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WORLD HEALTH ORGANIZATION

REGIONAL OFFICE FOR THE EASTERN MEDITERRANEAN

PLANNING OF HEALTH SERVICES

KINGDOM OF LIBYA

SURVEY AND RECOMMENDATIONS

ALEXANDRIA
April 1967

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by R.H. Bland, M.D., WHO Consultant
January - June 1966

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PART I

HEALTH ADVISORY SERVICES

by

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January - June 1966

I SUMMARY APPRAISAL OF PROBLEMS AND PRIORITIES

1. PREPARATION OF HEALTH PERSONNEL

We have no hesitation in identifying the "number one" problem, deserving highest priority, as that of the preparation of Libyan citizens to staff the health services. Modern medical science demands high standards of education and training and there is no acceptable short cut to preparation of health staff.

1.1 In Chapter XIV of this report we have discussed and made recommendations on this subject but we have stressed that all training programmes will be ineffective unless the emoluments and conditions of service for technically trained Government officers: (a) are made competitive with the private sector; (b) give proper weight to years of basic education, technical training and experience; and (c) permit the prohibition of private practice to all health personnel.

1.2 The most serious lack of trained personnel is apparent in the various categories of the para-medical professions - of nursing, of sanitation, of laboratory technology and of radiography, etc. - and we have made recommendations for strengthening and expanding training programmes (Chapter XIV).

2. ENVIRONMENTAL SANITATION

We consider the strengthening of environmental health services as also of highest priority. Hitherto the emphasis of Health Services activities has been on medical care by provision of hospitals and dispensaries but the present volume of disease and of mortality could be greatly reduced by, (a) improved environmental sanitation and (b) preventive programmes in general.

2.1 We have proposed that steps be taken forthwith to prevent new health hazards arising from the current major development projects

for housing, water supplies and sewage disposal and recommend that professional public health (sanitary) engineers be appointed to the planning and executing departments of the Ministries of Housing, of Public Works and of Agriculture (NASA).

2.2 We have laid emphasis on the Ministry of Health's responsibility for ensuring safe domestic water supply and for safe disposal of human excreta. We have recommended strengthening the Ministry of Health by the appointment of a Professional Public Health (Sanitary) Engineer and measures for strengthening the health laboratory services to facilitate especially the regular control of domestic water supplies and of sewage effluents.

2.3 While domestic water supply demands priority for attention, general environmental sanitation activities of all kinds need development. We have recommended (Chapter XII, paragraph 3) the appointment of experienced medical officers of health and of professional Sanitarians to regional Controllers' offices to guide the work of Libyan public health (sanitary) inspectors for the preparation of whom we have recommended training programmes (Chapter XIV, paragraph 5).

3. PLANNING AND EVALUATION

The comprehensive planning of health services requires the full-time attention of a special organization able to evaluate existing services and to collect all necessary information through the continuing activities of a permanent staff.

3.1 We support the Government's proposal to request an expert from WHO on a long-term assignment and we have proposed (Chapter XII, paragraph 6) the formation in the Ministry of Health of a department of Health Planning strong enough to be able to provide the Ministry with all the information needed for comprehensive planning, and inter alia, to enable the Ministry to negotiate all requests for technical assistance in the health field.

3.2 To strengthen co-ordinated planning of integrated health services we have recommended the creation of a permanent Health Planning Committee (Chapter XII, paragraph 6).

3.3 For provision of the reliable data needed for planning we consider that the Health Statistics Section needs strengthening, particularly with regard to collection of hospital morbidity statistics. We have recommended (Chapter XII, paragraph 7) that WHO be requested to provide an experienced health statistician to assist in the building up of statistical services.

4. NURSING SERVICES

In any health service, nursing personnel comprise the largest single category of health worker. Libya at present has a most serious lack. During the next seven years a special effort is indicated, to raise the whole status of nursing and of nurse training so as to improve the quality of nursing care and to increase the quantity of well trained Libyan nursing staff. To achieve this we have recommended:

4.1 The strengthening of nursing administration in the Ministry of Health, in Regional Controllers' offices and in hospitals by the appointment of experienced nurse administrators (Chapter XIII, paragraph 3).

