health, as president; a member of the Civil Service Personnel Division, as secretary and technical advisor; the Medical Director of INAS; the senior health officer of one of the three provinces; and the clinical director of a general hospital. Another ad hoc member of the board should be a highly qualified specialist in the field of medicine to which the individual boarded belongs.

Four Problems Facing all Professional Personnel

1) Consideration should also be given to finding a way to stimulate the best members of the staff to remain in Libya permanently. An ever-changing staff cannot be counted on to carry on the work and make continued effort toward improvement. Only a permanent career staff can give the desired stability to a program. Work satisfaction, more than financial benefits, will go a long way toward developing a career service. It is recommended that a number of foreign physicians be offered permanent assignment or at least a long contract, after two tours of outstanding work and demonstrated ability to speak a useful Arabic. Permanent assignment must include the usual social benefits.

2) A constantly recurring complaint of the staff is that they lack authority. Perhaps it is that they do not exercise the authority they in fact have. But as long as they feel that this is not commensurate with their great responsibilities, or that they may not be backed up by higher authority in case of a showdown, they feel frustrated, and their effectiveness suffers.

3) Many physicians, currently working for the government of Libya, practice part-time medicine as private practitioners. I believe that one cannot serve two masters. Each physician should be adequately paid to permit him to give up private practice and devote all his energies and loyalties to his full-time government position. A doctor's staff job is around-the-clock. To do it justice he must have freedom from financial worries as well as freedom from the competition of paying patients. There is room in Libya for the private practice of medicine, and those who choose that road should not suffer

the unfair competition of government physicians.

4) It must also be mentioned here that the INAS is also actively engaged in recruiting physicians and other professional employees. INAS standards and pay scale are different from those of the Ministry. This creates rivalry between two government health activities and makes for additional problems in personnel management. In my opinion, it is essential that this problem be solved by creating a single personnel policy for the entire country and by enforcing uniform

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NOTE: All that has been said here, of physicians, applies equally to dentists, and other professional personnel.

The Critical Need: Many Kinds of Health Workers

I would now be remiss if I failed to re-emphasize that in our modern world and with our expanding medical knowledge, no individual is self-sufficient. A physician is no exception. To be efficient, he works in team. The make-up of the team varies with its functions and, of course, the availability of supporting skills. To mention but a few of the more obviously desirable teammates is to focus attention on the enormous problems of modern medicine.

Nurses

Midwives

Laboratorians

X-ray technicians

Social service workers

Dietitians

Record librarians

Physical therapists

Health educators

Clinical psychologists

Administrative nursing and dietetic aides

Maintenance workers

---these by no means represent all the skills needed by a modern hospital. Libya has few and in some instances no personnel in these categories.

Libya's most important shortcoming, and correspondingly most critical need, is for qualified staff at all levels of health work. Perhaps the least critical lack is of physicians. There is a physician for every 3,500 persons; if they were wisely used, distributed and supported, they could provide a good program. They should be immediately relieved of the simple tasks of making entries in ledgers, keeping books on drugs, signing papers of little importance. These simple administrative tasks could be delegated to personnel with limited basic training. The time gained by the physicians would enable them to devote substantially more time to medicine.

Libya's manpower needs are so great, it is unlikely that adequate numbers of secondary school graduates will be found for training in the health professions and middle skills such as professional nursing, laboratory work, midwifery, record librarianship.

Therefore, recruiting of these professional workers, outside the country, may have to be undertaken for many years to come. A complicating factor is that Libyan women, at present, do not have secondary school education in sufficient numbers to provide candidates for scholarships. In western medicine it has been the custom for women to fill the major part of the nursing and para-medical positions.

Priorities in Recruitment for Health Personnel

The recruiting of nurses, midwives and all para-medical professional staff should follow the pattern that has been suggested above for physicians. After a position to be filled has been established, and the work and the level at which the work is to be accomplished has been defined, then -- look for the individual to fit the needs. A professional nurse, even one with a university degree in nursing education, is not necessarily capable of establishing a clinic in maternal and child welfare; nor can a public health nurse, by virtue of her degree in nursing, establish a central supply and equipment service in a general hospital.

It must also be kept in mind that the best professional worker, alone, without team or authority, cannot get results.

Since it is inconceivable that all needed positions in the health field will be filled by professionally qualified personnel, Libyan or foreign, one must be prepared to accept the best possible immediate expediency.

1) HIGHEST PRIORITY: NURSES, TRAINED TO TRAIN AIDES. Therefore, it is recommended that highest priority in the recruiting of nurses be given to those who have had the experience of training

unskilled workers for simple nursing tasks such as are generally performed by nurses' aides and practical nurses, in the western countries. These experienced teaching nurses should be assigned to each of the large general hospitals, not less than two to each, to give on-the-job training and supervision to Libyan hospital workers. This training should be continuous, and those workers who respond to it, and have some basic scholastic background, should be rewarded by improved salary, promotion to higher responsibility, and the opportunity to enter formal course leading to a nurses' aide or practical nursing certificate.

2) PUBLIC HEALTH NURSES, AND MIDWIVES. Second priority should be given to the recruiting of public health nurses and midwives for employment in health centers and hospital out-patient departments. They are to be the link between the community and the clinic and will train the Libyan personnel by demonstration rather than classroom instruction. No health center or clinic can function without trained public health nurses and midwives. One at least for each maternal and child welfare clinic, health center and out-patient department of the hospitals should be obtained.

3) HOSPITAL NURSE ADMINISTRATORS. Third priority should be given to hospital nurse administrators who can develop a nursing service: at first, in the new hospitals, where they can organize the service before tradition and habits contrary to the concepts of modern nursing arise as stumbling blocks. No hospital nursing service can be produced by a single nurse; but, depending on the size and function of the hospital, a team of three or more should be considered. This is to be in addition to the staff recommended

for the on-the-job training program. Soon after the new hospital nursing needs are met, nursing services for the regional general hospitals should receive consideration.

4) SMALL TRAINING TEAMS. Fourth priority is the creating of small teams to help establish essential services in hospitals. These teams would work on short-term assignment. For example, a team could organize the central sterilizing and supply activities, and train local personnel to carry on the work. Another team could establish routines for surgical, medical, pediatric and obstetrical nursing.

(NUNS' CONTRIBUTION TO HOSPITALS.) Perhaps this is a good place to pay tribute to the Catholic religious orders that provide nuns to work in many of the hospitals. Generally their devoted labors make the hospital a cleaner, more orderly place than some that lack their leadership. Yet it must be remembered that they are not, as a rule, trained professional nurses, and their contribution is to be considered more in the broad sense of house-keeping and management rather than of nursing. More than one hospital director has indicated that the Sisters are apt to assume more initiative in professional matters than their training warrants. Another hint of a possible problem is the nuns' inbred conservatism, accepting changes only slowly -- whereas, in the dynamic professions of health care, change must be constant; the rule, rather than the exception. Therefore, prior to assigning nurses with independent and important responsibilities to hospitals where nuns are working, it will be essential to define the spheres of interest and authority of each group.

5) MIDWIVES. Midwives are needed -- one in each health center and hospital -- to train the empirical midwives who do most of the deliveries in the communities, rather than only for actual assistance at the deliveries. The largest cause of Libyan newborn mortality is tetanus of the umbilicus, which is due to the common practice of the untrained midwives of putting sand on the umbilicus and tying it with sheep or camel wool. Winning the confidence and respect of the local midwife and educating her in simple cleanliness, a hands-off policy, the need of birth registrations, and the availability of help when needed (without blaming her for ignorance) are to be the tasks of the newly recruited midwives.

6) RECORD LIBRARIANS. This professional skill does not exist in Libya. A record librarian is needed to obtain from the physicians and nurses good clinical charts with essential information properly recorded. Diagnostic and treatment information is coded in accordance with international standards, and cross-referenced. This statistical information thus becomes immediately available for administrative and medical investigative use. Three record librarians are immediately needed; one each for the Tripoli and Benghazi hospitals and one to work in the Ministry's statistical section and to visit institutions and there give staff orientation.

7) HOUSEKEEPER. All hospitals require expert instruction in modern hospital housekeeping -- in the broadest sense of the word. One competent man to develop a course in hospital housekeeping for the Libyan personnel is needed. He will also develop the equipment and supply needs for this essential service.

8) MAINTENANCE ENGINEER. For the repair and improvement of all hospitals, Libya needs a hospital maintenance engineer, to set up a preventive maintenance program and prepare the list of necessary maintenance equipment and supplies for each hospital. Consideration should be given to developing a national mobile maintenance team, that could visit each hospital yearly for preventive maintenance work. Another unit could be organized to meet the need of emergency repairs.

9) A PHARMACIST SUPPLY ADVISOR is currently available in the Health Division, AID.

10) LABORATORY PERSONNEL, equipment and administrative needs are great. A special report is being prepared by Dr. Albert Hardy. Therefore, these needs will not be discussed here.

11) X-RAY TECHNICIANS. A fair number of on-the-job-trained technicians are currently available in Libya. A teacher of radiography and radiotherapy should be recruited. He should possess special experience in safety practices. He would visit all installations and teach the personnel the better techniques -- especially emphasizing protection against radiation fall-out. He would also advise on the x-ray equipment and supply needs of Libya.

In here describing the type and the number of professional and technical personnel recommended for recruitment, the training of Libyans for health work has been chiefly stressed. It should be stated again that commerce, industry, the teaching profession, and agriculture all compete for the available manpower. Therefore, if the health field is to be successful, it must offer the future worker an interesting and rewarding career, with job satisfaction

and job security.

* * *

The Number of Doctor-Leaders Needed

The health team leader is the physician. For the next 20 years, the young Libyan will have to obtain his medical training in foreign countries. Conservatively speaking, 500 Libyan physicians are needed, with a yearly replacement or addition of 25. Since medical training requires a minimum of seven years following secondary school graduation, over a thousand secondary school graduates must be trained, in the next 20 years, to meet the basic requirements for entering medical schools. The preparing of such a number for the M. D. degree is an enormous task, both in manpower and funds, the latter estimated at 25 million Libyan Pounds.

The training of Libyan dentists presents another large and similar number of obstacles.

A Stop-Gap in Preparing Auxiliary Health Officers

Consideration might be given to the training of auxiliary health officers at a lower educational level. Students with two years of secondary school and four years of combined academic and special training in health practices could earn a combined secondary school and auxiliary health officer's certificate. These graduates could function in the broad public health fields of environmental sanitation; epidemiologic control of endemic diseases; vaccination of the population; supervision of birth and death registration; school health programs; the rendering of a first-aid type of general medical assistance. Personnel such as this could substantially accelerate

the improvement of health services, and the pressure for training the enormous number of fully qualified physicians would be much reduced. Admittedly, this is a stop-gap solution, but one that has proved its merit in other countries. For example, Ghondar, Ethiopia, has a successful program of this type; and Liberia is currently planning a school for the training of para-medical workers.

Such a school might offer courses for health educators, laboratory and x-ray technicians, physical therapists, medical statisticians, operating room technicians, central service workers, community health workers, etc.

The Present Training Schools, and the Needed New Ones

The Ministry's School for Professional Nurses, in Tripoli, admits young women of fourteen years and over who have six years of education. The school gives a three-year course.

The youth, the limited basic education and their almost complete exclusion from treating adult male patients, prevents them from acquiring the knowledge, the experience, and the professional maturity generally associated with professional nurses in the western countries. There is no opportunity in Libya for more advanced study in nursing. On the basis of the present standards the graduates of the school are not eligible for academic training in the western countries.

The school should be regarded as an early step toward opening the professional nursing field for Libyan women, and as such it is a very commendable effort. But much progress will have to be made and many more women, with higher educational and social background, will have to be motivated to enter this dedicated profession, before the graduates of the school could conceivably assume the leadership in nursing in Libya.

It is essential that the present schools for nurses' assistants, laboratory technicians, maternal-child welfare and midwifery assistants be enlarged to train more personnel. Let me suggest that the classroom work be reduced and that the emphasis be more on practical training on the wards, in clinics, and in the making of community home visits.

More schools, for training the auxiliary personnel, are greatly needed. Since it is desirable that the graduates accept work in rural areas, it is urged that some of the new schools be established in rural areas where local students would train and subsequently remain home and not be lured to the large metropolitan centers. The graduates of these schools eventually should replace all the untrained health workers. Certainly all new hospitals should be staffed with the formally trained auxiliary workers, there to be supervised by professionally trained personnel.

Some 3000 nurses' aides are needed now in Libya; and the other disciplines, on the aide level, will easily raise that figure to 5000. This number of workers is not in addition to but in lieu of those presently employed in the various parts of the public health system.

The schools should be organized in conjunction with existing or planned general hospitals and health centers, and not built as separate new facilities.

The project to build a maternity hospital in Tripoli for the training of community midwives is exorbitantly expensive, wasteful, in critically needed personnel, and slow. Midwives are certainly needed; and so are beds for maternity care. A course could be

initiated immediately in the busy service of the Government hospital; with organized home delivery service, now lacking. To build an additional ward on the existing central facilities could be rapidly accomplished. For a more permanent solution it would be desirable that a new modern general hospital, already planned, have as part of its obstetrical service the School of Midwifery.

Fellowships and Scholarships for Study Abroad

Local and on-the-job training of Libyan personnel will not meet the country's needs. In order to acquire the necessary skills to fill important administrative and training positions, many Libyans must be provided with fellowships and scholarships to foreign countries. It is natural and most desirable that the top health workers be Libyans -- nationals rather than foreigners-- as soon as competent Libyans are available.

Above I have given some estimates of the vast resources needed for long-term solution of the problems, and have indicated priorities in recruiting for the immediate needs of the country. It is also necessary to think in terms of the period of transition -- some ten years -- when the important positions will still be entrusted to foreigners, while Libyans will be trained outside the country, first to work with the foreigners and, when ready, to take over the direction.

The following are my recommendations toward an orderly meeting of the most urgent training problems:--

1) At least six Libyan physicians should be given fellowships in public health administration. These fellowships are to be for

one year of study, leading to the Master's degree in Public Health. Within the next twenty years a minimum of one yearly addition to the group should be planned. The approximate cost for each will be L\$ 2000.

2) At least six promising persons, from the present administrative personnel of the Ministry and its dependencies, be selected for training in hospital administration. These men upon their return to Libya would be utilized, one each in the three regional offices, and one each in the three regional general hospitals. Eventually every hospital should have a qualified hospital administrator. Therefore, in each future year, additional administrators should be trained. The training suggested is for a six-month period, at the school of Administrative Medicine, Columbia University, New York City. This school offers a special program for students from abroad. The course is geared to meet the needs of the developing countries. Practical work is given in selected United States institutions where the work, as nearly as possible, duplicates the assignment the candidate will have upon his return to his own country. This training does not require that the candidate possess an academic degree; upon completion of the course he receives a certificate, rather than a degree. The estimated cost for each candidate is L\$ 1500. An additional six months of practical on-the-job training can also be arranged for each of the candidates to work with a selected University approved preceptor. Estimated cost L\$ 500.

NOTE: One physician, and one non-physician with University degree in public administration, business administration, engineering or

law, also should be considered for training in hospital administration at the graduate level. The course for this type of training is for two years, one of which is classroom work essentially, and the second a residency assignment in a selected and approved hospital. Upon completion of the two-year course and the writing of an acceptable thesis, the candidate receives the Master's degree in hospital administration. The two candidates, upon successful completion of this course and their return to Libya, would be assigned to the Ministry of Health as the director and the associate director of the section on medical care and hospitals. The cost of the course for the full two years for each is an estimated L\$ 3000. This is a one-time project.

3) Three engineer graduates be sent for six months of training in hospital maintenance. Then one each would be assigned to each of the three regional offices, to survey the maintenance and repair needs of the institutions in the respective regions; plan a preventive maintenance program; specify the needed equipment, supplies and personnel; and prepare the maintenance budget. In addition, each could begin a training program for local employees. Eventually all larger hospitals should have maintenance engineers. It is estimated that the need for the next 20 years will not exceed 12 for the entire country. Arrangements for the program will have to be made with individual preceptors preferably through a contract with a University. Estimated cost for each trainee: L\$ 1200.

4) Six secondary school graduates (or its equivalent) be provided with scholarships: three to study laundry management, and three housekeeping. The laundry management group might be assigned to

the American Laundry Institute School; while the house-keeping students may have to be individually trained by selected preceptors. Suggested length, of course, six months. Estimated cost: L \pm 1200 for each candidate. Upon their return, these men can be assigned to the staff of the Regional maintenance engineer, with whom they will form a team, to improve the Regional institutions and to start local training courses. Eventually all large hospitals should have trained personnel, and it is recommended that within the next ten years the training of six additional housekeepers and laundry superintendents be planned.

5) Four University graduates, with biology or mathematics majors, should be trained in the science of medical record librarian. An estimated two years of additional training will be required to obtain the necessary experience and, perhaps, a Master's degree. This training is on the graduate level; its estimated cost, L \pm 3000 each. Upon their return to Libya, one medical record librarian would be assigned to the Statistical Section of the Ministry of Health, and one to each of the three Regional offices. On these four trained librarians will fall the serious responsibility of educating all Regional health personnel in the importance of keeping medical records and the correct ways to establish, register, code and cross-index them. It is recommended that this program be continued until 20 professional record librarians are available. This number will meet the requirements of Libya for the next 10 years, provided there are also local courses to prepare coding clerks and auxiliary workers for the important function of medical record keeping.

6) Three x-ray technicians should be given training in the maintenance and repair of x-ray diagnostic and treatment equipment, in the calibration of machines, measuring radioactive fallout, and the control of safety factors. Each upon his return would be assigned to one of the Regional offices, where he would help the individual medical-care institutions with their problems concerning x-ray personnel, equipment, supplies and budgeting. Suggested background is a secondary education with major interest in physics; and some practical experience in both diagnostic and therapeutic x-ray work. The training outside the country would take 18 months, of which 6 months is for theoretical studies and one year for practical work. Estimated cost for each candidate: L£ 2400. There will be need for six technicians in the next 20 years.

* * *

Libya's Gravest Hospital Lacks:

- 1) Some trained women
- 2) Uniform hospital standards
- 3) Qualified administrators

NURSES AND MIDWIVES

Nurse and midwife graduates who would benefit the country by being further trained abroad are not available at present. Efforts and money will be better spent in preparing more female secondary school graduates. When available, a selected number of these should be sent to obtain diplomas in nursing from 3-year schools of nursing in countries with good nursing education. The new graduates would

then return to Libya for re-orientation into the then existing nursing situation. Then, out of that group, some should be given scholarships to train for specific high professional and administrative functions. It is not suggested that the future of nursing be based on all-female nurses, but that the small pool available for replacement will be augmented from this important new outside source.

The present very modest yet unattainable need for professionally trained nurses in Libya is 1000. This figure will double in the next 20 years. If this is to be accomplished, women must be used.

The training of professional nurses requires, in the western sense, a minimum of two and generally three years, following secondary education. Even if the latter requirement is reduced to a more attainable two years during the transition period, the need of nurses trained to teach in nursing school or hospital is too great to be met solely by Libyans during the next 10 years.

UNIFORM ADMINISTRATION AND QUALIFIED ADMINISTRATORS

The second and third gravest problems in Libyan hospitals are the lack of uniform administration and of qualified administrators. The three Regions do not now meet their problems in the same way, since each is following a system inherited from the Italians in Tripoli, the English in Cyrenaica, and the French in the Fezzan, respectively.

To start with, it is essential that uniform standards be followed by each Region, and within it, by each institution. These standards will have to be prepared and adherence to them enforced in the Ministry of Health.