4.2 The establishment of three levels of nursing personnel; viz. professional nurses, technical or community nurses, and nurse-aides (Chapter XIII, paragraph 3).

4.3 The intensification of nurse-training programmes with schools of nursing for males and for females in Tripoli, in Benghazi and in Sebha; special courses of in-service training for nurse-aides; and a start to be made on the training of Libyan nurses at University level (Chapter XIV, paragraph 6). In this connexion we have recommended a request to WHO for the services of two experienced nurse educators.

5. COMMUNICABLE DISEASES CONTROL

Priority needs to be given during the next seven years to: (a) eradication of malaria; (b) maintenance of eradicated smallpox; (c) control of bilharziasis to reduce the already serious problem in the Southern Provinces and to prevent the disease becoming a serious problem in the western and eastern regions (especially the Derna area); (d) tuberculosis control, (e) trachoma control; and (f) anti-leprosy activities.

We have recommended specific programmes to be developed with assistance from WHO (Chapter XIII, paragraph 5).

6. REORGANIZATION AND STRENGTHENING OF ADMINISTRATION

With the long-term objective of developing a health service in which medical care and preventive health activities are fully integrated some reorganization and delegation of administrative powers will be essential.

6.1 We have recommended (Chapter XII, paragraph 3) the merger of two departments in the Ministry of Health into a single "Department of Health Services" under an Assistant Under-Secretary or Director-General, who will be a medical officer with post-graduate qualifications in public health. The Department should have five sections each headed by a professionally qualified officer and will require in addition, specialists in certain fields, e.g. public health engineering, nutrition, health laboratories, health statistics, hospital architecture, nursing education. Similarly, the expertise of regional Controllers' office should be strengthened by the appointments to each, of a medical officer of health (with post-graduate public health qualifications), of a public health nurse administrator, of a professional health educator, and of a professionally trained sanitarian.

6.2 Priority is recommended in Chapter XII for improving the health laboratory services (paragraph 8), the health statistics service (paragraph 7), the department of pharmaceuticals and medical equipment

(paragraph 5), hospital administration (paragraph 11), and health education services (paragraph 10).

6.3 We consider the present exercise of the privilege whereby citizens can have medical treatment abroad at Government expense, is definitely bad for the "goodwill" and development of Libya's own health services. Medical Boards are now demanding far too much time and effort from senior officers who have far more important functions to fulfil. We agree with the Ministry of Health that this problem deserves most urgent consideration and we have recommended steps which might be taken gradually to rectify this situation (Chapter XII, paragraph 12).

7. MEDICAL CARE PROGRAMMES

Because of the grave shortage of qualified Libyan medical and para-medical staff, which cannot be adequately met by the importation of foreigners, the hospitals' building programme should be slowed down and emphasis given to improvement of existing establishments and of out-patient services (Chapter XIII).

7.1 There are specific hospitals and hospital departments which, because of their extreme unsuitability, require urgent action for their replacement. We have recommended new accommodation for (a) the paediatric department of the General Hospital in Tripoli; (b) the infectious diseases department in Tripoli; (c) the "Emergency" or "Traumatology" Hospital in Tripoli (Chapter XIII, paragraph 1.2.2).

7.2 A lot can be done to improve the efficiency of existing hospitals and a general survey of requirements will be well worthwhile (Chapter XIII, paragraph 1.2.2).

7.3 Reconsideration of the plans for new hospitals in Derna, Misurata, Sebha and Tobruk has been recommended (Chapter XIII, paragraph 1.2.2).

7.4 The medical care services of INAS are not in competition with those of the Ministry of Health and we recommend no change to present policy or plans (Chapter XIII, paragraph 1.4).

7.5 Out-patient curative activities should be only part of the work of general community Health Centres. Plans for community health centres are being implemented and it is recommended that one such centre and its community should be developed as a "pilot project" with special priority for staffing and data collection in order to ascertain community needs and the best methods of meeting them (Chapter XIII, paragraph 1.3).

8. SPECIAL HEALTH PROMOTION PROGRAMMES

8.1 Nutrition (see Chapter XII, paragraph 9).

Several different Ministries have responsibility for activities contributing to improved nutrition in Libya and it is essential that the Ministry of Health should take the initiative towards co-ordination and to provide expert advice. It is therefore necessary to create a Nutrition Division in the Ministry of Health which will be able to provide co-ordination, nutrition education, advice on institutional diets and school feeding programmes and undertake epidemiological studies and surveys on malnutrition. WHO and FAO will be glad to assist.

8.2 Maternal and Child Health (MCH)

MCH activities should form a most important part of general health activities but they cannot be effective unless the services provided to mothers and children are truly comprehensive. The present programme of preparation of MCH assistants cannot achieve desirable objectives because the personnel so prepared are unable to meet family needs. We recommend (Chapter XIII, paragraph 4.1) the merger of the MCH training staff and facilities to complement the three-year nurse training programme with special reference to preparation of a "community nurse/midwife" (see also Chapter XIV, paragraph 6).

8.3 Health Education

Existing activities are concentrated on health propaganda programmes and we consider the service needs to be strengthened to be able to contribute teaching on health education methods to the training courses for health personnel and for school teachers. At least five professional (university level) health educators will be required for this: one for the Ministry of Health, one for each regional Controllers' office and one to work with the Ministry of Education (Chapter XII, paragraph 10).

8.4 School Health Service

We strongly recommend that this essential service be not permitted to develop in isolation from other community health services. A school health service is essentially a promotive and protective health activity and it should not be allowed to become a curative service additional to other existing curative services. We recommend that the proposals for school health clinics with a full complement of specialists should not be implemented (see Chapter XIII, paragraph 4.2).

9. RELATIONSHIP WITH THE WORLD HEALTH ORGANIZATION

The proposals which we have made will involve, if the Government so wishes, a considerable volume of technical assistance from and through the World Health Organization (WHO).

The United Nations' Charter recognizes the WHO as the International Agency responsible for matters of health and the constitution of WHO provides that member countries should be represented at the World Health Assembly by "persons most qualified by their technical competence in the field of health, preferably representing the national health administration of the member"[1].

We feel it important that the Ministry of Health should be able to negotiate directly with WHO on all forms of international technical assistance

[1] Constitution of the World Health Organization, Article 11.

in the health field and on all other health matters in which the Government of Libya and WHO jointly are concerned. Naturally, normal Governmental procedures for consultation and approval must be observed, but the Ministry of Health, with the WHO Representative already in their Ministry, should be strong enough (see paragraph 3.1 above) to take full initiative and responsibility in this sphere, as in all other matters concerning health.

II INTRODUCTION

In response to a request in 1965 from the Government of the Kingdom of Libya, the World Health Organization (WHO) provided a team of consultants to advise the Ministry of Health on the preparation of a plan for the development of national health services during the Second Five-Year Period, 1968-1973.

The objectives of the project were described as being:

"To assess the health problems in the country and to recommend priorities for remedial action.

To appraise the efficiency of health services in meeting the health needs of the population and to proffer guide lines for future development of health services.

To indicate the facilities needed for planning and evaluation within the national health services and for co-ordination with the overall planning for the economic and social development of the country."

The WHO team was made up of:

- A senior public health administrator.
- A public health engineering consultant.
- A public health nursing consultant.
- A health statistics consultant.
- An administrative assistant.

The revised terms of reference, as stated in a letter from the Ministry of Planning and Development dated 8 June 1966, are as follows:

"To undertake preliminary fact-finding and a survey of existing health services, curative and preventive (including water supplies and sanitation). This survey will include an assessment of the country's socio-economic conditions having a bearing on the health situation; a survey of existing physical facilities problems and of health statistics.

To prepare an outline plan covering separately the two-year period 1966/1968 and the five-year period 1968/1973. This outline plan should include:

- Overall policy considerations
- Definition of general, specific, immediate and long-term objectives
- Recommendations on priorities
- Proposals concerning:

  a. Administration, organization and legislation.

  b. Establishment of a permanent planning machinery.

  c. Development of and physical facilities for all sections of health services.

  d. Health personnel, their procurement and training, including training programmes for Libyan personnel and specifically concerning the establishment of a Medical Faculty in Libya."