The preparation of these standards or norms should be the function of the Medical Care section in the Ministry's Program Division. This Division should concern itself with setting the attainable goals and providing the facilities and means by which the goals can be obtained. The strategy of how the aims that are set up are to be reached is the concern of Operations. Close coordination between Planning and Operations is essential, but these are parallel activities rather than either one being subordinate to the other.

A Regional Assistant Director General will see that all hospitals in his large expanse of the country are functioning according to one master-plan. Each hospital will be directly responsible to the Director General for Curative and Preventive Medicine. The three assistants will function as staff officers. Yet each hospital must be given ample authority to make operational decisions and to develop local policy within the national standards.

Desirable as it may be that the Director of each hospital be a physician, for Libya this does not seem practical. It takes a great deal of time to educate a physician and then to give him additional graduate training to qualify for the position of a hospital director. It is quicker and cheaper to train non-medical administrators for hospital administration. With this in mind, it has been herein suggested that a number of experienced non-medical administrators be sent on fellowship to the United States. Hospital administration is a specialty, and University courses to train for the specialty are of United States origin, and courses for "practical hospital administrators" are available only in the U.S.A., Canada and Mexico.

It is essential that where there is a non-medical Director as administrator, a competent physician be assigned as the Medical Director -- also known as Clinical Director and hereinso titled. This doctor should have authority to coordinate the professional work and the staff who do this professional work. By being relieved of the hospital's administrative details and the discipline of the non-professional workers, he can devote much more effort to the professional administration which is properly a medical responsibility. This arrangement is particularly important during the time of transition when the physicians will be foreigners and will find personnel and property management, the preparing of reports in Arabic, and the dealing with the community difficult.

The organizational chart of a large hospital indicates the functional relationships. In smaller hospitals, some of these functions are combined. All these same kinds of work are done, but more than one category may fall to the same individual. For example, in a small hospital, the pharmacy, laboratory and x-ray work may be in the hands of one man; and there may not be a separate organizational staff for Surgery and for Medicine because all the work will be done by one or two general practitioners. Nevertheless, the separate functions exist, and should be shown.

* * *

The Role of a Hospital Director

The administration of a hospital centers in a single responsible Director, to whom the Minister of Health delegates authority to carry out the national policy on hospital practices. Each Director is provided with a staff and the funds to fulfill his assignment.

DISTRIBUTION OF HOSPITALS
AND HEALTH CENTERS
ACCORDING TO DISTRICTS

Location	Health Centers		Specialized Hospitals				Chest Diseases		General Hospitals	
	Bed Cap.	No.	Venereal Disease Bed Cap.	Mental & Nervous Diseases Bed No.	Bed No.	Cap.	No.	Bed Cap.	No.	
<u>West. Div.</u>	88	9	16	1	681	2	166	1	1,686	6
Tripoli City										
a) government	-	-	16	1	681	2	166	1	1,221	1
b) private	40	3							178	1
Misurata									80	1
Zavia									140	1
Jefren									27	1
Ghadames										
Gharian	10	1								
Sabrathe	8	1								
Zuara									40	1
El Kussabat	6	1								
Tarhuna	8	1								
Khons	6	1								
Zaleetin	10	1								
<u>Eastern Div.</u>	18	1					152	1	1,385	8
Benghazi City:										
a) Government									547	1
b) Private									103	2
Derna									379	1
Massa									111	1
Tobruk									154	1
Shahat							152	1		
Marj									44	1
Ijdabia									47	1
Kufra	18	1								
<u>Southern Div.</u>									272	5
Sebha									188	1
Ghat									17	1
Murzuk									23	1
Hoon									26	1
Brak									18	1
<u>Grand Total</u>	<u>106</u>	<u>10</u>	<u>16</u>	<u>1</u>	<u>681</u>	<u>2</u>	<u>318</u>	<u>2</u>	<u>3,343</u>	<u>19</u>
for Libya										

NOTE: Taken from Statistical Abstract, 1963

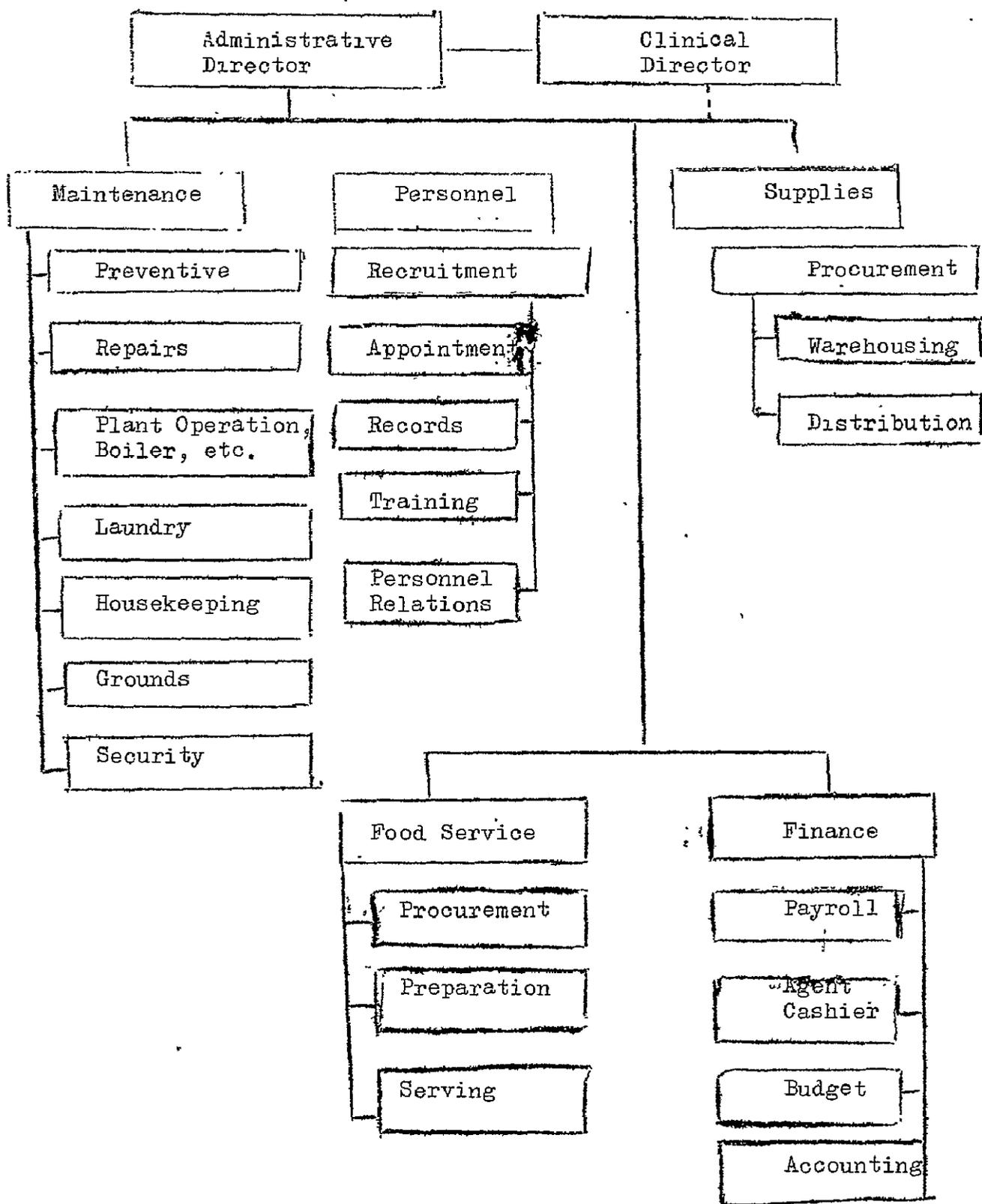
His practical management is two-fold: clinical - or professional; and the administration of all the supporting services and activities.

Depending on the size of the hospital and the scope of the work to be accomplished, the Director may assume all the administrative functions, or he may have an assistant. In all instances, however, where the Director is not a physician, a Clinical Director with ample independent authority to guide the professional staff and control their performance must be appointed.

The Organogram, here attached, pictures a large hospital with full staff and broad professional responsibilities. But even in the smallest of hospitals there are the same demands for professional and administrative work -- only the work is accomplished by fewer special sections, and each person assumes multiple responsibilities.

The Director is the coordinator of the efforts of all the staff. He interprets for the staff the wishes and policies of the Government, and maintains close relationships with the community by attending community activities, participating in meetings where he can explain to the people the hospital's broad functions and how it goes about fulfilling them. This will give an opportunity also to obtain community cooperation in the hospital's work on a voluntary basis, and an understanding contribution toward the cost of medical care by all who are financially able to do so. The maintenance of a good cooperative relationship with other local Government agencies is another important function in his role of fostering wholesome community relations.

In the period of transition, while Libya's public health functions



are not located within and do not depend upon hospitals, a hospital's Director must bring about the closest mutual support between his organization and the work of all Public Health Officers, who have interest in and supervision over the epidemiologic and vital statistics functions of the hospital; and the hospital must provide professional assistance to them and their dispensaries and maternal-infant care centers, whose small staffs are inadequate to meet all the demands upon their services.

The Director must know and have a mutually supportive relationship with the other hospitals in the Region, in order that identical problems be dealt with in concert, and patients transferred from one hospital to another when medical or sociologic reasons or crowding demand it.

Planned Meetings, for deepening their experience and knowledge of hospital affairs, are desirable for the development of Directors.

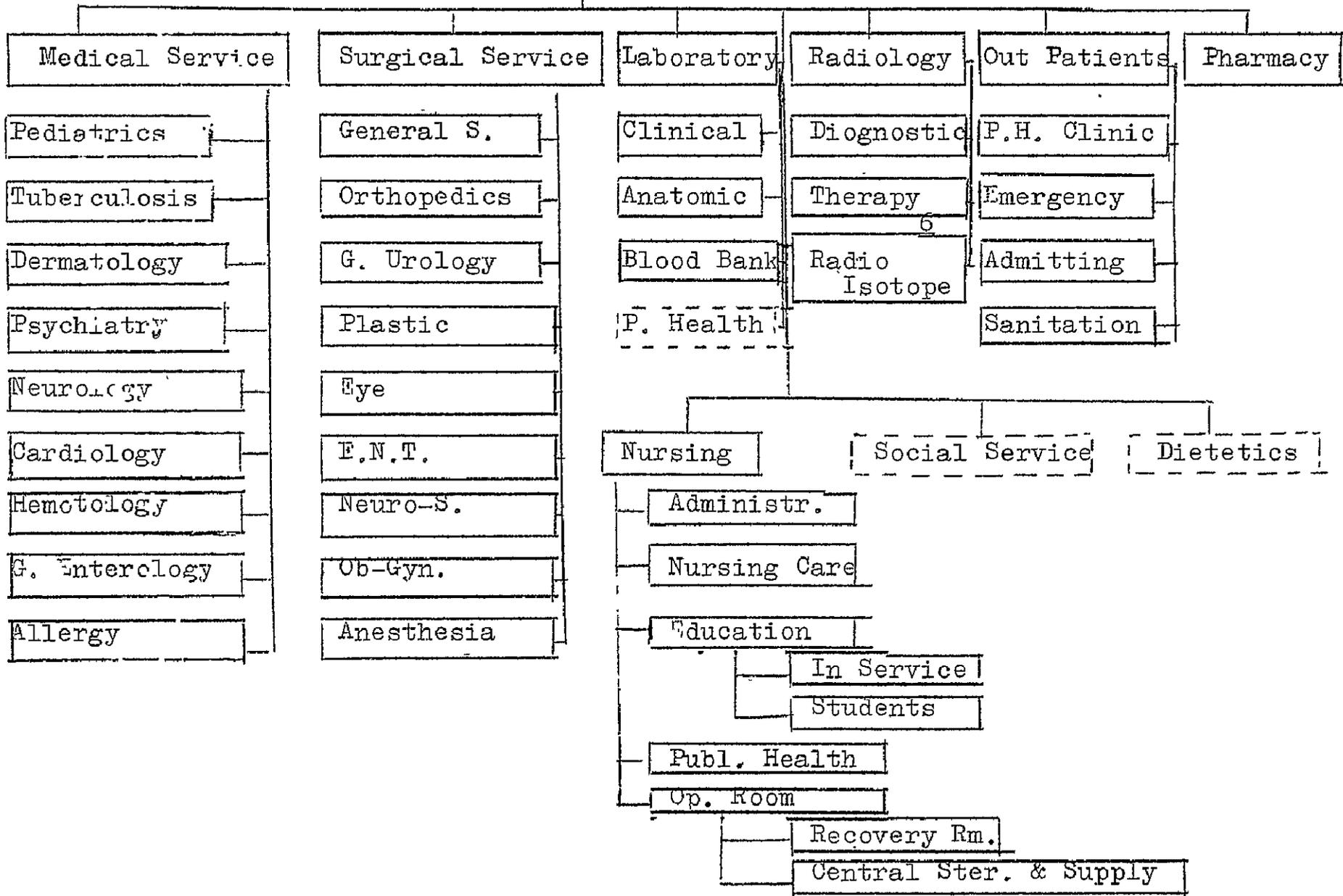
As the responsible officer, the Director makes all reports required by law, or by regulations, to his superior officers.

The Role of Clinical Director

The Clinical Director is the ranking medical officer of the hospital, and he may or may not assume additional direct professional functions. He is administratively responsible to the Director, but in all professional matters he must have ample independent authority. In the hospital as large as the Government hospitals in Tripoli and Benghazi he -- even with an assistant -- can be fully occupied by staff work.

The Clinical Director is coordinator of all professional activities within the hospital and of the work of the personnel who

PROFESSIONAL SERVICES
CLINICAL DIRECTOR



directly support the professional activities, such as nurses, laboratorians, x-ray workers, and (hopefully, when available) record librarians, social service workers, public health nurses, dietitians.

Coordination requires communication and this not only from the Clinical Director to the staff, and from the staff to him -- but also horizontally, from staff to staff. This in turn demands meetings of the staffs for exchanging ideas as well as for preparing and publishing directives.

Professional control is accomplished by visiting and knowing the work of all his staff and providing them with the equipment and materials with which to work effectively. In turn he should demand from each a high performance.

The success of all health work is measured by the impact it makes on a community -- and not only on the individual patients. These results are compared with the performance of similar institutions under similar circumstances.

A few items, to be considered by the Clinical Director in evaluating the hospital's effectiveness, are:

- 1) The patient's stay in the hospital. (The quicker a patient is diagnosed and given definitive treatment, the sooner will he be ready for discharge. In a general hospital, each bed should be able to accommodate an average of 26 patients a year).
- 2) The number and kind of operations performed; the infection rate; the post-operative death rate, with analysis of cause of death.

- 3) The number of births -- normal, by forceps, by caesarian section; post-partum hemorrhage; retained placenta; infections; maternal and infant mortality, with analysis of causes.
- 4) Pathologic examination of all tissue removed in the operating room, with correlation of the pre-operative diagnosis and the selected treatment.
- 5) The autopsy rate -- an excellent measure of medical performance in a hospital. (At present this scientific control is not practiced in Libyan hospitals, but it is hoped that steps will be taken to educate the communities that an autopsy does not violate the religious code and is not a mutilation of the body.)
- 6) Staff review of all deaths occurring in the hospital.
- 7) Utilization of drugs, laboratories and x-ray facilities.
- 8) Study of out-patient activities.
- 9) Review of the routine functions of all sections.
- 10) Careful analysis of the preparation, coding and filing of patients' clinical records.

The Clinical Director should also concern himself with the daily nursing care the patients receive; the development of the patient-staff relationship; the education of patients and their families in continued health care after discharge; patient and staff discipline; and the general cleanliness and hygiene of the hospital.

There are clinical records to be reviewed and reports to be made to higher authority. And it is the Clinical Director's

responsibility to develop an esprit de corps within the staff. A staff that has pride in its work and develops respect between its members, on the same and different levels of professional responsibility, will deliver the highest type of medicine.

Staff Conferences and Journal Clubs

It is essential that each hospital establish regular staff conferences in which professional and administrative matters each have importance. A statistical report on the ten items, enumerated above, could be presented during the first part of the conference session, while the second part could be given over to the presentation of interesting cases, especially where cooperation of the various hospital sections was necessary in reaching the solution of the problem.

Another suggested staff activity is the organization of journal clubs. In a hospital where physicians come from many nations and are multi-lingual, this activity could become most valuable.

* * *

Those who Support the Clinical Activities

The Director of the hospital -- or his Assistant Director, in a large hospital -- will coordinate the functions that support the clinical activities that do not directly deal with patients' care. In this supportive category one considers engineering and maintenance, housekeeping, laundry operation, personnel administration, supplies, purchasing, warehousing and financial control.

Chapters could be written about each of these functions, but I will discuss these activities only in general terms, in relation to what I observed when visiting the nation's hospitals.

In general, one sees no central administrative activity at all. Various people come in for the Director's signature upon the most trivial matters; yet he has no authority to make repairs, paint a ward, purchase a missing part of equipment that would make an x-ray machine functional, hire a new employee, or fully control the vehicles assigned by a Ministry, other than the Ministry of Health.

One Director could not use or show me the x-ray room because the technician was out of the hospital. In another institution we could not see the laboratory, for the same reason. A physician who needed drugs from the pharmacy in an emergency could not get the pharmacist to return during the night or give the key to him. When the doctor then entered the pharmacy to obtain the needed drugs, he was reported to the police for housebreaking. He was exonerated, but it was a time-consuming unpleasantness. The pharmacist is still a member of the same hospital staff.

It is essential that the hospital management have autonomy for carrying out the national policy in health. Only an organization that plans its own strategy and has control over its own resources can function intelligently, forcefully and with flexibility.

Each Hospital a Part of the Nation's Budgeting Process

It is recommended that hospitals be required to enter into the nation's budgeting process. At present this is almost entirely a centralized function. A Budget should be considered as a yearly financial plan, based upon the work plan of the hospital.

Each section or division of the hospital should be required to prepare a list of its foreseen needs for the fiscal year, within certain guide-lines issued by the Ministry of Health and added to by the hospital's Director. The Ministry, for example, may indicate that the budget for personnel may not exceed the level approved for the previous years; that the cost of food and drugs is to be based on a 10% increase above the previous years; that public utilities are not to be included in the calculations; and that capital investment is or is not to be included. The Director will additionally indicate the expected patient load and other basic assumptions that specifically apply to his hospital.

Each section then will estimate its needs in personnel, supplies, equipment and maintenance. For example, the pharmacy will know from previous years what drugs have been used and the quantities needed for out-patient and in-patient activities. Based on the expected patient load, a fair estimate can be made of the necessary standard drugs. It is also expected that the pharmacy will have knowledge of new developments in the drug field, or that such information is sought from the medical staff. If a new drug has been developed and the staff intends to use it, it has to be budgeted for. The pharmacy may need a distilling apparatus; therefore, its specifications and cost should be entered in the budget.

When all the section needs are prepared and set forth, the Director has then to reconcile the total figures with the probable funds available. To avoid duplications, or arbitrary decisions, it is advisable to have a budget committee, composed of representatives of the sections, to advise on the institution's final budget estimate,

to be submitted through the Regional Office to the Ministry.

The same kind of review and committee advice may also be effectively employed at the Regional level. Here the budgeting is set up separately for the health activities of the Region and for the Regional office itself. Similarly, the Ministry of Health will coordinate the requests from the field, and prepare the National Budget estimates for health activities.

When the Ministry receives its operational and other funds, it must examine and adjust these funds in the light of the realities. In other words, the funds available will probably not be identical with the funds requested. The Ministry can approve funds to Regions -- or to each activity. But whichever is decided, each separate activity must be told how much money it will have during the next fiscal year. This does not mean that each institution will be given cash, but rather that, quarterly, it may draw from the national treasury the funds to pay for the personnel salaries, the purchases made from the national supply department, and the food from the vendors with whom there is a nationwide contract, etc. There should be flexibility within the budget, to allow each Director to set, within his allotted funds, the amounts to be used by each section; and to transfer funds, if desirable, from one category to another.

It is important that, upon the receipt of the approved budget allotment, each activity or section learn of its own share, and that each activity keep an account of how the funds are used. This will result in intelligent participation in management.

The Director must then see that each activity keeps within its allotted funds or asks for adjustment on the basis of well-documented needs. These requests may be discussed by the budget

committee and presented to the Director for approval. No commitment of funds should be permitted without first obtaining formal approval.

Procurement

A limited authority for procurement activity is necessary. For lack of replacement part, some facility may be out of use for as long as a year. The Ministry's central supply department is not geared to give active and immediate attention to small details. The hospital, on the other hand, could obtain such replacement within a few days.

It is also desirable to establish a petty cash fund that would enable each institution to make certain petty emergency purchases. The amount used for such a purchase could be limited to an arbitrary amount, let us say not to exceed L \pm 3.00.

Maintenance

It has already been mentioned and it is now re-emphasized that maintenance should be a local responsibility, planned and executed out of locally budgeted funds. The work may be done by local employees or by contracting. An organized preventive maintenance program must be a part of all hospital planning and regular activities. The control and maintenance of vehicles should also be a local affair, with chauffeurs the employees of the hospital and their work there evaluated, adequately controlled, rewarded, and if necessary disciplined.

When Building is Needed

Building projects do not fall under the maintenance program.

Any building should be programmed by the hospital's administration, for approval by the Ministry of Health's planning division and the architects in that division. Funds for building, and for the contracts with builder and suppliers, can either be delegated to the hospital handling, or handled centrally. This is a policy decision, to be made on the basis of national customs and experience. Indeed, the size of the project and the hospital's experience in handling contracts may be the deciding factors.

Supply

Another major field where administrative control can improve the existing practices is supplies. While, generally, no complaints are heard concerning food or linen (with the exception of the hospitals of Cyrenaica), serious problems concerning equipment and drug supplies exist in the other two Regions. One hears, from staff members:

"It is easier to obtain large expensive equipment than something costing a few Pounds." Or,

"We get too many obsolete drugs that we have no use for and that just clutter up the limited storage facilities. But we get only token amounts of the important and needed materials." or,

"Our specific requests are arbitrarily modified by the Supply Departments." or,

"There is no way of disposing of obsolete equipment or drugs."

Decentralized budgeting, discussed above, wherein each activity will have a certain amount of money deposited with

the Central Supplies Department against its planned equipment and supply needs, will help solve this problem. It is further suggested that an advisory committee be set up in the planning section of the Ministry, to prepare a list of standard equipment and supplies. Then, on the basis of the committee's recommendations, the Ministry can decide to buy and stock only standardized items; and in all new purchases they will follow this rule, so that within some five to ten years the now existing confusion and duplication can be eliminated.

To illustrate the need for action, let me mention one example.....that of the Benghazi Supply Depot, where I saw a large quantity of x-ray film approaching expiration date. Upon question, I was told that it is of a size for which the Cyrenaica hospitals and clinics lack the necessary hangers and cassettes, therefore, it is unusable in that Region. An explanation of this had been sent to the source of supplies in Tripoli, in the hope of an exchange of film or a supply of the correct size hangers and cassettes. But the communication remained unanswered.

However, this failure of communication is not limited to supply problems. Complaints are numerous, that reports are not considered; that letters of request or suggestions or information sent by field staff to higher authority are not answered. When reports and letters seemingly serve no purpose, the tendency is to become careless in their preparation. A prompt denial of a request, or a courteous explanation accompanying the disapproval of a suggestion, are far less resented than

the ignoring of them altogether. It is desirable that the receipt of all communications be acknowledged and within a definitely stated period be acted upon by some office; at which time the initiator of the communication should be notified of the action.

Housekeeping

Housekeeping is the next large item in the administrative field that urgently needs attention. All hospitals and clinics should be conspicuous in their practice of hygiene. The population looks to the health activities for guidance and example, and unfortunately the leadership in this phase has not been what it should be.

Without exception the cleanliness is sub-standard, even though a large number of manual workers are available for the tasks. For example, in one forty-bed hospital there are only one physician, a few para-medical workers, and 70 unskilled laborers. There the Director is making a real effort but he does not know, and his employees do not know, how to go about doing a good job.

Special training for this important function has been suggested above.

Laundry

Laundry is another important function of administrative support. It can be part of the housekeeping function; or separate, in larger hospitals. In this field, great differences exist between the equipment that is available. In the Tripoli

Government Hospital there is good equipment, a fair amount of space, and good organization; while in a comparable hospital in Benghazi the laundry is done by hand in cold water and dried in the open air, at times on the ground, and generally is not ironed. A new laundry building is currently being made ready for the installation of equipment. It is poorly laid out. The Director does not know what equipment will be installed. The nun who will be in charge was uninformed that a new laundry is being constructed, and she has no experience with modern laundry equipment.

In the Cyrene Hospital -- perhaps the most modern and best equipped of the hospitals -- they have a battery of household laundry machines, no drier or flat ironer; but in a hospital for example of Gharian, with 50 beds, there is a laundry machine of 100 kg. per hour capacity, and too large to permit installation without structural changes. Jefren Hospital has good and adequate laundry equipment, including a flat ironer; this laundry would be adequate in a hospital of 300 beds or more, but it has long been used only for storage space for all kinds of odds and ends.

In general, there is no attention given especially to bloody linen or linen coming from isolation sections, or soap and starch cockers, and no thought has been given to the important matter of laundry circulation and the avoidance of mixing soiled and clean linen.

Here, too, it is essential that attention be given to the training of laundry superintendents, and the better planning of laundry space for the installation of standardized equipment.

Food Service

Food service is handled by the nuns in some hospitals and by the cook in others. Apparently the food is well prepared, and generally the cleanliness of the kitchens is good. The personnel has no idea as to the cost of the food itself, or of the operation. There is no special attention given to the dietetic needs of sick patients who are given the nationally popular foods, said to be responsible for much gastric disturbance. Therapeutic diets are individually prescribed by physicians but appear to be only rarely available.

The kitchen equipment in most hospitals is scant, in the American sense, but labor is available and the lack of mechanical equipment does not seem to handicap the operation. In most hospitals there are heated trucks for the distribution of food, but in not one hospital have I seen them plugged in to the electric outlets. In one hospital one such electric truck is used to keep the operating room blanket hot, while in another one is used as storage cabinet for the wards, and still in another it is in the lobby with an alcohol heater and cups for the use of the night watchman.

There is not a single hospital that has a dishwasher-sterilizer. This, in my mind, is the greatest and most serious shortcoming in the food service departments of all the hospitals, especially where infectious patients such as tuberculous are treated.

It is strongly recommended that modern dishwashing facilities be provided to most hospitals.

Attention should also be given to better garbage disposal. All wet garbage should have covered cans that are sterilized daily, and the garbage disposed of by burying, incineration or grinding up as the individual hospital finds most convenient.

It is also suggested that guidelines be prepared for the dietetic needs of hospitalized patients and a simple manual made available to hospitals, to give instruction in the preparation of the most commonly-used therapeutic diets. Perhaps a short-term dietetic consultant could prepare a list of the essential equipment, teach a team the use of the equipment, including the dishwashing and other hygienic procedures, and prepare the diet list for therapeutic diets and teach the preparation of it to a limited number of Libyan personnel.

Hospital Accounting

Hospital accounting is a field in which Libyan hospitals are doing very little at this time. Since budgeting is not a decentralized activity, and the amount of the funds available to a hospital is unknown, and cost accounting is not practiced, the finance officer or business manager is doing only simple book-keeping. As the hospitals proceed to undertake more decentralized responsibilities, and as the INAS is going to cover larger numbers of patients and will consequently utilize the services of the hospitals and clinics, more attention must be paid to the functions of the finance or accounting section.

It is essential that a uniform accounting system be devised and that all important documents and accounting reports be

safeguarded. It must be decided what statistical data are to be collected and communicated to the Director of the hospital and to higher authority.

One of the first priorities should be the establishment of a simple cost accounting system for hospitals. It is important to know how much a day's hospitalization costs. This figure must include the pro-rata cost of all services, including the salaries of physicians, cost of drugs, food, transportation, administration, and replacement cost of the hospital and its equipment. When the cost data for each hospital and dispensary are established, an average for Libya can be easily calculated. That average figure, with or without an average surcharge, should be charged for patients who are not entitled to hospital care and services without charge. The cost of hospitalization should be adjusted and brought up to date yearly.

For example, it is important that the Ministry's hospitals and dispensaries bill the INAS for hospitalization and dispensary treatment of its members. At present, this is done only in some hospitals and none of the dispensaries. In Jefran, for example, where there are several insured patients hospitalized, no charge to INAS is ever made. In other hospitals, the charge, when made is an entirely arbitrary figure of 70 piasters daily. Appropriate government agencies should be billed for hospitalization and out-patient care of their personnel, including the armed forces of the country. Each activity presumably budgets for its medical needs and responsibilities, and should transfer funds to cover the cost

for care of its personnel, when this is given by another governmental agency.

The accounting division is the logical coordinator of the budgeting requirements of all divisions and sections. It should prepare the final requests, and when the budget is received it should control the expenditures.

A hospital accounting firm can be contracted to set up the national standards, provide the forms, and train a team that in turn would go to the individual activities to install the system and later function as coordinators of the data assembled within the Ministry of Health.

PARTNERSHIP WITH NATIONAL HEALTH INSURANCE

The National Health Insurance (INAS) is a relatively new program in Libya, fashioned after the Italian system, and it is at present not capable of rendering complete service to the insured population. Even in its early infancy, it is creating a great problem for health planning. It is in the process of establishing independent dispensaries or clinics in many places where the Ministry of Health has established out-patient facilities. In some parts of the country it is paying, to full-time Ministry of Health personnel, a compensation rendering out-patient service to the insured patient, within the Ministry's hospitals and dispensaries. The INAS is in active competition with the Ministry of Health in recruiting personnel outside of the country and luring away the best employess of the Ministry by paying higher salaries than the Ministry can offer.

This is not in the best interest of Libya. The establishment of clinics or dispensaries requires the purchase of expensive equipment, and the obtaining of expert personnel to operate and maintain them. This equipment is generally used only a few hours a day and often at night when similar equipment in existing hospitals of the same community is idle. There is also duplication in the services of physicians, other professional workers, administrative personnel and in the purchase, warehousing and distribution of drugs and other supplies.

The number of insured persons and their dependents is too small to justify complete care, including hospitalization, developed and given them by INAS. Therefore, it is strongly recommended that the medical care activities of INAS, already separate from the Social Benefits activities, be maintained only as a central administrative controlling and evaluating organization; and that the actual medical professional work be delegated to the Ministry of Health. The INAS would pay a calculated share of both in and out-patient cost rendered to the insured.

This will require that:

- 1) The Ministry's staff, both professional and administrative, be increased to absorb the additional patient load. This could be done to the mutual benefit of the Ministry and INAS, by transferring the INAS staff (and equipment) to the Ministry.

- 2) The Ministry's personnel be given orientation in the proper recording of pertinent medical and administrative information, required for the insured patients; and that they learn to make timely reports to INAS on the services rendered, so that the insured patients and families receive their social benefits promptly.

3) The INAS Medical Director become a member of the Professional Standards Board, (heretofore suggested) and that he and his designates be ever welcome to the medical activities, where insured patients receive care, so that they can be satisfied their patients receive proper treatment and care.

4) The INAS set up standards for the evaluation of medical disability, and maintain a central organization of medical experts who can evaluate the submitted medical data, and if necessary request further laboratory test, x-ray examinations and expert consultation from the Ministry's hospitals.

I firmly believe that following the broad principles of avoiding duplication, elimination of competing governmental system in medical activities and following a single high standard for all medical care will assure cheaper, but (more important) better treatment for all Libyans, whether they finance their individual care, receive it through INAS, or through governmental financing.

According to the Statistical Abstract 1963¹, there were at the time of its publication, in Libya 4,458 beds in a total of 34 hospitals, special hospitals and health centers. The Five Year Development Plan envisages an increase of 2,143 beds at an estimated cost of Lt9.9.000. The Ministry of Health carefully considered the locations of new construction. No comments from me are necessary.

CROWDING IN THE EXISTING HOSPITALS

New constructions are necessary, more to reduce the beds in the existing hospitals than to sharply increase the total number of beds. There is no magic number of beds necessary to serve

adequately a given population. The need varies according to customs and the prevalence of endemic diseases. Availability of qualified staff more than beds will make a hospital perform well. I feel strongly that Libya's need for additional beds is less acute than its need for better distribution and utilization of beds, and for higher quality care. The most modern buildings and best equipment will remain unused if patients spurn them, and/or if there is no qualified and dedicated personnel available to utilize the facilities. No new construction can keep up with the demands for beds, if patients stay indefinitely because of slow treatment or social reasons. No planning for a hospital system will work if patients can travel hundreds of kilometers to be admitted, for routine non-emergency hospitalization, to the hospital of their choice, rather than to the one within their own community.

Some hospitals, especially the smaller Health Center Hospitals with a single, or at best with two physicians, are often empty; while others are crowded. With the exception of the hospitals in Misurata, Zuara, Nalut and Shahat, all hospitals have too many beds in each of their wards. Some have twice as many beds as they were designed for.

In most but not all the hospitals, the pediatric patient is accompanied by and shares his bed and board with his mother, at times with sisters and brothers too. In almost no instances were the mothers giving any help in nursing care and certainly were no help on the ward. They seem to stay in bed all day, requiring as much attention as the sick children. I believe this practice

is not in the best interest of the patient or the hospital. It was a pleasure to see three beautiful pediatric divisions where the sick children were well looked after without parental presence and interference in the General Hospital, Benghazi, the TB Hospital, Shahat, and in the hospital of Jefran.

While some departments are not crowded, some seem to have more patients than existing beds, consequently patients are housed on mattresses placed on the floors (as in the Emergency Hospital of Tripoli) and have two patients in a single bed in many others. On the obstetrical service of the Tripoli General Hospital, there were three patients in a single bed.

Isolation facilities are the poorest throughout the hospital system. The facilities are the oldest, no provision has been made for isolation techniques, there is extreme crowding and multiple occupation of beds, the nursing and medical care are marginal. I believe that urgent and expert attention must be given to this problem, especially in the three regional hospitals. Tripoli is probably the worst off, and has the greatest number of patients. Here new construction is strongly recommended.

CARE IN NEW CONSTRUCTION OF HOSPITALS

It cannot be overemphasized that all new construction should receive careful scrutiny, and that great care should be exercised, not only in the selection of site and the number of beds, but in the programming - which should be a joint responsibility of a competent Hospital Consultant and a Hospital Architect.

A visit to two new hospitals will illustrate this point.

There is a beautiful new hospital building, lavishly constructed by architects who have only scant knowledge of hospital routines

and functions, therefore, it is replete with useless waste space; while essential services have little room and lack functional unity. This hospital will always be difficult and expensive to operate. The other hospital is the new Mental Hospital in Tripoli, planned by an experienced and functionally-oriented physician. Here functional relationships are well conceived, and the hospital will well serve the purpose for which it was built; yet certain engineering and architectural details could have been better solved had Dr. Felice been given expert architectural assistance.

After the need for the hospital is determined and the probable site has been selected, the new hospital is programmed by carefully defining in detail the purpose it is to serve; the number of beds it will contain, and the kind of patients it intends to admit; the various services it will offer; the requirements for each department; the size and type of staff to be employed; the way each department will function and what their interrelationships will be. Generally this program is prepared by a competent Hospital Consultant, after discussion with the group who will finance the hospital and the staff who will work in it. The Hospital Architect, if already chosen, is also consulted.

After the approval of the written program, the hospital architect translates the principles contained in the program into a building design. First a preliminary sketch is prepared, indicating space assignments, functional relationships, flow charts and circulations. This is the time when the consultant and architect work closely together and when mutually agreeable changes are made. After agreement at this point, the architect proceeds with more definitive architectural drawings and later with engineering planning, while

the consultant begins on the planning of the equipment list, the supplies needed, the developing of administrative details, table of organization, staffing patterns and the training needs of the new hospital.

A TYPICAL HOSPITAL BUILDING PROGRAM

To illustrate how a hospital program is to be prepared, a Program for a Regional Health Center Hospital suitable for Sebha in the Fezzan is here given. The program could serve equally well, with modification, for any small General Hospital of 100-250 beds. On the basis of this program, a hospital architect would be in the position to prepare preliminary drawings, calculate the area needed, the cubic footage of the building, and estimate the approximate cost of the construction. See Appendix I to this report. Appendix II deals with a suggested Personnel or Staffing Pattern of the programmed hospital.

It has been indicated that all types of beds are not utilized equally; also, that in the future more and more patients who now need hospitalization will be taken care of in an out-patient department. It follows, therefore, that the bed allocation must be carefully studied and from time to time revised.

There is general crowding in the tuberculosis, isolation, obstetrical and pediatric wards. The question must be raised if special buildings or hospitals might not be considered to meet this problem.

SPECIAL HOSPITALS

At present there are in Libya two Tuberculosis, two Mental, one each of Venereal, Emergency Surgery and Leprosy Hospitals.

TUBERCULOSIS HOSPITALS

Tuberculosis is the disease that currently requires the largest number of hospital beds, therefore, it deserves special treatment in this report.

Estimated Incidence of TB

Tuberculosis is widely reported to be one of the most serious public health problems of Libya.

No accurate information exists on its incidence. Libyan hospital statistics for 1962 reported tuberculosis morbidity (per 100,000 population) in Tripoli as 211; in Cyrenaica, 310; and in the Fezzan, 230. This is roughly a 2.5% incidence. A sampling survey by the World Health Organization's TB advisor, Dr. Jean Helet, indicated a high incidence of tuberculosis in Cyrenaica in 1959. Mr. George J. Inada, USAID statistician advisor, estimates the incidence of tuberculosis in Libya to be in the neighborhood of 5%; while the physicians engaged in tuberculosis work and rural health center hospitals estimate its incidence, for the entire population, at 10%.

It is generally agreed, by all the physicians interviewed, and the laboratory reports seen in the few hospitals where such reports exist, that besides the common pulmonary tuberculosis there are a fair number of abdominal and genital infections. It can be assumed, therefore, that there is bovine tuberculosis and that a joint program with agriculture should be considered if the disease is to be controlled.

Present Approach to the Problem

Libya's approach to the tuberculosis problem so far has, by

and large, been limited to treatment. No organized case-finding or preventive work is currently in progress. Dr. Alfredo Kosopoulos, Director of the tuberculosis section in the Ministry of Health and Chief of the Central TB Clinic in Tripoli, is thoroughly familiar with the TB program and has written plans for instituting a competent case-finding and BCG vaccination program.

The program for tuberculosis prevention and treatment, as conceived by Dr. Kosopoulos and proposed in the Five Year Plan, envisages that all tuberculosis patients will be treated in special tuberculosis hospitals and special clinics, completely independent of the general hospitals and dispensaries. A total number of 1160 hospital beds is foreseen, 660 of which will be in hospitals that are not yet built.