The WHO team leader arrived in Libya on 31 January 1966 and left the country on 20 June 1966. Other members of the team had shorter assignments.

The team travelled extensively throughout all three regions of Libya, surveying existing services; they also studied numerous reports from Government authorities and technical assistance experts.

Administrators, doctors and para-medical workers in all peripheral units were most co-operative, informative and helpful, as also were authorities in the private sector and in various Ministries from whence information was sought.

The Ministry of Health's own contribution to the work of the WHO team was, unfortunately, limited by the scarcity of medically qualified staff, and because of the heavy load of work carried by senior administrative officers. This resulted in the fact that basic information on the approved establishment of posts and on recruitment arrangements remained unavailable even after repeated requests over a period of four months.

The Under-Secretary himself, being the only Medical Officer in the Ministry gave as much time as he could to the WHO team, but his many commitments within and outside Libya very naturally restricted his availability for consultation.

The Government established a "Steering Committee" to guide the WHO team; the Committee met on four occasions and only once was there present a medical officer to represent the Ministry of Health, on one occasion no Ministry of Health representative was present.

This situation reflects the grave shortage of Libyan medical officers and of health expertise in the Ministry of Health. It highlights also the fact that Ministry officials are so overwhelmed with day-to-day operational problems that they can give little time to the more important matters of policy and of comprehensive planning.

The WHO team wish to record their sincere appreciation of the kindness everywhere shown to them and for the trouble taken on their behalf. A debt of gratitude is owed to very many Libyan Government officers, but special mention can and should be made of Their Excellencies the Under-Secretaries of Health and of Planning and Development, and of Mr. Abd al Kareem Ballu, who travelled extensively with the WHO team and became their guide, interpreter, tutor and friend.

III GENERAL CHARACTERISTICS

1. GEOGRAPHY

The Kingdom of Libya on the north coast of Africa extends along the Mediterranean seaboard, from its eastern frontier with the United Arab Republic (Egypt) and with the Sudan, to the Tunisian and Algerian frontiers on the west. Its southerly frontiers from east to west are with the Sudan, Chad, Niger and Algeria. This extensive land border raises the question as to how best Libya can be protected against importation of communicable diseases.

The Kingdom of Libya covers 1 760 000 sq. km, with a coast-line of about 1 980 km:

> "The larger part of the area in Libya is unproductive, comprising vast expanses of steppe and desert, characterized by slight rainfall, high temperatures, sparse vegetation and poor soils; the area suitable for human habitation is estimated to amount to barely 14 million hectares (or less than eight per cent of the total area of the country), of which some 11 million hectares are suitable only for grazing and the balance for cultivation. The population is largely concentrated around this small portion of productive land lying mainly in the fertile coastal belts and to a lesser extent in the better-watered sections of the "Gebels" or highlands of northern Tripolitania and northern Cyrenaica, and in a few scattered oases in the south. Areas suitable for settlement are so rare that nine tenths of the people occupy only one tenth of the land. The Sahara region in the south, or the desert area comprising four fifths of the total area - one third of Tripolitania, three fourths of Cyrenaica and a great part of Fezzan - has a population of barely 70 000 persons concentrated in half a dozen remote oases."[1]

[1] General Population Census, 1954; Ministry of National Economy, Census Department.

2. CLIMATE

In general, along the Mediterranean littoral, the climate is excellent with sunshine all the year round. Minimum temperatures during January, usually the coldest month, may reach a low of 1° - 4°C. and rise to a maximum of 40° - 42°C. in the summer months of June to September. In the coastal areas annual rainfall averages about 350 mm and is rarely less than 200 mm anywhere along the coast, it occurs sporadically, however, over 30-40 days in the year and mostly during the months of November to February, inclusive.

In the Sahara desert of the Southern Provinces, and parts of the Eastern and Western Provinces, there is little or no rain (in Sebha during 1964, for example, there was one day only on which rain fell giving 0.5 mm).[1] In the desert temperatures are more extreme than in the coastal areas, with minima around 1° - 2°C in December, January and February, rising to maxima of 40° - 45°C in the summer. Because of low humidity, temperatures drop in the southern region perhaps 30° - 35°C from maximum to minimum on any one day. Along the coast average relative humidity at mid-day is about 55% and it decreases steadily towards the south.

Because of the low rainfall and lack of vegetation, dust storms and sand storms are not infrequent, the design of new housing and of institutions for Libya should take into consideration local prevailing factors and not merely copy plans used in other countries.

3. NATURAL RESOURCES

Owing to lack of water, no more than five to ten per cent of Libya's land area can be put to economic use and perhaps not more than one per cent is suitable for settled cultivation. Neverthless, agriculture and animal husbandry always have been and must continue to be an important part of the Libyan economy. Continuing research and surveys are necessary to find potential means of augmenting Libya's water resources.

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[1] Statistical Abstract 1964, Census and Statistical Department, Ministry of National Economy.

Oil exploration in Libya started in 1955 and by 1964, 658 wells were in production with an additional two wells producing natural gas. In 1964 the export of crude petroleum valued at £L. 216 million constituted 99 per cent of domestic exports.[1] The estimated revenue from "Petroleum" in the financial year 1965-1966 was £L. 124 million, or nearly 75 per cent of total revenue.[2]

Known resources of other valuable minerals are few, but include ample supplies of marine salt, good deposits of gypsum and large deposits of 45 per cent iron ore in the Southern Provinces, the latter deposits are too far from the coast to offer much hope of economic exploitation. Deposits of limestone and clay are known to exist together near Homs in the western region and may provide for local manufacture of cement.

Libya, with its 1 900 km of coast-line, possesses natural assets for development of the fishing industry. Fish is rich in protein of high biological value and consumption of fish should be vigorously promoted.

4. INDUSTRIES

The advent of the petroleum industry in Libya has substantially changed the industrial and labour pattern. Employment for many Libyans has been provided not only by the exploration, production and marketing companies themselves, but also by the multitude of other firms which are engaged in contracting, transportation, catering and other services to support the oil industry. At the end of 1964, for example, an estimated 9 657 persons were employed by units engaged in petroleum mining[3], but these figures do not include employees in supporting industries, nor do they include large numbers of casual labourers and persons finding domestic employment with the oil companies' foreign communities.

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[1]Monthly Economic Bulletin, Bank of Libya, January-February 1966, Table 18.
[2]Budget Estimates for the Financial Year 1965-1966, Ministry of Finance.
[3]Report of the Industrial Census 1964, p. 12, Census and Statistical Department, Ministry of Economy and Trade.

Apart from the above, Libya's larger industries include building and construction, the public utilities, port activities, the automobile industry (sales, service and repairs), and the processing of local agricultural commodities.

A considerable number, 7 332, of small-scale industries[1] employing comparatively small numbers also are in operation. The 1964 Census, covering all industrial activities except agricultural activities, estimated that 100 466 persons were employed in 36 938 establishments, only 460 of which employed twenty or more persons[2].

Although Libya's small population and proximity to Europe is likely to preclude industrial development on any large scale, recent growth already is encouraging migration from rural to urban areas. Urbanization and its attendant health problems has started to create conditions requiring urgent action by the social services in general and by the health services in particular.

5. AGRICULTURE

Generally arid soil with an uncertain rainfall will always hamper the development of Libyan agriculture, and soil erosion by wind and water constitute a major problem.

Food production in Libya is subject to very considerable fluctuation from year to year, the occurrence, amount and distribution of rainfall is the main decisive factor and unless ground water resources can be greatly developed it will be difficult for Libya to become self-supporting. To fulfil the requirements of the population, substantial amounts of food are being imported. In 1964 the value of "Food and Live Animals" imported was £L. 13 436 000[3].

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[1]Report of the Industrial Census 1964, Census ans Statistical Department, Ministry of Economy and Trade, Kingdom of Libya, p.21.

[2]Statistical Abstract 1964, Census and Statistical Department, Ministry of National Economy, p.225.

[3]Statistical Abstract 1964, Census and Statistical Department, Ministry of National Economy.