TB Hospitals with Out-patient Clinics Presently Needed

Recognizing the special requirements of tuberculosis care and the long hospitalization needed for the patients, the continuation of special tuberculosis hospitals, set apart from the general hospitals for acute illnesses, is still desirable at the present time in Libya.

Where a tuberculosis hospital now exists, it is strongly recommended that the ambulatory clinic be located within the hospital, and that its staff work in the hospital wards and clinics. Only in this manner can the staff develop an encompassing point of view on this disease in the community, and on the value of case-finding, hospitalization, continued care by an out-patient

department, and rehabilitation. This approach will also make the utilization of scarce personnel and equipment, pulmonary function tests and laboratory facilities more economical.

Where the location of the hospital is distant from the population center, making it difficult for out-patients to get to the hospital, bus transportation from some central point of that community can be provided. Since the existing TB clinics are obsolete and new buildings are planned, these should be located upon the existing or planned general hospital grounds, making possible a combined use of x-ray, laboratory and clinical record system facilities.

The Location of Other TB Clinics

In locations where no tuberculosis hospital exists and where clinics are planned, it is suggested that these facilities be established within the existing or planned general hospitals.

All hospitals must have an out-patient activity. The treatment of all types of medical conditions will be more and more in out-patient departments, and less and less in hospital beds. As the Libyan medical care program develops, there will be more integration of all types of medicine -- preventive, curative and rehabilitation. Patients will be considered as whole individuals, within their environment, rather than as individuals with some special diseased organ. Therefore, the tuberculosis clinic should be part of the entire hospital-health complex.

There is, of course, every justification for the clinic to be staffed by specialists in Ptisiology and that the standard of

treatment and administration of the program follow the norms for tuberculosis care developed and published by the tuberculosis section of the Ministry of Health.

Specifically in the Fezzan, it is recommended that the tuberculosis hospital and clinic be part of the Sebha General Hospital. Recommendations for the general hospital will be given elsewhere.

TB Case-Finding, and Prevention

The concepts of using mobile case-finding and BCG vaccination units, of using a staff in two small localities -- as suggested in the Kosopoulos Five Year Plan, and of developing chest surgical teams in each of the three major political Regions of the country are well conceived.

The Necessary Number of Hospital Beds

The number of beds, 1000 for the entire country, now considered necessary, is perhaps too high if ambulatory care will be given greater scope and if the period of hospitalization for patients can be reduced. With good control of patients and with adequately trained medical personnel, average hospitalization can be reduced to an average of 100-120 days. This would mean that in 1000 tuberculosis hospital beds, at least 3000 patients could be adequately hospitalized yearly for active advanced tuberculosis.

I cannot believe that this number of persons in Libya annually requires, or would accept, long-term hospitalization for tuberculosis. I consider that even with the present long

hospitalization, 650 special beds would suffice -- with some isolation beds available in general hospitals, where patients could be attended until their need for long-term hospitalization or surgery is established, when they would be transferred to a special tuberculosis hospital for their long-term hospitalization.

In my opinion, more urgency exists for establishing a program of case-finding and BCG vaccination than for new construction.

Education of the Community in the Problems of TB

The success of such a program depends largely upon good community relations and acceptance of the program by the people. This is inconceivable without community nursing, social service and health education. It is not suggested that specialists in each discipline are essential. The point of view and some technical knowledge of these disciplines in a single individual with or without special training will have to suffice in Libya for some time to come. Recruiting technicians for these positions may not be easy, since no successful program can be developed without a useful knowledge of Arabic; and any foreign technician with the usual two years' contract will not be able to acquire language proficiency within his contract period. Another difficulty will be encountered in the existing cultural rejection of the idea of women's employment in these fields.

Until professional Libyan personnel can be trained, it is suggested that a carefully selected and well-oriented physician be appointed to a position of physician in charge of community relations, with the responsibility of preparing the communities

for the acceptance of a case-finding and vaccination program, for educating the community to receive the patients when they return to their homes, and to facilitate the follow-up of these patients. This is not to be a clinical assignment, but one of support of the clinicians. This doctor should be given Libyan personnel of good cultural background, to be trained on-the-job for the various facets of the work, such as publicity with its audio-visual and writing responsibilities. Others would be trained for home visiting and environmental responsibilities.

Importance of Training Libyans at All Levels

Before embarking on hospital construction, one must realize that even the best built, equipped and supplied hospital remains inanimate without a hospital team of physicians, nurses, technicians and other auxiliary personnel. While physicians and some technical personnel can conceivably be recruited from outside the country, it is essential that Libyans be engaged in large numbers to do the bulk of the important routine work. Some of these persons will be skilled; some semi-skilled; and some, manual laborers. But all require training. The building of the trained team must precede the building of structures.

RECOMMENDATIONS

The visits to Libya's existing tuberculosis facilities, where certain observations were made, have brought me to the following specific recommendations based upon them: --

A) Nursing care

- 1) Sputum cups are now of enamel ware, often chipped and open. They should be replaced by disposable cups that can be burned.

- 2) Neither patients nor staff wear masks. Masks should be worn for self-protection by the staff and to reduce dissemination of the disease. They should bear a visible mark to indicate the outside of the masks. They should be changed daily, and autoclaved.
- 3) The wearing of gowns by the personnel should be made compulsory.
- 4) Each patient should have his own thermometer.

B) Laundry

- 1) All laundry workers who sort and handle linen before it is processed should wear masks and protective gowns.
- 2) All laundries should be equipped with autoclave.
- 3) Linen, in institutions where other than tuberculosis patients are treated, should be dyed a distinctive color. It should be specially collected in marked laundry bags, and autoclaved before laundering.
- 4) All laundry bags should be autoclaved.

C) Kitchen

- 1) Dishes should be centrally washed and sterilized. None of the hospitals has a dish sterilizer.
- 2) Garbage cans should be covered; and sterilized daily.
- 3) Garbage should be burned and not sold for the feeding of animals.

D) Maintenance

- 1) It is essential that an incinerator be built in each hospital. It should have the capacity to burn wet garbage as well as trash.
- 2) Trash should be collected in covered receptacles, and the latter sterilized.
- 3) Hand-washing facilities should be provided for the staff, in each nursing unit.

E) General

- 1) No family should be permitted to "sleep in" with a patient.
- 2) New-born child should be immediately separated from mother.

- 3) Children should not be permitted to visit. This is to include the children of mothers working in the hospitals.
 - 4) Female patients should be advised of the danger, to themselves and their offspring, in case of pregnancy; and should be offered contraceptive advice and instruction if they desire.
 - 5) Use of International nomenclature of diseases should be established.
- F) The Tuberculosis Sanitorium, Busetta, Tripoli
- See under Tripolitania

Establish on-the-job training for Libyan personnel on all levels.

- G) The Tuberculosis Clinic, Ministry of Health.

This is a good organization, doing good clinical work in an old and inadequate setting. Its most urgent need is for a laboratory with trained personnel.

It would be desirable to create an adequate new clinic in conjunction with the Busetta Sanitorium.

It is essential that a tuberculosis case-finding and BCG vaccination program be instituted.

The Ministry of Health is aware of the urgent need for more beds, better equipped and staffed institutions, and the plans are made to initiate tuberculosis case findings and BCG vaccination programs.

Since huge amounts of time will be required to develop the plans, and build new construction, certain temporary solutions are being considered.

1. There is a plan to equip a new building in Ajdabia, as a temporary tuberculosis hospital. The building was visited, and I consider it entirely inappropriate for use as a hospital and it is especially unsuitable for adaption to serve the needs of tuberculosis patients.

2. I was shown a group of buildings near Benghazi and was told that these may become available for conversion. These buildings, if properly equipped and properly converted, could adequately accommodate some 250 long-term tuberculosis patients. Should this building become available, the bed-requirement for tuberculosis would be solved until the new general hospitals are built and put into operation.

MENTAL HOSPITALS

At present there are two mental hospitals in operation, both in Tripoli. Since the old institution is about to be abandoned and all patients are to be transferred into the new hospital, it is not necessary to comment upon it.

The new Gagaresch Hospital is a splendidly-conceived, modern institution, dynamically headed by Dr. Felice who willingly shares the credit with his multi-lingual staff. The hospital is built to accommodate 450 patients, and there is room for expansion, if the need arises.

It is strongly recommended that:

- 1) The occupational therapy facilities be much extended, and consideration given to the establishment of shops where the patients could make articles for sale so that from the proceeds they may take care of some of their personal needs.
- 2) A physiotherapy unit be established.
- 3) An out-patient department be organized and in conjunction with it a "Night Hospital Program" established, by which

patients could live in the hospital at night and work in the community during the day while they get accustomed to full extra-mural living. And-

- 4) Establish a pediatric unit, with schools and mental hygiene clinics.

The mental hospital in Shahat, that accommodated 150 patients, has been closed after the earthquake in that zone, and now no other mental hospital exists in Cyrenaica. It would appear reasonable that in the new general hospital, planned in Benghazi, (and as a matter of fact, in all new general hospitals), they provide a psychiatric unit. This unit would admit acute psychotics and be prepared to give active treatment for toxic psychosis, also to those with psychomotor disturbances; but would transfer to Tripoli patients requiring longer hospitalization. In conjunction with these psychiatric units, it is essential to have an organized out-patient department.

It is believed that the presently available number of psychiatric hospital beds, and the beds made available in each general hospital for the transient psychotic episodes and other short-term admissions, will meet the country's demands for psychiatric beds for the next several years. Additional needs will develop or not, depending on the continued success of tranquilizers and the dynamic treatment of patients by competent staff.

VENEREAL DISEASE HOSPITAL

This hospital seems only to serve for the control of the licensed prostitution in Tripoli. While the clinic control is expertly carried out, in-patient cases are simply non-existent.

It is recommended that the few patients needing hospitalization be admitted for treatment to the gynecologic department of the Tripoli General Hospital; and the in-patient portion of the Venereal Disease Hospital be discontinued.

EMERGENCY SURGICAL HOSPITAL

This hospital is intended to serve in the emergencies that arise from accidents; but at present all kinds of surgical cases are admitted and all types of elective surgery is done. They have 85 beds and good surgical equipment, but the sterilizing facilities and kitchen are poor, and there is no laundry.

The staff is excellent. At the time of my visit there were six physicians on duty and four more were immediately expected to arrive. There are two anesthetist technicians and there are trained personnel in the laboratory and x-ray departments. There is a notable lack of blood bank.

The staff is doing a prodigious amount of surgery. With an average daily admission of five patients, both operating rooms are in action all day. Emergencies, also, are treated on an out-patient basis. For example, all patients with minor fractures go home after the case has been applied.

ORGANIZATION OF PROPOSED HOSPITAL SYSTEM FOR LIBYA

Presently, the Director-General for Medical Care and Preventive Medicine is the operating official for the medical care program in Libya.

On a lower operating level, there are unnecessary and undesirable duplications in functions. Preventive medicine and community health programs are delegated to different sets of personnel from the program for medical care. There are, within each program, semi-autonomous activities such as maternal and child care clinics and tuberculosis control. It has been strongly recommended in this Report that both the functional and geographic separation be eliminated as soon as possible, and that, in all new construction, provisions be made for complete integration of all the facets of the program.

It is desirable that all operational responsibilities or line functions be carried out by Libyans, as soon as personnel can be trained. Therefore it has been suggested that as rapidly as possible, experienced Libyan administrative personnel be given additional formal training and subsequently named to the positions of Hospital Administrative Director. Where there is a non-medical Hospital Administrator, a Clinical Director who is an eminent foreign physician can be appointed.

It is further suggested that positions be established within the office of the Director-General, for the field supervision and coordinating of all the health activities of the country. This is in addition to and not in lieu of the existing administrative organization presently functioning in the three regions. These organizations, for the time being, would remain unaltered, but their functions might later be modified

on basis of recommendations made by the Assistant Directors for Medical Care and Preventive Medicine. Three positions are proposed: one each for the Western, Eastern and Southern regions.

STRONG REGIONAL ADMINISTRATION .

Three positions are proposed: one each for the Western, Eastern and Southern Regions. Although the incumbent's principle responsibility will be the visiting of the respective regional activities, his headquarters should be the Office of the Director-General in the Ministry of Health. This is necessary in order to avoid the reestablishment of the system of the "Nazareth" (wherein each Region established individual practices at times inimical to the principle of a single centralized authority), and to avoid the incumbent's taking over at this stage of organization the administrative responsibilities of the existing Regional offices.

Until such time when competent Libyan physicians, with degree and experience in public health or hospital administration, become available, these three Regional positions will have to be filled by foreign physicians. Consequently, it is perhaps undesirable to charge them with direct operational responsibility. They will represent the Director-General, will interpret the policy of the Ministry of Health to the field activities, and gather the information necessary for wise policy-making on the Ministerial level. In other words, they will be highly placed staff officers, whose opinion will be sought on the level of policy making. Their advice to the Regional offices and the field stations will carry the weight of that of the Director-General, whom they represent.

As soon as feasible, each Regional Assistant Director General for Medical Care and Preventive Medicine should have assigned to him an administrative assistant and certain technical experts who can contribute to the effectiveness of the field inspection, and who can initiate the training of field personnel. These technical experts may be shared by the three Assistant Director Generals.

In Libya, where at present the country must rely upon foreign technical assistance in all health activities, it is essential to have frequent contact between the Ministry and the field stations. Supervisory visits stimulate better work; and it is wise to follow up the visits to ascertain whether suggestions have been complied with and corrective steps taken, and to assess the progress made towards the achievable goal. It is also essential for the Ministry to have first-hand information, gathered on the operational level, because only in this manner can a reasonable program be planned, and sound estimates made of the quality of the staff, the adequacy of the physical plant, how the system of supplies operates and what actually is the relationship between the community and the staff.

ADMINISTRATIVE ASSISTANT TO THE DIRECTOR GENERAL

Within the office of the Director-General there should be an administrative assistant for Field Operations who will schedule the field visits of the Regional Directors and staff and who will keep in constant communication with them. He will participate in the frequent meetings of the three Regional Assistant Director Generals and the Ministry's technical advisors, and will keep the minutes of these meetings. He will also keep the report on the field visits. When an Administrative Assistant to each Regional Director is

appointed, these will coordinate their activities with the Administrative Assistant for Field Operations.

THREE COMPLETE, REGIONAL HOSPITALS

The hospital system as foreseen in the Ministry's Five Year Plan, with the modifications suggested, would have three complete regional hospitals, with specialists available in almost all fields of medicine, obviating the need to send patients for some types of treatments, as it is now commonly practiced, to foreign countries.

THE GENERAL HOSPITALS

There will be a number of general hospitals with adequate medical staff to render most of the commonly required medical and surgical diagnostic and treatment services. In these hospitals most of the clinical work will be done by general practitioners, but there will be specialists for the most needed special work such as general surgery, or pediatrics.

HEALTH CENTER HOSPITALS

The next lower echelon will be the smaller Health Center Hospitals, with different number of beds, essentially for meeting emergency needs in obstetrics, pediatrics, medicine and surgery. Here patients will not be hospitalized for long-term care or elective surgery. For these they will be transferred to a larger general hospital. The professional staff will be general practitioners and when available public health physicians.

HEALTH CENTERS AND HEALTH POSTS

Still smaller units will be Health Centers with only one or two physicians and beds only for keeping patients long enough to await transportation to a hospital. Here no major surgery will be attempted and no patients will be hospitalized who need care beyond a few hours.

The smallest unit of the system is the Health Post (ambulatoria) with a trained nursing employee and (hopefully) a midwife in attendance. The work is limited to meeting the daily transient medical needs of the community. Problem cases will be scheduled for the Health Center physician's regularly scheduled visits. Preventive medical care, vaccination, prenatal visits, well baby clinics will be organized.

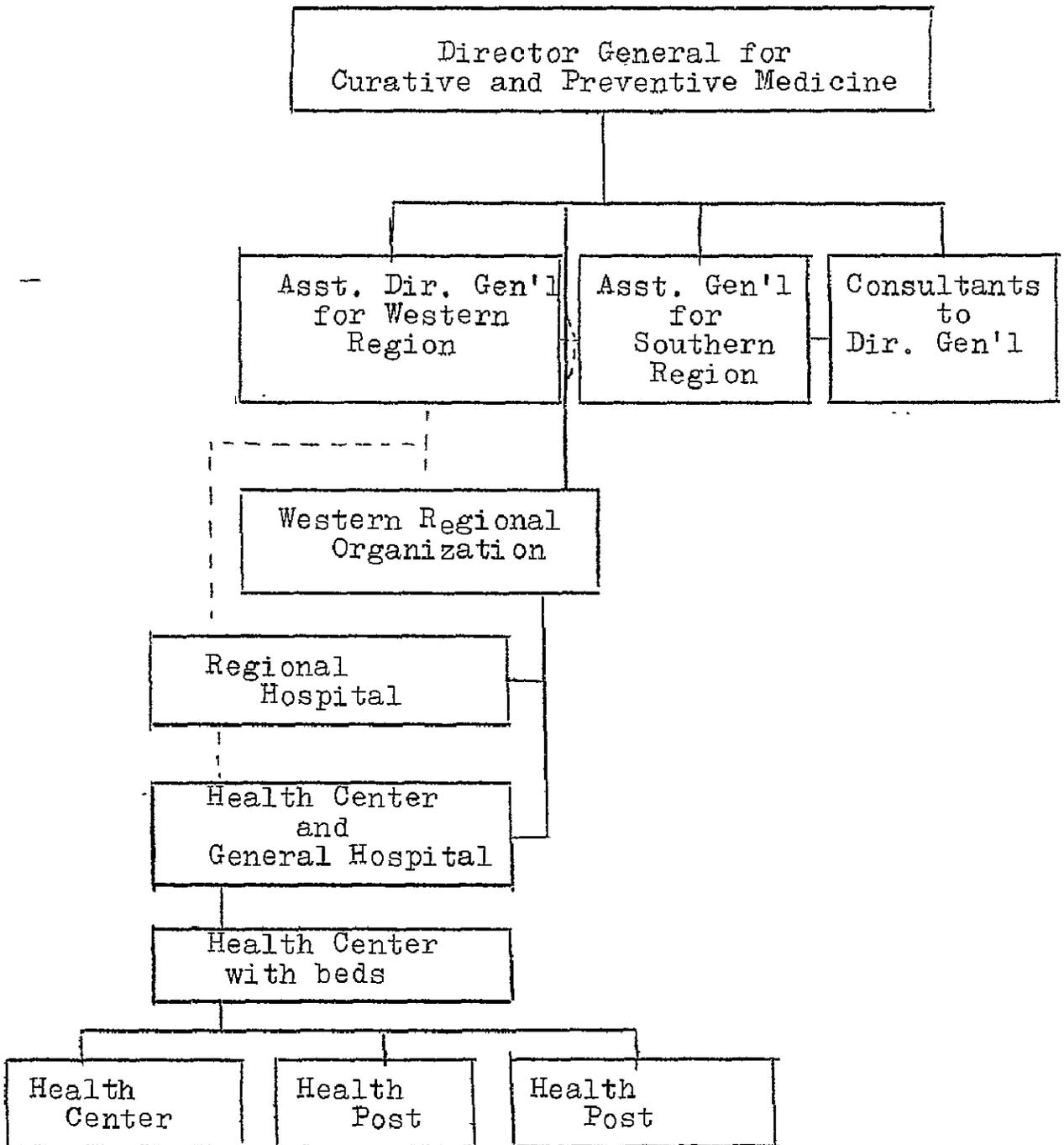
VISITING SPECIALISTS

Specialists or specialist teams will be organized in the three Regional Hospitals for periodically visiting the smaller general hospitals and Health Center Hospitals where they will give diagnostic or therapeutic assistance to the local staff and will review the professional work of the staff in the specialty field each represents. In this manner the head of the department of each specialty in the Regional Hospital will exercise a professional functional guidance over the physicians in the entire region. It goes without saying that he should share authority in the appointment and evaluation of the clinical performance of the physicians; each head of the department, by necessity of this added responsibility, must be carefully selected and must have professional background equivalent to those who occupy high teaching and administrative posts in their own countries.

POLICY REGARDING SPECIAL HOSPITALS

It will be the policy of the Ministry of Health that in the future no special hospitals be built. The need for the existing special hospitals however is so great that no immediate possibility exists to eliminate them. The tuberculosis hospital, the psychiatric

HOSPITAL OPERATION



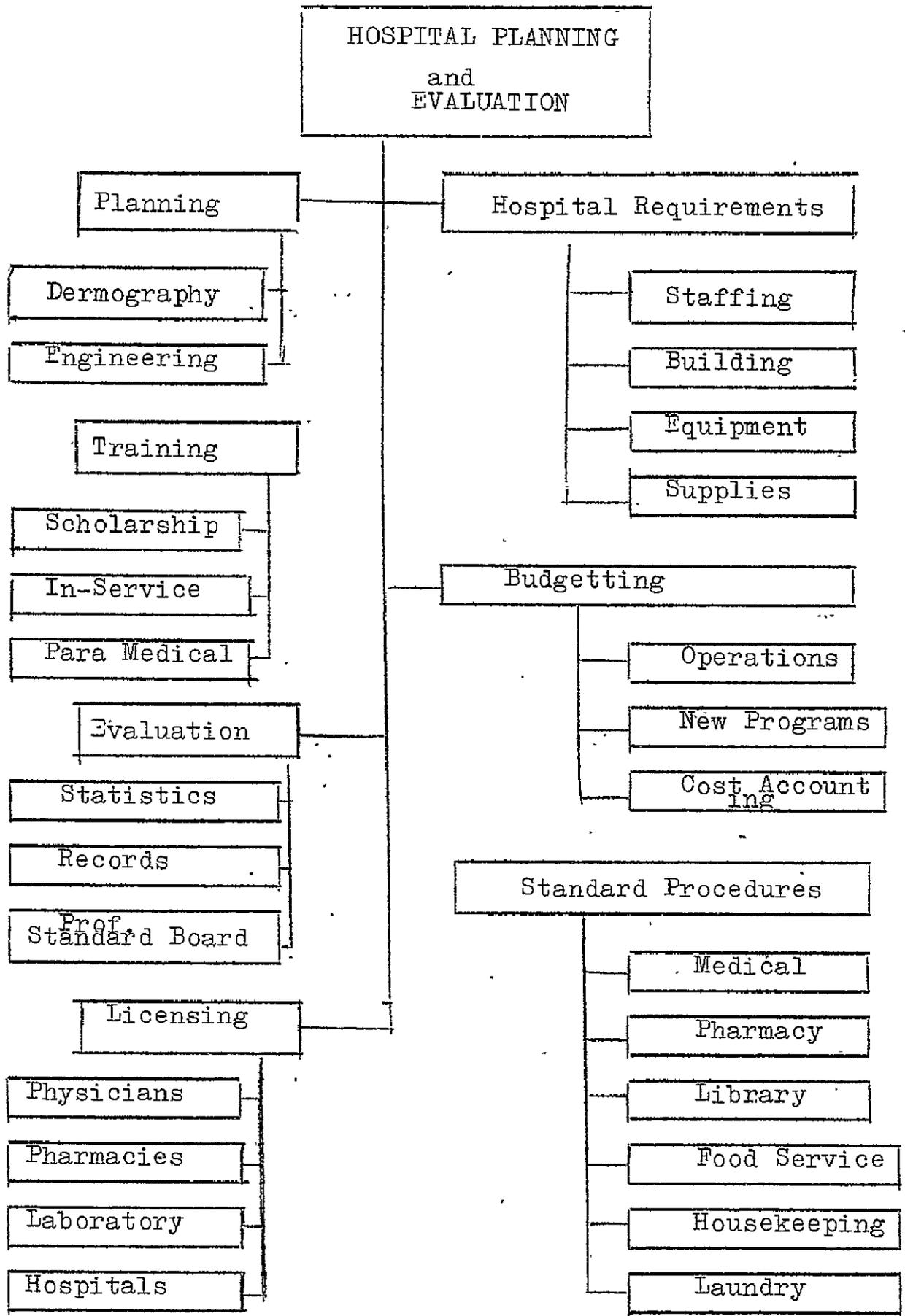
hospitals and the leprosarium will receive patients referred to them by the individual Hospitals, or Hospital Health Centers. The special hospitals will serve primarily in rendering definitive treatment requiring long term hospitalization and special facilities. Special thought will have to be given to the care of the old patients not requiring active medical attention and who cannot be returned to their families. Some of the old hospital buildings that become available with the construction of new hospitals might be used for Nursing or domicilliary care of these patients. Another need exists for providing "Hostel" accommodations for discharged, or convalescent, patients, and families accompanying patients, who at present remain in the wards and corridors creating problems for the hospital staffs.

PLANNING AND EVALUATION

Quite a different problem from operation is the planning or programming of the hospital system and of evaluating the performance. It is hoped that these functions can be given an equal organizational standing. It is realized that the present organization of the Ministry does not have a Department and Director-General for Planning. If such a department is unacceptable to the Ministry, a second and less desirable alternative is to have the Hospital section divided into Planning and Operation, leaving both subsections within the existing Department of Medical Care and Preventive Medicine.

In any event, the planning or programming will be done on the basis of existing and anticipated long-term needs of the country, the availability of resources, and reasonable timing. Therefore, in the event of new construction, the section should have reasonable information on the following:

- 1) Dermography, including density of population, expected changes within 5, 10 and 20 years; existing and planned community development programs. When the location of the future medical care institution, its size and functions have been decided, it has to be "programmed."
- 2) Engineering. Based upon the "Program" architectural preliminary drawings are made. Site surveys must be conducted, when the final architectural and construction plans are prepared, they must be approved by hospital consultant and all architects.
- 3) Equipment: This must be planned for all new construction on the basis of approved plan and function. Equipment and supplies must be available at the time when the structure is ready for occupancy.
- 4) Training of personnel. Based upon the size and functions of the new facility, a personnel staffing pattern will be prepared and key personnel selected or recruited. The maintenance director, or in smaller facilities a general mechanic, should be assigned to the contractor six months to one year before the completion of the building, so that he may be thoroughly familiar with all the mechanical features of the structure that will be his duty to maintain. Several months before the expected inauguration of the hospital, the Administrative Director, Clinical Director, Supply Officer, Chief Nurse and Personnel Officer should begin to prepare the organization of the facility and learn to work as a team. The coordination of the team will be the responsibility of the Training Section.



These boxes represent functions and not individuals.

Besides the planning of new facilities, there is a constant need to evaluate existing facilities, plan their maintenance, and at times modify some activities and equipment. An up-to-date list of standard equipment and supplies must be kept. Information will be needed on developments in such services as food, laundry, housekeeping. This information then has to be adapted to the needs of Libya and published as the standard, the norm of hospital practice. What is true in the administrative and auxiliary services also applies to the professional activities. Here, too, certain minimum standards must be maintained and constantly evaluated.

THE PROGRAMMING OF TRAINING NEEDS

The training needs for Libya's hospital system are vital and must be carefully programmed on all levels - professional (outside the country; para-medical training, within the country; and in-service training. A constant coordination will be required not only within the Ministry of Health, but also with the Ministries of Education and Planning. Also with International agencies and foundations.

FUNCTIONS OF A PROFESSIONAL STANDARDS BOARD

Recruiting of personnel must also be a carefully planned program in which the proper person must be found for each programmed position. The establishment of a Professional Standards Board would function within whatever section approves the staffing patterns, position descriptions, position requirements, assignments, grades and performance.

Since the Ministry of Health is responsible for the supervision of all medical care activities, whether it is provided by the Ministry itself or other agencies, therefore this section would also have to establish the

minimal standards that must be met by all hospitals, clinics, dispensaries, nursing homes and physicians before they can engage in giving care to patients.

The section will prepare the budget estimates for the new constructions and new programs, and will coordinate the work plans and budgets for the existing activities within the medical care program.

ADVANTAGES OF A UNIVERSITY CONTRACT

It is recommended that an outstanding physician hospital consultant be contracted to head up this section. He should have on his staff a competent assistant, a non-medical hospital administrator; and a bio-statistician. This team of three should be employed full time. Additional short-term consultants in the allied or supporting fields should be made available. For example:

- 1) A contract could be made with a hospital accounting firm to establish the system of cost accounting; the routing of billing for services rendered to other governmental agencies - especially to the INAS; and the training of a few key personnel.
- 2) An expert in housekeeping could be got to teach a group of Libyans the organization of a housekeeping section, the use of modern equipment and techniques, and to plan the training schedule.
- 3) Similar short-term consultants could be used for maintenance, for service, management, radiation safety procedures, etc.,.

Consideration should be given to obtaining on a long-term contract the services of a U.S. University. The University could study the total need of the Ministry's needs for planning, operation, evaluation and

training and provide the Ministry with the staff required for each of these functions in Libya, and on the University's own campus or affiliated institutions. Training and consultants will be easily available with special knowledge on Libya's needs and continued interest in solving the problems.

This has the great advantage that a contract is made with a single organization of proven excellence and reliability. Thus, all the details of recruiting and contracting with individuals are eliminated. The finding of the proper place for training a large number of Libyan scholars is a major task that only a great University can solve. And finally, there would be available to Libya an almost inexhaustible wealth of experience, within easy reach and on short notice.

RESUME OF RECOMMENDATIONS

in Brunner Health and Hospitals Report

PERSONNEL:

FOREIGN

A shortage of qualified personnel is the Number One Problem in Libya's Ministry of Health. Libya will have to be dependent on foreign technical personnel to fill most of the important and many of the routine positions for many years to come. Therefore it is recommended that:

- 1) A Professional Standards Board should be established, to prepare the staffing pattern for hospitals and health centers; to write the position descriptions and performance requirements; to examine the qualifications of applicants; and approve the employment and assignment of recruited personnel.
- 2) Recruiting should be conducted with specific positions and the finding of the appropriate candidate firmly in mind.
- 3) The pay scale should be adjusted for all personnel, so that for equal responsibility equal compensation is received. Employees of longer service should be given salary adjustments in line with the salaries paid to new recruits.
- 4) A career service should be created in which a small number of key personnel of proven excellence and loyalty be given the option of making permanent -- or at least long-term -- contracts.

- 5) All employees should be full-time, and not permitted to engage in outside gainful professional work.

PERSONNEL:

LIBYAN

It is tremendously important to prepare Libyan personnel for positions within the health field. In this Report, the needs are estimated, and suggestions made as to strategy. To recapitulate:

- 1) Scholarships should be established for secondary school graduates to study for professional degrees.
- 2) A specified number of University graduates should be selected for special training in public health and hospital administration.
- 3) Experienced administrative employees can be trained in hospital administration at a "Certificate level," under the tutelage of selected preceptors.
- 4) A specified number of promising technicians can be trained for key positions such as maintenance, housekeeping, laundry, food service management, hospital accounting, record management.
- 5) The existing training of nurses, midwives, laboratory technicians needs extension. Let new courses in conjunction with the existing and newly planned hospitals be prepared and set up.
- 6) On-the-job training, at all levels within each hospital, is essential.
- 7) Assistant health officers are a category to be considered: one that would give valuable service at a lesser cost.

- 8) Organized training groups would be of great value, for visiting hospitals and teaching the hospital staff certain skills, or preparing them to assume certain new functions. For example, a team could give instruction in hospital organization, bookkeeping, record-keeping; while another could train certain personnel in the management and operation of central services; or sterilization; or the management of a recovery ward; or an intensive treatment unit.

HOSPITALS IN HEALTH CENTERS

Hospitals should be considered as an integral part of an over-all public health program; not as an unrelated activity. All new hospitals should be built as general hospitals that are part of Community, City, or Regional Health Centers, in which environmental and community health work, curative and rehabilitative medicine have proper and balanced representation. All of these Health Centers should have training responsibilities, both in the technical and in the general health education level. Investigation should be encouraged.

HOSPITAL ADMINISTRATION

As quickly as feasible, the Health Center Hospitals should be administered by national personnel. To accelerate this, it has been suggested to train non-medical administrators for the leading administrative positions. Within 10 years, enough Libyan personnel could be prepared for these important posts. But they must have medical support. Therefore it is recommended that the position of Clinical Director be established in each

hospital that is administered by a non-medical Director. The Clinical Director is to be given appropriate authority.

NURSING

A nursing service is to be developed in every hospital. There should be a clean-cut understanding as to what are the proper nursing facilities. Each nursing service should be headed by a professional nurse; and in each hospital there should be at least one other professional, with responsibility to train, on-the-job, the personnel who render care to the patients.

LABORATORIES

All hospitals must have an intra-mural clinical laboratory, prepared to perform at least the essential diagnostic tests; and must have easy access to a consulting laboratory service, where the more complicated tests can be done and the reports quickly communicated to the clinical service.

MEDICAL RECORD KEEPING

All Health Centers and Hospitals should be required to prepare and safeguard patients' records that contain all pertinent clinical and administrative data; with the admitting and discharge diagnosis, stated in the international nomenclature.

Hospital statistical data, vital statistics, the report of communicable diseases, and important administrative information will be preserved, in order that base-line information for national planning will be available.

BUDGET PARTICIPATION

Health Centers and Hospitals should be made responsible for preparing their own yearly work plan and budget estimate. When their budget is approved, the responsibility for controlling the expenditures should be delegated to the local institutions.

EMERGENCY PURCHASING

Within sensible and defined limits, each institution should be given authority to make emergency purchases, appoint lower-echelon personnel, and enforce their adherence to the national standards and local regulations.

SOME LOCAL AUTONOMY

Within established national standards, policy statements and budget limitation, hospitals should be delegated the responsibility (and the commensurate authority) to plan their strategy, and to establish local policies without need of reference to higher authority.

STANDARDIZED PURCHASING

Besides their staffs and their funds, medical care institutions need large quantities of equipment and supplies. In order to make these easily available, it is recommended that all items that are used be standardized. A list of standard items should be given to each activity, and they in turn should be required to establish a standard inventory. When the inventory is approved, there should be budgetary provision to maintain this at a permanent level. All non-standard items will gradually be eliminated.

EFFICIENT DISTRIBUTION OF SUPPLIES

To facilitate the easy flow of necessary supplies to the using services, it is essential to have a well-functioning supply service -- or medical stores, as it is

called in Libya. A complete program for the proper functioning of such a service is given, in the Report.

TRANSPORTATION AND MAINTENANCE

Steps should be taken to eliminate the present practice by which the transportation and plant maintenance and repairs are dependent on the Ministries of Communication and Public Works respectively.

IMPORTANCE OF AVOIDING TWO HEALTH SYSTEMS IN THE NATION

Duplication of governmental medical programs such as the nascent National Social Insurance (I.N.A.S.) should by all means be avoided. This organization is competing with the Ministry of Health for qualified personnel, and is currently in the process of establishing facilities within sight of the existing Ministerial activities. It is strongly recommended that the Ministry of Health absorb the existing I.N.A.S. medical facilities and render, on a reimbursable basis, complete clinic and hospital care for the insured and entitled families. The Ministry should also obligate itself to provide I.N.A.S. with rapid and adequate clinical and administrative information, upon which I.N.A.S. can comply with its proper social insurance obligations to its subscribers.

h o w t o d o i t a l l

HERE ARE TWO METHODS OF ORGANIZATION:

I.

To bring about the above professional, administrative and even legal changes, the Minister of Health can establish an organizational element, to concern itself

with planning, and the evaluation of services. This organizational element would plan on the national scale; prepare the standards, and the timetable for reaching the objectives; coordinate the budgets; plan the training programs; and evaluate the results. This organization would function parallel to the present organization of operational responsibilities within the Ministry. The latter's function, according to this concept, is to place the plans and standards in full operation. To put it otherwise, Planning is a staff function (office); while Operation is a line function (the field). There must be complete coordination and constant interchange of opinion between these two organizational elements.

A less desirable alternative is to have, under the Director-General of Curative and Preventive Medicine, a "Hospital Section," with planning and operation forming two sub-sections.

A. Planning and Evaluation

1) The Director of this sub-section can be a distinguished physician (foreign) who is an outstanding expert in the hospital field, with experience in working on a national scale in hospital and public health administration, construction, equipping and organizing health centers and hospitals. He should have experience in recruiting, training and administering schools for paramedical personnel. It is desirable that he be multilingual.

2) The Assistant Director can be a foreigner who is a qualified non-medical hospital administrator with a Master's degree in hospital administration, and membership in the American College of Hospital Administrators. He should have not less than five years' experience as an administrator or associate administrator of a fully accredited hospital. He will be responsible

for the preparation of the hospital system's budget and the preparation of the standards for the administrative field. He will concern himself with the continued education of the non-medical hospital directors. It is desirable that he be multi-lingual.

3) The Statistician can be a foreigner who has a Master's degree in medical or biologic statistics, or in clinical record library science; with not less than five years' experience in the hospital or public health field. He must have proven ability in investigative work in statistics.

B. Operation

1) The Director-General of Medical Care and Preventive Medicine will be in charge of the hospital system. He must be a Libyan physician, distinguished in his clinical field; and must have public health or hospital administrative experience. After 1969, the holder of this position must have a Master's degree in either public health or hospital administration.

2) Regional Directors are staff officers who advise and assist the hospital Directors and who report their findings to the Director-General of Medical Care and Preventive Medicine. There will be a Regional Director for each Region: Western, Eastern, and Southern. The Regional Directors must be physicians. They may be foreigners, with Master's degree in either public health or hospital administration, with three years of practical post-graduate experience. (Five years of practical experience may be considered as equivalent to the Master's degree).

Appendix II

Table of Organization and Staffing Pattern for the Programmed Hospital in Sebha.

Administrative Director's Office:

Administrative Director	1
Secretary	1
Clerical Pool	5
Telephone Operators and Information	5

Administrative Offices and Activities:

1. Finance Officer	1
Bookkeeper	1
Agent Cashier	1
Clerk	1
2. Personnel Officer	1
Asst. Personnel Officer	1
3. Supply Officer	1
Store Keeper	1
Clerks	2
Laborers	2
4. Maintenance Engineer, Chief	1
Housekeeper	1
Laundry Foreman	1
Laundry Sorter	1
Laundry Machine Operators	4
Seamstresses	2
Ward Janitors	15
Other Laborers (Housekeeping)	15
Machinist, Boiler Room	1
Plumber	1
Electrician	1

APPENDIX
PROGRAM
FOR THE
REGIONAL HEALTH CENTER
(GENERAL) HOSPITAL
SEBHA - LIBYA

by

Dr. Endre K. Brunner

Consultant Medical Care Program

INTRODUCTION

The Regional Health Center Hospital of Sebha will be the principal Health Center and Hospital in the Fezzan Region.

It will be staffed and equipped to serve as consultation and treatment center for all satellite hospitals and health units of the region.

It will be the teaching hospital and clinic for the School for all types of health workers for Fezzan.

The Regional Health Center Hospital will be located on the ground of the present hospital.