Nevertheless, recent action by the Government to provide means for capital investment and to improve organization and technical know-how is demonstrating that farming in Libya can be expanded and made to pay. The Government rightly is concentrating much patient effort on fostering agricultural development and it is most important that the health services keep in step with the programme activities of their colleagues working in the sphere of agricultural, livestock and forestry improvement. The development and use of water resources is a matter of primary importance for promotion of health as well as of farming and the health services must accept a full share of responsibility in guiding and supporting such activities in the best interests of the communities served.

The 1960 Census of Agriculture in Libya estimated an agricultural population of 854 717 and 279 970 persons of 15 years or more whose occupation is agriculture[1].

If migration away from rural areas is to be curbed fully adequate health facilities, at present lacking, must be provided to rural communities.

6. COMMUNICATIONS

The principal highway of Libya runs along the coast between the borders of Tunisia and the United Arab Republic (Egypt) and is joined by the asphalted Southern Provinces road from Sebha in the south. Other roads connect the coastal areas with the hinterland but many of these are unsurfaced as are also the desert tracks, passable only for four-wheel drive vehicles. Whereas in the coastal areas road communication is adequate to provide for the needs of the health services, in the more southern desert areas lack of good roads, and long distances between settled communities constitute a real problem for the provision, organization and supervision of adequate medical care.

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[1]Statistical Abstract 1964, Census and Statistical Department, Ministry of National Economy, p. 180.

The number of road vehicles has been multiplying rapidly from 15 636 in 1959 to 53 073 in 1964[1]; concurrently the number of road accidents increases. In 1964 there were 6 768 accidents resulting in 230 persons killed and 2 915 injured; comparable figures in 1959 were 4 220 accidents, 105 deaths and 1 975 persons injured[2].

Activity in the Libyan seaports of Tripoli, Benghazi, Derna and Tobruk also has rapidly increased from a net registered tonnage of 2 501 entered in 1959 to 3 493 entered in 1964[3]. Libya has three international airports and there is a regular schedule of internal services connecting Tripoli with Benghazi and with Sebha. Unscheduled services by contract airlines also operate within Libya. At the Idris and Benina Airports, traffic has mounted from a total of 40 910 passengers arriving in 1959 to 101 491 passengers arriving during 1964[4]. This increasing travel through Libya's ports poses also a problem of providing efficient quarantine safeguards.

Postal, telephone and radio services are owned and operated by the Government of Libya and a modern network of cable and radio communications connects most centres. It is important that the health services should have arrangements whereby in rural areas rapid communication can be provided in case of emergencies.

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[1] Statistical Abstract 1964, Census and Statistical Department, Ministry of National Economy.

[2] Statistical Abstract 1964, Census and Statistical Department, Ministry of National Economy.

[3] Ibid

[4] Ibid

IV DEMOGRAPHY AND STATISTICS

1. ETHNOLOGY

The dominant ethnic groups in the population are Arabs and Berbers. The language of the people generally is Arabic, and English is taught in all schools above the primary level. Italian is still widely spoken and understood in the western region and is perpetuated by the numerous Italians still living in the country.

The largest religious group is Muslim, numbering (1964 Census) 1 520 517, or over 95 per cent.of the total; Christians with 38 274, Jewish with 3 866 and others 1 712, together constitute less than 5 per cent.

2. POPULATION

2.1 Censuses 1954 and 1964

A first general population census of Libya was undertaken on 31 July 1954. A second census was carried out on 31 July 1964, provided for by the Census and Statistics Law No. 16 of 1963.

According to the census data, Table 1[1], the number of population in the whole area of the United Kingdom of Libya in 1954 was 1 088 889 and in 1964, 1 564 369. Data from Table 1 shows also the total population by sex and Muqataa. If the number of inhabitants in 1954 is taken to be 100 (Table 2) then the index in 1964 is 143.7, which means that the number of the population in Libya has increased in 10 years by a 43.7 per cent average for the whole country.

2.2 Density

The density of population is low, 89 per 100 km^2. Data from Table 3 show, according to the 1964 Census that the Western Provinces have the highest density (412 per 100 km^2), and the Southern Provinces the lowest (12 per km^2). The Western Provinces, although the smallest in area (only 250 km^2, or 14 per cent of the total area of Libya) are

[1]All the Tables referred to in this Chapter appear in Part IV, Annex VI, of this Report.

the most populated, with over 1 000 000 persons living along their fertile sea-coast.