The hospital will have all conventional services of a modern general ~~teaching hospital~~. The Health Center - Out Patient Department will be larger than usual for a hospital of 150 beds because the utilization of this activity for pre-hospital diagnostic work, post discharge follow-up and rehabilitation of patients is anticipated. It will also serve as a center of preventive medicine and teaching of students in all phases of paramedical work. It will also serve as orientation center for newly appointed physicians and health workers recruited from foreign countries who will serve in the Fezzan.

This program is for the guidance of the architects and the committee that will coordinate the project.

ADMINISTRATION LAYOUT

On the main floor, near the main entrance hall, will be located the director's and assistant director's offices. Between the two will be an office for their secretaries.

The director's office will be large enough to accommodate a desk, two chairs, a sofa with two chairs, a coffee table and a small bookcase.

The assistant director's office will be large enough for a desk, three chairs and a small bookcase.

The secretaries' office will also serve as waiting room for no more than three people. It will have two desks, two filing cabinets, a supply cabinet and chairs.

The business office will be adjacent to the admissions office. It will have a patient locator file, a mimeograph machine, a desk for patient control clerk, a desk for the billing clerk, and another for the cost-account clerk. There will be a grille window opening to the lobby. Behind this window, there will be an enclosure with safe and desk for the agent cashier. Here will be room for accounting machine, I.B.M. machine, visible files, and filing cabinets.

The supply officer needs a desk within the business office area where he can work and interview dealers and job seekers. (For opening bids he can use a conference room.) His purchasing agent, storekeeper, inventory clerk and secretary may be better located in the warehouse area.

The personnel office will be easily accessible to an entrance for facilitating contact with job seekers. The chief of personnel must have a private office within the general office, to enable him to converse privately with applicants and employees. In the general office will be a classification technician, who will serve also as assistant personnel officer, a recruiting and personnel technician and secretary. The office needs four file cabinets, a supply cabinet, a bookcase and chairs or bench where 4-5 applicants may wait.

The maintenance director will have his office near his shops, or boiler room. He needs an office large enough for his desk with two chairs, a drawing table, a cabinet for all the architectural and mechanical plans of the Health Center Hospital and a visible file on its preventive maintenance. His secretary's room will also contain timekeeping unit for the maintenance division.

The housekeeper will have space similar to that of the maintenance director, except that his office will require no drawing board or blueprint cabinet. It can be located in the basement near the employee's entrance but if this is not feasible, any location is acceptable.

The library - a space to be constructed to accommodate about 300 volumes of books, 100 current, scientific journals, safeguarding ground volumes of journals for 10 years, catalogue cabinet, desk and work table for a librarian, and table and chairs for 10 persons.

THE OUT-PATIENT PROGRAM

The Out-Patient Department of the Health Center Hospital will also function as a Community Health Center and will render the following preventive health services:

- 1) General health examinations of both adults and children
- 2) Vaccinations and other immunizations
- 3) Pre- and post-partum care
- 4) Nutrition clinic for the healthy and those who have metabolic diseases
- 5) Sight preservation
- 6) Hearing-problems clinic
- 7) Dental prophylaxis
- 8) Cancer detection clinic
- 9) Rehabilitation (physical, mental and vocational)

The professional care will be given in the specialty clinics.

The admissions office will be a part of the out-patient department and so will direct patients to first aid or emergency service.

The out-patient department will serve as teaching center for medical students and para-medical personnel.

All patients examined will have a clinical chart with records of clinical laboratory tests, Xray examination and data on hospitalization. This clinical chart will be included in any new chart of future hospitalization. The new chart will bear the original serial number in accordance with the "Unit Numbering System."

All new patients, whether hospitalized or not, will have a chest Xray which will be repeated routinely every year.

New patients will have a routine uranalysis consisting of specific gravity, sugar and albumin determination, and a microscopic examination of the sediment; a determination of hemoglobin and blood smear for morphology and search for malaria parasites; a serological test for the diagnosis of syphilis. These routine tests will be repeated if more than one year has elapsed between the patient's last visit to the Health Center Hospital.

The admissions office and emergency service will function 24 hours a day. The admitting physician will be the director's representative during the night hours, Sundays and holidays. During regular clinic hours, his admission and emergency functions will be carried out by the out-patient department staff.

Routine admission procedure begins when the patient is interviewed by the admissions clerk who will record the vital administrative data. He will issue the clinical chart to which he will assign the patient's unit number. He will also prepare a locator card, charge cards, etc.,. From here the patient will go to the photofluorographic unit for his chest Xray, then to the laboratory testing of his blood and urine and then to the admitting physician or specialty clinic. If the need for admission is decided upon, the patient next will be interviewed by the social service representative to determine his ability to pay for the full or partial hospital bill and his possible needs of

social service attention. The planning for his later discharge and rehabilitation begins here, at the time of his admission.

In case of emergency admission, the patient will be first attended by a physician and the administrative routines will be attended to later. Some information may be obtained from an accompanying relative or friend.

The Health Center Hospital will have a main entrance which will lead to reception hall sufficient to accommodate a limited number of visitors but not so large that it will invite social gatherings and loitering. On one side will be an information desk with a 24-hour service. Here will be located the telephone central and the fire alarm system. The attendant will have a patient locator file, information about critical patients, operations and other vital facts that may be given to relatives or public by phone or in person. Here will also be located the board indicating the presence or absence of the medical staff.

The same information desk will oversee the two waiting rooms, one each for men and one for women and children, each having a space with 40 seats. From the information desk will be distributed the clinical charts, and patients will be sent to the various examining rooms. Also this desk will give passes to visitors who may see hospitalized patients.

Adjacent to this desk will be three cubicles where an admissions clerk will get the data from the patients to be admitted either to the out-patient department or to the hospital.

Three more cubicles will be available for the use of social service interviewers.

The diagnostic and treatment facilities will be a continuation of these administrative spaces. Provision must be made for a reasonable separation of men and women in accordance with current social customs.

TECHNICAL AUXILIARY SERVICES

Photofluorography: For routine chest X-ray or tuberculosis control.

Clinical Laboratory: For quick routine examinations of blood and urine - to accommodate one technician and the following equipment: a boiling sterilizer attached to the wall; hand washing basin with towel rack; laboratory sink with suction apparatus for the cleaning of pipettes; laboratory table with bottle racks, 2m x 50cm; small refrigerator; chair with arm-rest for drawing blood; stool for the technician; microscope table; a cart to transport specimens to the central laboratory and a stretcher for patients who need rest after the taking of a laboratory sample. Beside the laboratory will be two toilets, with an opening through which a patient can pass the bottle containing urine specimen to the technician.

ADMISSIONS OFFICE

Conveniently near the above described space will be located the admissions department consisting of a consultation room with desk and three chairs and an X-ray viewing box. On either side of this room there will be an examining room. Each will have an examining table, scales, a chest with diagnostic equipment, a Mayo stand, a stool for the physician, a washbasin with towel rack, and a wastebasket. This department will be so located that it can be reached from the ambulance entrance, which is located at the back of the hospital. The ambulance entrance will have a marquee to protect patients from rain.

EMERGENCY SERVICE

This is closely connected with the admissions service and the ambulance entrance. It is a space that will have a first aid cabinet, an antidote locker, equipment for catheterization, gastric lavage, tracheotomy, suture set and oxygen tanks. It will have a washbasin, towel rack and wastebasket.

Connected with this room will be a small recovery room with bed, bedside table and two chairs. Opening from this room will be a toilet and washbasin.

THE CLINIC SERVICES

The staff will be provided by each Specialty Department and each physician will have both in- and out-patient responsibilities.

The Medical Department will have two units similar to the admissions service. Between the two units will be dressing cubicles for the patients and a closet for nursing supplies.

Urology will have three rooms; one for consultation, two for examination and treatment of patients. One of the treatment rooms will have a sterile water tank for bladder irrigation. The rooms will have tables suitable for observation, cystoscopy and hand washing facilities.

Orthopedics will have two rooms: one with an orthopedic table and a suspension apparatus for applying plaster jackets. It will have a cabinet for plaster of Paris bandages, a sink with plaster trap, and a worktable 3 x 4m. The other room will be of unit size for routine examinations and consultations.

Ophthalmology will have a refraction room of 6m length with three treatment chairs with their treatment stands. Also cubicles for retinal microscope, visual field equipment, electromagnet. Connected with this, but jointly used with otolaryngology, is a small darkroom of 2 x 2m.

Otorhinolaryngology will have a room with three treatment chairs, cuspidors, treatment table with suction and spraying equipment. It will have easy access to the darkroom jointly used with ophthalmology. Also adjacent to this will be an acoustically treated room for audiographic testing.

Dental Service: Two rooms with chairs for diagnosis and treatment: the first equipped with X-ray, the second with surgical unit. Adjacent to this, a small recovery unit with bed will be located and also in this section will be a small dental laboratory for minimal technical work.

Surgery (General Surgery) will have a unit with a consulting room and three treatment rooms. One treatment room will have a Buey (rectal) table; the others will have examining tables, equipment cabinet, dressing carriage, hand-washing basin, towel rack and wastebasket. The unit will have two dressing cubicles and a closet for nursing supplies.

Gynecology will have 3 rooms; one for consultation, two for examination and treatment of patients. One of the treatment rooms will be equipped with electrocoagulation and tubal insulation apparatus. Both will have wash basins. The facilities, specifically for women and children will open from the women's waiting room and will be completely separated from the general facilities that serve both males and females.

Pre- and Post-Partum Clinic: One unit with a consulting and two examining rooms; another room where a nurse takes and records the patient's weight, blood pressure and the result of the uranalysis will be here. In the same room will be dressing cubicles and a storage closet for nurses' supplies.

Pediatrics will be adjacent to the pre- and post-partum clinic. It will have clinics for pre-school and school children. The same room where the mother's weight and blood pressure are taken will at other times serve the same purpose for healthy children. There will be four examining rooms for pediatrics; each with table, instrument table, desk, three chairs and a hand washing basin.

Separated from this area, a group of three examining rooms will be installed for sick children; each equipped as above (near the medical service).

Vaccinations: Adjacent to the well-baby clinic will be a separate room for vaccinations with an alcove for waiting. The room will have a refrigerator, boiling sterilizer, instrument table, three chairs, stool for the nurse, hand-washing basin, towel rack and wastebasket.

OTHER SERVICES

Near the ramp or stairs, perhaps in the basement, will be shower rooms for patients to be routinely admitted, one for men and one for women. There will also be two dressing cubicles for changing from street clothes into hospital clothes. Connected with this will be a room where the patient's clothes and valuables will be stored while the owner is in the hospital. There will also be a desk and chair for the attendant, a filing cabinet, a safe and a supply closet for hospital garments and linen.

Chief Nurse: She will have an office with a glass enclosure from which she can survey the nursing activities. There will be a desk and chairs for herself and an assistant. A medicine cabinet and another supply cabinet, will be located here. Opening from this office and from the corridor will be a nursing utility room, containing a worktable with cabinets and shelves above it, a hot plate, a large utensil sterilizer, an instrument sterilizer and hand washing facilities.

Records: The central record room must be continuous or in close communication with the information desk where the patients will be given their assignment and the records distributed. It could be located in the basement with a dumb-waiter connection if room is unavailable in the administrative offices.

Within the out-patient department area, it will be necessary to locate messengers who distribute charts, collect laboratory specimens, help with stretcher and wheel chair patients. There will be room in the same place for one stretcher and a wheel chair.

Sanitary Facilities: Near the waiting room the public toilets both for men and women will be located.

Cleaning: Near here or some other convenient location will be a janitor's closet with janitor's sink, mop rack and shelves for janitor's supplies.

COMMON SERVICES

PHARMACY

The pharmacy will be centrally located, easily approached from the out-patient department and convenient for the dispatching of medication to the hospital nursing units by means of a dumb-waiter.

Prescriptions will be given to out-patients through a window opening into the waiting room or corridor. On the level of the window will be a worktable with drawers for the filing of prescriptions. Narcotic prescriptions will be separately filed. Prescription blanks of different colors will indicate whether they are for in or out patients, insured or private patients.

In shelves around this window the common drugs and materials, pre-packaged in the usual amounts, will be ready for dispensing, requiring only the adding of the number of the patient's prescription.

Around the room, starting from the window, the drugs will be placed on shelves and in drawers in alphabetical order with their names and inventory. Expensive and rare drugs will be guarded under key, in the above manner.

In the center of the room will be a bench of 2 x 1 m with scales, mixers, mortars and other usual pharmacy equipment.

It is not intended that the pharmacy compound any individual prescriptions. It will only dispense approved standard drugs in standard packages.

There will be a second room where bulk drugs will be kept ready for processing. Here will be a small office for the chief pharmacist where he can interview salesmen, confer with staff and where he will have a bookshelf for his ready reference library, such as Pharmacopoea, useful drug lists, drug and equipment catalogues. There will also be a safe for narcotics and expensive items, and an icebox for the safekeeping of biologicals.

The pharmacy will be large enough to accommodate three employees and drug baskets from all the nursing units. In these baskets will be distributed the drug order of each unit.

LABORATORIES

The laboratories will be easily accessible to both in and out patients. They can be on the ground floor or the floor above, near the ramp connecting the various parts of the out-patient department.

Their waiting room should contain four chairs, a stretcher and a wheelchair.

Next to the waiting room will be four cubicles, each with a cot and instrument table. One will be used for electro-cardiography; one for the testing of basal metabolism and pulmonary function; and two for additional space for the above tests, for taking blood samples and drawing blood for blood transfusions.

There will be a room of 3 x 4 m with worktable and equipment to work up and file the results of the tests done in the cubicles.

Near here will be toilet facilities for patients, men and women.

The Clinical Laboratory will be located in a large room of about 6 x 8 m. Here will be prepared the materials and solutions used in the laboratory.

This will serve also for uranalysis, gastric content and other chemical analysis such as blood chemistry. Around the walls will be laboratory benches with sinks, shelves below and above. In the center will be a chemical laboratory bench with centrifuge on either end.

Separated from the main laboratory by glass partition, but a part of it, will be a ventilated space of about 2 x 4m. for the examination of feces.

A similar space, but without exhaust, will be reserved for hematology.

Communicating with this space will be a small room that can be entered also from the outside, used for drawing routine blood from up patients. It will have three chairs with arms, and between them two small tables for instruments and material.

Bacteriology and Serology Laboratory will have a laboratory bench of 2m x 60cm with water and gas connection. Another laboratory bench with hood TB work, of about 2m x 60 cm, will also be installed. There will be space for an incubator of 2m x 60cm and a refrigerated centrifuge requiring about 1 x 1m in space and an icebox.

Separated from this laboratory by a glass partition will be the virus laboratory, 3 x 4m in size. To be equipped only when virology will be initiated, probably in several years.

Attached to this unit will be the sterilizer and preparation room with an autoclave requiring 1 x 2 space, a hot air sterilizer of 60 x 60cm; scales, equipment for washing bottles, Petri dishes and general cleansing. A supply closet will be attached to this room of about 4 x 5m.

There will be a small office for the bacteriologist and the section's secretary.

The Blood Bank will be nearby, under the direction of the serology laboratory. It will contain a central laboratory bench with microscope, a stand-- and floor centrifuge and two Jewett or similar blood refrigerators with alarm system.

Pathology Department: Requires a room with a central workbench with running water where organs can be cut and microscopically examined. On one side will be a microtome and a freezing microtome. On shelves around the walls will be material such as paraffin, dies, etc., and the blocks saved for future sectioning. Around the walls will be located benches for the technicians and the spacing of two auto-technicons, each requiring about 1 x 1m. space and slide cabinets of about 1m x 50cm. Estimated space: 3 x 4m.

A similar size room will be required for the study of the stained specimens. This microscopy room should have facilities to darken it for small conferences when slides are projected. It should be provided with ventilation.

The pathologist will have a small office and another office for two secretaries and filing space for the autopsy protocols.

In this section will be located a supply closet and a janitor's locker with cleaning equipment and water.

The autopsy room will be located on the basement floor, near an exit from the building. It will have a cadaver refrigerator for two cadavers. This will open at both ends so that a body can be taken directly to the autopsy room or out to be delivered to the undertaker. The autopsy room should accommodate up to 12 onlookers. The autopsy table will be installed with hot and cold water and basin. There will be near it a scale and instrument table. Around the walls will be shelves where autopsy material can be stored. Size: 6x6m.

Adjoining the autopsy room will be a small dressing room, with toilet and shower, for the pathologist.

Also connected with the autopsy room will be a small room where the attendant can clean up the equipment used and where needed supplies are kept.

There will also be a janitor's closet, with water and cleaning equipment.

ROENTIGENOLOGY

This department will be responsible for only diagnostic work.

The waiting room will accommodate four chairs, a stretcher and one wheel chair. Through a window opening into the department's administrative office, patients will receive their instructions and number that will correspond with their unit number as well as the number within the X-ray department. Each patient will be directed to the proper room and technician.

The administrative office will have room for two desks, and transcribing equipment. Here will be stored the reports and the X-ray plates. Size: 4 x 5m.

The X-ray reading room will also serve as conference room, and will accommodate 14 participants. It will have 10 batteries of viewboxes of eight lights each, with a chair and a dictaphone. There will also be located a stereoscope, a bookshelf for ready reference and a skeleton closet.

The hospital will have two radiographic units, each with its dressing cubicle and toilet to facilitate X-rays and barium enemas. Between the two units will be located the darkroom for film processing.

Here or in the operating suite will be the cystoscopy room with a Squire or similar table, a dry sterilizer for ureteral catheter, a boiling wall sterilizer, a leaded box for plates, a viewbox of two lights. The room will provide space for the surgeon and four other persons, and permit easy movability for a stretcher. If cystoscopy is located here, there must be room for the surgeon to dress and scrub for the operation.

The radio-isotope laboratory, for routine diagnosis and therapy, also could be located in this area. It will contain two counters, a laboratory bench with shelves, a lead safe and a stretcher.

There will be a small private office for the director of roentgenology.

There will be:

- 1) Toilets and washroom for personnel
- 2) Storeroom for supplies, such as X-ray plates, chemicals
- 3) Janitor's closet

Space will be reserved also for a mobile X-ray unit, a wheel chair and a stretcher.

REHABILITATION

Rehabilitation will have no nursing unit of its own, but will render service to hospitalized patients in the various departments. It will be located, if possible, on street level or near a ramp. Its administration will have three offices: one for the director, one for two assistants, and a space for a secretary between.

There will be a gymnasium of 8 x 4m; a room for hydrotherapy with Hubbard tank, two whirl baths, each for arm and leg, a scotch douche (size 8 x 5m). Another room will contain four tables for massage and other types of physical therapy. This will have a short wave diathermy apparatus, two ultra-violet lights, two infra-red lights and a paraffin bath. Size 4 x 5m.

For nerve and muscle testing and examination, a room with two cubicles and a room for the equipment will be reserved (3 x 4m).

A small room acoustically treated will be used for rehabilitation of the aphasic patient. Here also will be equipment for psychologic testing; a closet of 2 x 2m for storing occupational therapy equipment; bath and toilets for the personnel and toilets for patients; a janitor's closet with water, cleaning supplies and equipment.

* * * * *

THE CENTRAL SERVICE AREA

The Central Service will be so located that it is connected with the operating and delivery rooms, and if possible also with the pharmacy by a dumbwaiter.

In this department all the material and supplies of the hospital will be cleaned, packaged, sterilized and distributed to the various hospital areas.

Also it will store and distribute upon request, equipment not in daily use on the wards, hence more economical to have centrally available, such as Stryker, Balkan frames, oxygen tents, suction apparatus, vaporizers, Pulmotor, respirator.

The equipment and supplies will be distributed through a Dutch door near the elevators. There will be a wide door through which bulk material for processing can be easily received.

The principal workroom will have two windows: Through one, the used equipment will be received for processing; through the other, the sterile supply requirement of the hospital will be satisfied. The used material will be carefully washed and examined for defects, packaged and sterilized - thereafter, stored on shelves or cabinets, in quantity to be distributed again for use. On benches and around the room will be equipment for the cleaning of syringes, needles; (the latter to be tested and sharpened) rubber glove washing and reconditioning equipment. In the center of the room will be a large worktable where gauze and other material can be cut and processed.

There will be space for the bulk material to be processed, and adequate space for both sterile and unsterile materials. The space for the sterile supplies must be large enough to take care of the hospital needs during weekends, holidays and emergencies.

The equipment stores will include two oxygen tents; two large and three small suction apparatus, one Pulmotor, one respirator, eight Wangentstein apparatus, three Balkan and two Stryker frames, one oscillating bed, and shelves for many varied small equipment.

The sterilizing equipment will open into the principal workroom, but will be separated from it by a wall. It will have two autoclaves, one of 2 x 1m, another of 1m x 60cm. There will also be installed in the same area a hot air sterilizer requiring space of 1 x 1m and two distilling apparatus; one with 10 gallon an hour capacity and the other with two gallon an hour capacity. Required space: 1.5 x 3m.

There will be special space for the storing and distributing of oxygen and anesthesia gases. The floor will have metal strips to provide grounding of these explosive materials. Space: 2 x 3m. The estimated space for this activity is 50m² for work space, storage of material 8m², storage of equipment 12m², storage of gases 6m².

NOTE: If for any reason the entire pharmacy cannot be located centrally on the lower floor within the out-patient department, it can be included in Central Services, leaving only a small dispensing unit in the out-patient department area - which, however, must then be connected with the Central Service by special phone and dumbwaiter.

OPERATING ROOMS

There will be two major operating rooms: One will have equipment for orthopedic and neuro-surgery, but will not be exclusively used for that purpose. Each operating room will have shock-proof floor, four X-ray viewboxes, electric clock, shock-proof outlets for electro-surgical equipment, wall suction and oxygen supplies.

There will be two smaller operating rooms - one primarily for ophthalmology and otorhinolaryngology. This should be equipped for darkening without shutting out ventilation. The other smaller room will be used for minor surgery, especially for septic cases. The general equipment is similar to the major operating rooms.

Centrally located and available to all four operating rooms, there will be a room for the rapid autoclaving and/or boiling of equipment, a water sterilizer and storage facilities for nursing requirements and surgical instruments. This space will have dumb waiter connection with Central Service. Size: 12×14^2 .

There will be also room for pathology, a space of about 6^2 for the storing of equipment, a freezing microtome, a microscope, a small table with staining material and a stool for the pathologist.

The anesthesia room is for storing equipment and records and not for induction. Size: $12m^2$.

Central to the operating rooms will be the four hand washing sinks with soap dispensers, a basin for antiseptics, a workroom for the operating room attendants with water where the bloody linen can be soaked, the instruments cleaned and dried and unsterile supplies stored. Size: $12m^2$. If feasible it could be connected by a door with the nurses' sterile storage space.

There will be a dressing room for: 1) surgeons, with eight clothes lockers, one shower, one urinal and one toilet and hand basin; 2) female

doctors and nurses with four clothes lockers, a shower, a toilet and hand-basin; 3) male attendants, as under "two," except for an additional urinal.

The recovery ward will be adjacent to the operating rooms and will accommodate six patients in a single ward, but separated from each other by partitions. Two additional units of six beds each will be in the same section for the intensive treatment cases. A single head nurse could then supervise both groups of patients, although bedside care will be rendered by different groups of nurses. Each bed will have its individual oxygen and suction. The space between beds will permit the easy working of a nurse and a physician - the placing of an infusion set and instrument table. The nurse's station will be connected with a utility room in which will be a utensil sterilizer, a boiling wall sterilizer for instruments, a solution and a linen heating cabinet - medicine cabinet, an icebox, a hot plate, a bed pan washer and shelves for emergency equipment such as: laryngoto-thoracotomy sets. Connected with this will be a toilet for the nurse. Between the recovery ward and the operating rooms will be offices of the operating room supervisor and anesthetist and, between the two, the room for a secretary who will also keep all the operating room records.

HOSPITALIZATION

A. SURGERY

There will be sixty beds assigned for the hospitalization of all surgical specialties.

Each nursing unit will have a nursing station with a desk, a chair, a clinical chart rack, a drug cabinet and an icebox. Connected with each unit will be a toilet and a hand washbasin, towel rack and wastebasket.

Connected with the nursing station will be a utility room with a boiling; wall sterilizer, a bodpan washer, a utensil sterilizer, a bench with lockers below and shelves above. It will have a hot plate and alcohol lamp or Bunsen burner, a hand washbasin, towel rack and wastebasket. Here or separately there will be space for janitor's cleaning supplies and sink.

A room (for examination and treatment) containing a tilting table, a surgical dressing car, a Mayo table, scale, a small desk with two chairs, a washbasin with towel rack, a wastebasket, a cabinet for instruments and supplies, and an X-ray viewbox, will be needed.

An office for the ward surgeon, with a desk, two chairs, bookshelf, a private toilet and washbasin will also be located here.

Between the nurse's station and ward surgeon's office with entrance to each, will be the office of the ward secretary with her typewriter, transcribing equipment and supply cabinet.

The linen closet will be near the utility room. It will contain a linen cart with the inventory of a one day supply. The empty or near empty cart will be exchanged daily by the housekeeping department for a cart of full inventory.

Each one or two nursing units will have a diet kitchen for the serving of food and the storing of dishes, utensils and needed items for serving. This will have dumbwaiter connection with the kitchen. It will contain an icebox, a serving table with cabinet to heat plates, shelves for storage, and sink with hot and cold water. Size: 10m².

Between the semi-private rooms will be a toilet and washbasin. The toilet will be equipped with bedpan washing facilities, bedpan and urinal racks for two. This toilet will have entrance to both rooms.

The general sanitary facilities will have a cubicle for a bathtub, two showers, four urinals, four toilets and four washbasins with shelves and mirrors. All wards will have washbasins with foot pedal control.

The bed distribution in Surgery will be as follows:

- a) General Surgery will also include otorhinolaryngology, gynecology and urology. Men - 20 beds. Women - 20 beds.

(There will be a nursing unit for each, with one ward of eight beds, one ward of four beds and four semi-private rooms of two beds each: a total of 20 beds each.)

- b) Ophthalmology. Total of beds: 10

- c) Orthopedics. For men: one ward of 4 beds

one unit for semi-private patients: 2 beds

For women: two units " " " : 4 beds

- d) There will be a solarium or dayroom for each nursing unit.

Total for Surgery: 60 beds

B. INTERNAL MEDICINE

Internal medicine will have 57 beds:

Male: 19 beds - two wards each with 8 beds
two wards each with 4 beds
four semi-private rooms with 2 beds
six private rooms

Female: one ward with 8 beds
one ward with 4 beds
two semi-private rooms with 2 beds
three private rooms

The medical specialties, dermatology, cardiology, neurology, will also be hospitalized here. The nursing and general facilities are the same as under Surgery.

C. ISOLATION

There will be 10-12 beds, each private with its own toilet and washbasin, bedpan, urinal rack. The room will be equipped with ultra-violet room sterilizer.

The nursing station will be standard as in Surgery.

The diet kitchen will have a small dish-washing machine to avoid mixing dishes with those of the general hospital patients.

The linen will have distinct color and the soiled linen will be collected in distinctly marked bags that will be autoclaved before laundering.

Near the entrance to this unit will be a room with clothes rack where staff and visitors will be required to put on a robe, cap and mask.

An existing building will be converted into a tuberculosis unit after the new hospital will be built and operating. Another existing building will be adapted for living quarters to accommodate hospital personnel and a few transient rooms for patient's family.

C. PEDIATRICS

Pediatrics will serve patients below the arbitrary age of 12.

All patients will be first hospitalized in a reception ward to reduce the danger of infection from unrecognized exanthema; males and females will not be separated. The ward will have four cubicles for older children and four cubicles with cribs for the infants. In the center will be the nursing station from which the nurse can survey all the activities of the ward, a total of 8 beds.

Connected with the ward will be the sanitary facilities with a tub, a shower, toilets and washbasins. Here will also be the bedpan washer, utility sterilizer, bedpan and urinal rack, and janitor's facilities for cleaning.

After proper observation period, children will be transferred to the regular hospital section of a ward with 4 beds each for males and females, 2 semi-private rooms of 2 beds each and four small individual rooms, a total of 12 beds.

There will be a premature nursery with a foyer from which one may enter into the isolation and the clean section. The isolation nursery will have a heated crib and an incubator. There will be a wall bench and water for bathing, scales and all other isolation nursing requirements. The main nursery will have two incubators and two heated cribs, its nursing supplies and equipment. Both nurseries will have central oxygen supply and suction. The foyer will have a small desk for the nurse and charting material.

The section of Pediatrics will not have visitors in the observation-isolation units, or in the nursery. Visitors, when permitted, will wear hospital gown, cap and mask, which will be placed in a small room with

clothes rack. No provision is provided for the family accompanying the patient.

There will be an open space for children's furniture and toys for the up patient.

Surgical cases will return from the operating room to the recovery ward and from there will be taken to the single rooms of the surgical service. When the immediate post-operative condition permits, the patient will be returned to the Pediatrics service for recuperation.

Formulas will be prepared by the dietitians in the kitchen and sterilized in the Central Services. The sterile formulas will be in custody of the Nursing Service of Pediatrics and will be kept in their icebox.

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OBSTETRICAL DEPARTMENT

The principal nursing unit will be similar to that of the 20-bed surgical unit. Each adult bed will have a corresponding crib for the new-born. The second wing of the department will serve as a delivery unit consisting of 4 labor rooms or rather cubicles which will be entered through a corridor. A nurse on duty can observe all 4 cubicles. In the same suite will be a bathroom with toilet, a table for examination and shaving of the parturient, a shower and a bedpan sterilizer. Easily approachable from here will be two delivery rooms and between the two an instrument room with boiling sterilizer, water sterilizer and rapid autoclave. In front of the delivery rooms will be three hand washing basins for the scrub up of the obstetrician. There will be a surgeon's dressing room with shower, toilet, a couch and three lockers; a nursing station with a bath and dressing room. There will be a stretcher

station and a janitor's closet. In this general area should be a room equipped as an emergency delivery room, for infected cases. Close to the delivery suite but not within it, will be an isolation nursery with an ante-room that will accommodate a dressing table, baby bath, scales, shelves, supply cabinet. The nursery will have two incubators and four cribs. There will be two individual bedrooms, each with private toilets for isolation cases. The premature nursery is to be placed in the Children's Hospital.

GENERAL INSTRUCTIONS

In the hospital section there will be built two auditoriums, each to accommodate 30 students. They should be so built that the partition that divides the two can be opened and make a single large auditorium of the two. The facilities should include blackboards, moving picture (sound), projection and wiring for later installation of closed-circuit television.

The operating rooms (two of the major ones) and one of the delivery rooms should be equipped with closed circuit television camera which will replace the teaching amphitheater. A control booth will be built over or between the operating rooms. The wiring will lead to the two auditoriums.

The two bed units will have central oxygen and suction outlets in wall boxes. At least two such outlets will be in each of the larger wards as well.

There will be a nurse's call system from each bed. The central register is to be placed in the nurse's station. Telephone in each doctor's and secretary's office and nurse's station, and all other offices

and activities. A public telephone booth large enough to accommodate a wheel chair should be provided on each nursing unit.

A central record room where charts can be stored on shelves will be located probably below the information booth. Charts will be kept active for at least five years; therefore, space must be adequate for at least 100,000 clinical records; also for photostatic and microfilming equipment. Close to this basement location but with good ventilation and light must be a space for three clerks who will codify the clinical charts and keep the cross-reference files. A private office or cubicle within the large office will be set aside for the chief of this section. A table and chairs should be available for the doctors and students engaged in clinical and statistical investigation.

TEACHING OF HEALTH WORKERS

There will be a closed circuit television to view the operations. The screen will be located in an auditorium of 80 seat capacity.

One of the large operating rooms and a delivery room will be equipped with television camera; over it will be the television laboratory where the technician can control the camera and the colors.

Each clinical service will have a small conference room within or near their respective wards. The conference room will accommodate 25 persons.

The out-patient department will have a room that can accommodate individual desks for 6 visiting nurses and 6 sanitarians. Two health educators should also have 2 secretarial desks, maps and bulletin boards on walls and 4 filing cabinets. Adjacent to this room a room with sewing machines, 3 large tables and chairs for mother's Club and community meetings.

LIBRARY

In a suitable location, locate a library to accommodate 1,000 volumes of books and 20 current journals, catalogue, micro-film reader, two study booths - 2 reading tables with 2 chairs each and a workroom 3 x 4m for the librarian.

Central record room will house all records for in and out patients and will probably be located below the information desk. They will be stored on open shelves and in accordance with the unit-numbering system. There will be a card index with alphabetical listing, according to diagnosis, treatment, age, sex, etc. The chart will remain on the active list for at least five years from the date of the last visit or hospitalization. Room should be provided for an estimated 50,000 charts. There will also be room for a photostatic and a microfilming machine. There will be three employees working here: a chief who will have a desk and two chairs in a cubicle; a coding clerk with desk, typewriter and card index files; and a clerk. Room should be available for a conference type table and four chairs for staff who will be engaged in statistical investigation.

OXYGEN AND SUCTION

Private and semi-private rooms will be provided with wall oxygen supply and suction - larger wards will have at least one on each wall of the ward. Operating rooms, delivery room, recovery room, emergency room in out-patient department will also have similar equipment.

CALL SYSTEM

All beds will have a call button that will register at the nursing station and over the door or bed.

There will be a light call system on each ward corridor and hospital corridors to page physicians or other personnel.

All offices and nursing stations will be equipped with telephones. On each nursing unit there will be a public pay telephone, large enough to permit the entrance of a steel chair.

KITCHEN

The kitchen will be ample, light and airy. In its center will be the ranges with ovens. There will be a set of two deep fat fryers and two hot plates or fryers for quick frying. Size: $9m^2$. On each side will be hung kitchen equipment. There will be shelves underneath for additional gear. There will be installed two steam cookers of 20 gallon capacity. There will be a large flour mixer, a cooking fat purifier, large bins for flour, sugar and salt. On the walls will be sinks for washing kitchen equipment and hand washing basins.

Opening into the kitchen but separated from the working space by a serving table, $2m \times 60cm$ in size, will be a space for six hot food trucks, each with individual electric plug.

Easily accessible to the kitchen will be a walk-in refrigerator for the leftover food and food for the day's use. Size $4m^2$.

Also part of the kitchen but on the side, will be a space with worktables, shelves, scale, etc., for the preparation of special therapeutic diets and baby formula. A similar space will be used for the preparation of fruits and salads.

There will be installed here a dumbwaiter connecting the kitchen with the ward diet kitchens.

Opening into the kitchen with glass partition will be the dietitian's office with desk for herself and her administrative assistant who will maintain all records on stores, requisitions, and meals served. Another desk for her assistant and chief cook will also be here. They will also maintain time records for the dietetic employees. Space: 24m².

Adjacent to the kitchen but separated from it will be the central dish-washing unit for the entire hospital except the isolation unit. It will have dish washing, and glass washing units. On one side will be a pre-washing unit with a garbage grinder; on the other side of the dish washing machine will be racks for the clean dishes. Space: 20m².

Near the kitchen but not part of it, will be the vegetable preparation room with a vegetable peeling machine and entrance to a refrigerator for vegetables and fruits. Size: 2m². The room needs no more space than 4m². Another refrigerating unit of 2m² size will be used for milk, butter, cheese and eggs.

The butcher shop will contain a worktable, 2m x 60cm in size, at the end of which will be a chopping block. There will be an entrance to the meat refrigerating unit of 8m² where meat can be hung and prepared cuts can be stored on shelves. There may be barrels for pickling meats. An annex to this refrigerator may be a deepfreeze box 24m² in size.

A dry storeroom of about 16m² for the storing of staple dry foods, sugar, coffee, rice, flour and the like, and kitchen and eating utensils will also be needed. This may also serve for the office of the storekeeper with his records and desk.

The kitchen and its dependencies must have direct access to the service yards. The entrance should have a platform for easy loading. There will be a different entrance for the receiving of goods and the discharge of garbage and litter. This platform should be fly-screened. Near the entrance, goods should be weighed and the weight and inspection recorded by the storekeeper who will immediately take charge of the shipment. The garbage and refuse will be discharged in covered cans which will be immediately washed by a hose and sterilized.

There will be dressing rooms and washing facilities for male and female employees; at least eight each.

LAUNDRY

The laundry will consist of a sorting room with eight bins of wood or metal, a scale, a table for marking with a marking machine, and an autoclave. There must be adequate space to permit the easy passage of a laundry cart. Size $30m^2$.

The laundry itself will have two large and two small laundry machines in a row. Between the large and small machines will be a tank of soap. Size $6.5m \times 1.5m$. In front of these and parallel will be three centrifugal extractors - and two tumblers. These will require approximately the same space as the laundry machines; still in the row will be a starch cooker requiring about $1m^2$ of space. Space must be allowed between the rows of equipment for the easy passage of laundry carts.

Beyond the washing machines will be the flat ironer requiring $3 \times 4m$ of space. A space of about $3 \times 4m$ will be required for a battery of small uniform and shirt-ironing sets, and a space with an ironing board for hand ironing. On the side wall there will be two laundry tubs for hand washing.

Room either within the laundry or just outside it will be required for a hot water tank with 400 liter capacity and an air compressor. Connected with this, a small space is desirable for tools of mechanical maintenance.

Care must be exercised that the laundry carts of about 1m² can circulate among the equipment without interfering with the work of the attendants alongside the machines.

In direct line with the ironers, the clean linen will be taken to the clean linen room where it will again be examined for intactness and then sorted into the individual linen carts of the various using services or on shelves for reserve laundry. The linen needing repair will be sent to the serving room. The sorting room will have room for all the laundry carts and it will have easy access to the freight elevator.

Connected with this space will be the sewing room with a large central table for cutting material, two sewing machines and one mending machine. There will be shelves for materials.

The office of the laundry supervisor shall be so located that he can easily oversee all operations. It will have room also for a secretary who will also serve as unit timekeeper for the laundry workers.

CLEANING

Cleaning will be in charge of a housekeeper, who also will be responsible for the distribution of the laundry. His office may be close to the laundry, and will have an assistant or secretary in the office who will maintain the records and keep the time of the employees. This department will require a dressing room and toilet facilities similar to the laundry and dietetics departments.

MAINTENANCE SHOPS

Maintenance shops will be located near the boiler plant and will have a mechanical shop with tools of all types for mechanical repairs, especially for plumbing and hospital equipment. It will connect with a locked parts-storeroom. Size: 30m².

Shop and storeroom for electrical maintenance. Size: 12m².

Paint shop - with fireproof paint storeroom. Size: 12m².

Carpenter shop with machine tools. Size: 16m².

BOILERS

The boiler room will be large enough to accommodate a plant for providing hot water for the hospital and high pressure steam for sterilizers, laundry and kitchen. A guess is that one 200 H.P. and one 150 H.P. boiler will be adequate. Here will also be installed an emergency electric generator of 25 - 30 K.V. and a refrigerator plant for the kitchen refrigerators. Near here should be the automatic telephone exchange and the elevator mechanism.

The office of the director of maintenance will be placed elsewhere.

The dressing room and toilet facilities for employees are the same as for male dietetics employees.

GARAGES

Vehicles will be kept in an open car port that will accommodate two ambulances, a station wagon, a bus, four passenger cars and a truck. It will have a gas pump, a water hose and air hose.

There will be a closed garage for maintenance with a well for greasing, a space for washing of cars. Within the garage will be a locked replacement-parts storeroom, a tool room and an oil dispenser.

The garage superintendent will have his office here with a telephone and will maintain his records.

There will be a dressing room with four lockers, a urinal, a toilet and a shower for staff.

The ambulance entrance to the hospital will be on the back of the building. This will lead to the emergency section of the Admitting Service and the entrance will be ample to permit the easy handling of a stretcher. Size and equipment have been detailed before.

FACILITIES FOR EMPLOYEES

In a suitable space - perhaps the basement - will be located the dressing area with toilet and bath facilities. An estimated 50 lockers for male and 50 lockers for female employees will be needed.

FACILITIES FOR STUDENTS

Similar facilities should be built for 50 male and 30 female students.

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Appendix II

Painter	1
Mason	1
Carpenter	1
Gardners	2
Garage Mechanic	1
Chauffeurs	5
General Helpers (Laborer)	4
5. Food Service, Manager	1
Cooks	2
Store Keeper	1
Helpers	4
6. Patients' Control, Chief	1
Admitting Clerks	3
Messengers	4

Professional Services

Clinical Director's Office

Clinical Director	1
Secretary	1
Record Librarian (Clinical)	1
Coding Clerks	3
Medical Librarian	1

Surgery

Chief of Surgical Services	1
Orthopedist	1
Ophthalmologist	1
Anesthetist	2
General Practitioners	2
Operating Room Technicians	2
Secretary	1

Appendix II

Professional Services (cont'd)

Clinical Medicine

Chief, Medical Services	1
Pediatrician	1
General Practitioners	4
Basal Metabolism and Electrocardiograph Technicians	2
Secretary	1
Rentgenology Technicians	2

Laboratory Service

Chief of Laboratory Services (Tissue)	1
Asst Chief of Laboratory Services (Clinical)	1
Blood Bank & Hematology Technician Technicians	4

Nursing Service

Chief Nurse	1
Asst Chief Nurse	1
Education Director	1
Supervisors (Surgical, Medical, Pediatric, Obstetric and Night)	5
Recovery and Intensive Treatment	5
Midwives and Public Health Nurses	6
Central Services and Sterilization	1
Nurses' Aids (Libyan Nursing School Graduates)	20
Orderlies and/or Ward Maids	32
Secretary	1

Appendix II

Professional Services (cont'd)	
Admitting, Emergency and Public Health	
Chief, Public Health Physician	1
Asst Chief, Admitting Physician	1
General Practitioners	4
Physicians, Specialist	11
Physicians, General	11
Nurses and Midwives, Professional	20
Nurses, Trained Libyan	20
Administrative Personnel, Senior	5
Paramedical Technicians	15
Technicians, Non Medical	25
Clerical, Personnel Trained	28
Laborers	75

MEDICAL SUPPLY DEPARTMENT

The Medical Supply Department of the Ministry is independent from the Medical Care Program. It is, however, a service department that exists for the purpose of providing equipment and supplies to the medical care activities. Without a smooth flow of supplies the hospitals cannot function. Therefore, it is desirable to include, in this report, a suggested functional and organizational description of a Supply Department in harmony with the recommendations made on decentralized budgeting and hospital management.

1) All routine procurements shall be made in accordance with written plan, and only when funds are available.

2) All products shall be bought on the basis of specifications and on competitive bidding. When competitive bids are unavailable, or there is only one supplier who can meet specifications, a statement to this effect, signed by the requesting officer and the chief of procurement, must be made on the file copy of the purchase order.

3) When feasible, bids will be received in sealed envelopes, stamped as to time of receipt. These will be opened by a committee of awards, consisting of the permanent chairman who is the Chief of Procurement; a designated member of the Ministry, generally the interested section chief of the Department of Planning or a designated member from the field; and an expert in the field in which the procurement is to be made. For example,

when the purchase is concerned with pumps or pipe, a sanitary engineer shall be a member of the board; while, in the case of buying hospital equipment, a hospital director can be invited. In the case of procurement on individual requests, the person in whose behalf the purchase is made should have an opportunity to participate in the awarding of the contract.

In case there are several bids to be considered, the bidders shall have the opportunity to be present at the opening and awarding of the contract.

If the specifications are well written and all offers meet the specifications, the contract shall be given to the lowest bidder, but only if in the opinion of the award board the supplier can meet the date set for delivery and other considerations, for example, in the case of equipment, can be furnished replacement parts promptly? are maintenance and repair facilities easily available? is the equipment standard for the activities of the Ministry?, etc.

4) All routine procurements shall be made in quantities that are economically advantageous and in accordance with established inventory needs. It is not desirable to maintain an inventory larger than the foreseeable need or beyond the necessities of "lead time" (time needed to get a new shipment).

5) Purchase of small quantities and in emergency may have to be made on the local market. Justification for this must appear on the file copy of purchase order.

6) Authority for decentralized procurement of perishable food, combustibles, etc., shall be given in writing to the field activity concerned, against a national contract.

7) Suppliers who do not meet their obligations will be placed on a prescribed list and will be excluded from consideration in future purchases.

Chief of Procurement and his Section within the Medical Supply Center

The Chief of Procurement shall be directly responsible to the Director of the National Supply Service.

He will be responsible for knowing the budget of his section and for the maintenance of strict control over it. Within this budget he will prepare for approval of his chief a projected inventory of drugs, supplies and equipment. Within this approved plan, he will schedule the routine procurement without reference to his supervisor.

In order to comply with this responsibility he will:

- 1) Establish a list of suppliers in the various fields, known to him to be reliable and able to meet assumed responsibilities.
- 2) Negotiate on an informal and non-committal basis with possible suppliers.
- 3) Interview representatives of suppliers.
- 4) Prepare specifications, in consultation with the using services and experts, and invite bids.
- 5) Analyze bids in accordance with available services, parts, quality, known reputation of bidders and price.
- 6) Sit as permanent chairman of the committee or board for

awarding bids, and maintain a permanent record of the procedures.

7) Maintain records on the availability, within the approved budget, of foreign currency and will obtain permission to change national currency into foreign valuta, when this is permissible by law.

8) Maintain close relationships and control of the services rendered by the dispatchers in the various posts of entry.

9) Obtain customs clearances and transportation from the customs warehouse.

10) Issue all purchase orders.

11) Maintain strict follow-up on all orders and will keep the requesting service informed about the status of the order, especially in the case of delays.

12) Receive all shipment of materials and contractual services, and make the necessary documentation for these, both for his own records and for accountability.

13) Inspect and control the quality of received material and services rendered.

14) Insure purchased material, while in transit.

15) Maintain for his own use and for information of using services, a library of catalogs, lists of local suppliers, their prices for the common supplies, market data, lead time required for importation from various market places, shipping costs, and other information that may be useful for his work and the proper functioning of his section.

16) Maintain good and courteous relationships with the functionaries entitled to his services, his fellow employees, and the suppliers

and their representatives.

In order that procurement can function well, the chief must know not only what to buy but why and what the material will be used for, by whom, and what circumstances or forces will influence the use of the material. He should have easy access to the forecast of changing needs. For example, the discovery or availability of a new drug that will make a standard drug obsolete, or a new construction of health centers that will substantially increase the needs for drugs. Or, a campaign of vaccination that will be undertaken requiring additional quantities of vaccines, jet injectors, hypodermic syringes, needles, etc. Not only quantities are involved in this but also the planning of the time of purchase, so that the material will be on hand in the supply department and can be distributed to the field in time for the work to begin.

If funds for such material are unavailable, it may be necessary for the section to make suggestions as to where funds could be shifted from the procurement of some other items on the inventory that are not as essential or that are moving slowly.

Availability of space in the warehouse, change or impending change in the price of material, change in the regulations or laws also influence the operation of procurement. Therefore, the section chief must be included in discussions on a high policy and administrative level. His opinion should be considered in making decisions that involve his functions.

Maintenance of Inventory

That procurement and inventory have a close relationship with each other has been stated several times before. For our purposes

in Libya, the principal function will be the procurement of drugs and common health center-hospital supplies- most of which are imported from foreign manufacturers. The time necessary between an order authorized and received in Tripoli is an average of three months if the material ordered is readily available as manufacturer's stock. Where something has to be especially made or assembled, as for example, autoclaves, it may take 6-9 months of lead time.

The inventory for the usual common material is suggested to be established as a nine month supply for the central warehouse in Tripoli, a six month supply in Benghazi and Sebha and a two month supply in the warehouse of the field activities. It is considered that each activity should have on the shelves of its pharmacy, its sections and wards, enough material to last one month with a two month supply in their storerooms; therefore, their initial order for supplies will be for three months.

Each activity will make its requisition for drugs and supplies only once every three months according to a schedule to be established. The requisition will be dispatched from the central warehouse in Tripoli to arrive at the Regional activity at the scheduled time which in turn will make its own timely distributions. Material that cannot be supplied will be delivered as soon as it can be procured ("back ordered"). The estimated date of delivery will be communicated to the field activity. If the material is to be unavailable for an unknown time, the item will be eliminated from the order and the field activity so notified.

Emergency orders will be kept to the minimum, since their handling requires undue administrative difficulty and cost. No emergency order will be processed without the approval of the Regional Medical Director.

Orders will be filled only if the field activity has an account with the medical supply center and only if there are funds deposited. No credit can be extended. Each activity, including possible future participating agency such as INAS, will deposit the amount of funds their activities could utilize for the budget years, and will indicate the annual amount of money each activity or sub-account is entitled to. It must be remembered that the routine procurement process takes four months, and major modification of the anticipated volume of material used or the "run" on the established inventory would seriously interfere with the orderly process of planned programming and may not be feasible.

The Medical Supply Center will establish a standard supply list which is to be sent to each using activity. Orders will be filled only from this list. Any item not on it, if desired, must be purchased from the activity's own funds and not from its deposit account with the Medical Supply Center. Items may be suggested to be included in the standard supply table, and if approved by the advisory committee, and if available funds permit, it will be included in the future lists. ..

From time to time, an additional list may be circulated, informing the field about items that become available in small quantities on a first-come first-served basis. For example, occasionally it

is possible to obtain some material from U. S. Government Excess Property that can be distributed for only the fraction of the manufacturer's price.

The standard supply list and any special list will contain a definition of the unit of each item and the price of a unit to the field activities. In the unit price will be calculated the average cost of distribution. Thus, when the system has been functioning for some years, the Medical Supply Center will require no financing since its entire budget will be derived from the budgets of its using activities.

A Balanced Inventory

The list of material or articles, the number assigned to each, the available amount of each, its properties or characteristics, the purchase or replacement cost per unit, the date of acquisition and, if pertinent, its expiration date, is known as the INVENTORY. The inventory represents an investment of the available budget funds and must be converted into funds again if it is to be replaced. In order to replace and distribute the items one must add transportation, handling, warehousing and administrative cost for each item: a calculated amount, to be added to the direct or purchase price.

If the material is purchased in bulk and then processed, the inventory will be changed from bulk to the processed item. Corresponding records will reflect the steps taken to produce the processed material (such as sheeting, made into bed sheets). Also the inventory value will be changed to reflect the processing.

The optimum inventory for each item will have to be established on the basis of experience (at present unavailable). Close attention will have to be paid to inventory control. The basic principle will be that an inventory is ever changing: A sensitive thermometer of existing demand and supply.

A balanced inventory is the result of careful coordination between a well informed procurement and inventory management team, watched over by an imaginative direction. Information on existing conditions, needs and plans must flow to the central organization and from there to the field, if this service is to function well.

There must be available at all times information as to:

1. What inventories are available and for how long are these able to meet the normal demands.
2. Where they are located.
3. How old they are.
4. What procurement commitments are outstanding and when the material will be available.

Procurement and inventory are two phases of the same responsibility. Inventory really starts with procurement, continues with reception, inspection of the received material, warehousing, dispatching, and finally replacing the used-up material. This function, therefore, must be conceived as a cycle, a continuous flow.

Warehousing and Inventory

Having discussed the procurement process in some detail it will be necessary to discuss the phase of warehousing and inventory also more closely.

The delivered materials are received, unloaded and checked against purchase orders and invoices for promised date of delivery, quantity and quality. In other words, does the material meet the written specifications? Any deviation, shortage, overage or damage is noted, for prompt adjustment with the supplier or insurance company. The materials are then stored, either as bulk or uncrated and put into bins. The materials are dated. This is important from the point of view of aging. Goods received earlier must be issued for use first, to avoid deterioration.

To make the locating of materials easy, everything must be carefully identified and tagged. This is especially important where the original labelling is in a foreign language, not understood by the personnel. The tag should contain the name of the item, the number, the date of its receipt, the bin location and in bulk storage, the number of units each box contains.

The inventory may be maintained by a numerical system and accordingly each material will have a number, and decimal points will be used to separate additional numbers needed to describe various characteristics of the material. For example, let us assume that hormones have the number of 10. Then, Insulin, Epinephrine and Pituitrine, each hormones, might be identified as 10.1, 10.2 and 10.3 respectively, but Insulin will be obtainable in 20 units per c. c. and 40 units per c. c. dosages; Epinephrine and Pituitrine in 10 c. ampules and in 10 c. c. bottles. Hence, the numbers will be 10.1.1, 10.1.2, 10.2.1, 10.2.2, 10.3.1, and 10.3.2 respectively.

Surgical, nursing and laboratory instruments will have a similar system based upon the letters of the alphabet. For example, clamps

may be given the letter D. Kelly clamp D.a; Ochsner D.b, curved Kelly or curved Ochsner would be D.a.a and D.b.a. respectively. If they be further classified according to various size or whether nickel, chrome plated or made out of stainless steel. Then additional code letters will be necessary.

A combination of the numerical and alphabetical system can be adapted for processed materials if expansion makes this necessary.

Dangerous, poisons or explosive, dated and fragile materials will be also labeled for these characteristics, preferably by large picture, sticker or stamp, such as a skull or exploding bomb, a calendar, a broken glass respectively.

The records kept will reflect the existing quantity and the movement of materials. The current balance will be expressed in the units by which they are distributed. The records will also use the identification numbers or letters of each jitem; the date of receipt, the order number; the expected delivery time and amount of material in transit; the location of stored material both bulk and bin, the acquisition; the replacement and cost to the field agencies will also be shown. The record will also indicate all withdrawals and to which activity these have been sent.

Physical inventory will be made by the technical supervisor or his designates, the chief of procurement and the store keeper, not less often than every six months. They will check the properties against the records, but also check the storerooms' arrangement, neatness, identifications, and the condition of the existing stock.

The records of all movements of materials will also be controlled by the accounting section of the Medical Supply Center. This accounting section will have to check and approve all purchase

orders against existing funds and if these are made within the approved and planned program. Similarly all requisitions will bear the certification of the accounting section that funds to cover the requisition are available.

Cost Accounting

The accounting section will maintain, in addition to the data on movement of materials, information on the following:

- 1) Cost of all materials purchased, the purchase value of the inventory at the beginning of the year and end of the year.
- 2) Cost of direct labor-meaning the wages and salaries of employees directly concerned with the operation of the Medical Supply Center.
- 3) Estimated cost of indirect labor-the part-time work of employees who contribute to the functioning of the program: for example, time spent by consultants. This is known as "indirect labor cost."
- 4) Depreciation of fixed assets. A building should be considered to be valueless in 25 years, therefore, the quarter of the total purchase cost should be considered depreciation. Similarly, shelving, furniture lose their usefulness in the same length of time. Business machines will have a useful life of 10 years, hence a yearly depreciation is one tenth of the purchase cost. Trucks and vehicles are considered to depreciate in four years; the yearly cost is 25% of the purchase price.
- 5) Supply cost - Without supplies the organization cannot function. These supplies do not become part of the supply department but are used up for its function. The paper, the forms

used, the towels, soap, toilet paper, the gas and oil for the truck, the repair and repair parts, public services such as electricity, water, telephone, come under this category. It is customary to make adjustment between the supply inventory that existed at the start and at the end of the year. To illustrate; On January 1, 1962, the inventory of office supplies was \$1,000, on December 31, 1962, the inventory of this item was \$1,200. This means an increase of inventory of \$200. The purchase of office supplies during year 1962 was \$1200 but there was an increase in the inventory of \$200, therefore, the total annual cost of office supplies was \$1000.

6) Administrative cost - includes expenses in addition to acquisition costs, handling labor and depreciation. These are costs of insurance, obtaining clearance from customs, the cost of audit by outside agency (special project office of the Ministry of Planning of USAID). It also should consider travel of the staff to the field offices. For training field employees, checking inventory and utilization of material.

7) Cost of packaging and freight of material to the using agency.

For the present this information for the functioning of the Medical Supply Center will be required. But it is desirable to establish this information separately for drugs, medical, surgical, nursing supplies, office supplies and equipment and large non-expendable items separately.

INDIRECT LABOR COST

<u>No required</u>	<u>Job Title</u>	<u>Monthly Cost</u>	<u>Annual Depreciation</u>
1	Technical Advisor		
1	Accountant		
1	"Interventor"		
1	Secretary		

ANNUAL SUPPLY COST

<u>Quantity</u>	<u>Unit</u>	<u>Item</u>	<u>Annual Cost</u>
100	200 L drum	Lubricating Oil	
120 box	12 dozen	Towels	
120 dozen	1 dozen	Soap	

ANNUAL ADMINISTRATIVE COST

<u>Items</u>	<u>Cost per Item</u>	<u>Total Annual Cost</u>
Auditing of movement of drugs		
Auditing of movement of medical, surgical, nursing supplies		
Auditing of procurement procedures		
Insurance		
Importation - customs		
On the job training		
<u>ETS - itemize</u>		

ANNUAL COST OF DISTRIBUTION

<u>Items</u>	<u>Annual Cost</u>
Packing materials	
Cost of freight	
Travel by Staff	
Other - itemize such as losses in transit from warehouse, stealing	

ANNUAL ADJUSTMENT

<u>Inventory of</u>	<u>At start of year - At End</u>	
Aspirin	100	120
Atabrine	120	100
Accacia	<u>20</u>	<u>000</u>
Total	140	120
Increase in inventory		
Decrease in inventory		
Cost of materials purchased		
Annual cost of materials used		

BALANCE SHEET
January 31 - February 28

<u>Current Assets</u>	<u>Current Liabilities</u>
Cash in bank	Balance for materials
Cash petty	Accounts payable
Inventories:	Accrued wages
on hand	Christmas bonus
in transit	insurance payable
total current assets	Others (itemize)
<u>Fixed Assets</u>	<u>Cost-Depreciation Net</u>
	<u>Total Current Liabilities</u>

Land			
Buildings			
Equipment			
List - Items	Only for	Net worth	=
	June 30	working	current assets
	and December 31	canital	minus current
Total Assets			liability

SUMMARY OF OPERATING EXPENSES

<u>Overhead</u>	<u>Month of</u>	<u>Total for the Year to Date</u>
Supplies		
Packing material		
Office supplies		
Hand tools		
Lubricants		
Maintenance		
Others (itemize)		
Labor		
Technician supervisor		
Chief Procurement		
Office Personnel		
Others		
<u>Total Overhead</u>		
Administrative		
Auditing		
Insurance		
Others - Training		
Distribution		
<u>Unforeseen Expenses</u>		
Emergencies		
Itemize		
Increased cost		
Pay increase		
Overtime		
Others		
Itemize		
Total cost of Operation		