It is difficult to divide Libyan citizens into rural or urban population. Even in municipalities and towns, some of the population have rural characteristics. To be able to distinguish the urban population, occupational criteria have to be taken into consideration. According to some estimates in connexion with the 1954 Census, over one fifth (250 000) of the total population could be considered as urban.

2.3 Age Groups

Table 4 presents the distribution of the population by age and sex groups, and Table 5 the structure of the population by sex and age.

The main feature of the Libyan population is the large proportion of the younger generation, the percentage of children (age group 0-14) is nearly the same as the percentage of adults (age group 15-49):

1954		1964	
0-14	= 37.99%	0-14	= 43.63%
15-49	= 46.10%	15-49	= 43.48%

2.4 Birth and Death rates

Notification and registration of births is not yet organized for the whole country. Nevertheless, figures are available from some of the municipalities. Table 6 and 7 present the number of reported births by sex and Muqataa in 1963 and 1964. Table 7 presents the rate of live-born in 1963 and 1964 It is evident that in these rates there is too wide a variation and therefore the figures cannot lead to any conclusions. The crude birth rates, for example, in 1964 vary from 13.5 to 30.6 . The birth rate for Tripoli in 1963 was 29, and in 1964 the birth rate was 28.6 per 1 000 population. Compared with other developing countries, this rate appears low. It is unmistakable that such

rates, calculated from official figures, cannot be used with confidence in the planning of any health, social or economic policy. Nevertheless, on the basis of some estimates[1] of birth rate in Libya, and the rates revealed by the survey in 1950[2], the crude birth rate for the country as a whole could be between 40 and 50 per 1 000 population.

Notification and registration of deaths are incomplete and, in fact, less effective than of births. Tables 6 and 7 give the number of reported deaths by sex and Muqataa in 1963 and 1964. Table 7 presents the death rates in 1964. In 1964 the crude death rates vary from 2.1 to 7.6 per 1 000 population. The rate for Tripoli in 1963 was 7, and in 1964 for the same city 4.3 per 1 000 population. These rates are so far below estimated crude death rates for other countries in North Africa that they must be ignored because of obvious under-reporting. A recent paper prepared by the Economic Commission for Africa includes estimates of crude death rates as follows: UAR, 21, Sudan 20-25; Morocco 19; and Tunisia 26[3].

If the crude death rates for countries in which the registration of deaths is fairly good were taken as an example, then a death rate of 10-12 per 1 000 population for Libya could be a fairly realistic one:

Country	Year	CBR	CDR	Natural Increase
Tunisia	1961	43%	11%	32%
Aden	1961	47%	11%	36%

According to these figures[3],and taking into consideration the estimated birth rate (40-50%) and death rate (10%), a natural increase rate in Libya of 36 per 1 000 is possible.

[1] Statistical Paper II, Technical Appendix I, Ministry of Planning and Development.
[2] Report Series 5, United Nations, A/AC. 32/Council/R.167, 1951.
[3] Draft of "Some Demographic Indicators for Africa, "R.K. Som, 30 March 1966, for Economic Bulletin for Africa, Volume 6, p. 13.

2.5 Growth

As regards population mid-year estimates 1954-1964[1] (Table 8) and 1967-1972[2] in Libya, the population is expected to grow by 1972 to a figure of 1 935 827 of permanent inhabitants, subject to an annual average increase of 47 051. If it is presumed that after 1972 the increase of the population will continue at the same expected rate, Libya would have about 2 300 000 inhabitants in the year 1980, or 2 700 000 if the assumed increase rate is 3.5 per cent per year, which is very near to the 3.6 per cent rate found between the two census years, but which latter rate seems to be too high for justifiable projection.

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[1]Population estimates of the Central Statistical Office, based on geometric progression.

[2]Preliminary population projections for Muhafatha and Mutassarifia, 1967-1972. Statistics and National Accounts Section, Economic and Social Affairs Division, Ministry of Planning and Development.

V MANPOWER ANALYSIS

The main problem concerning manpower supply in Libya is centred on the availability of professional, technical and skilled personnel, the demand for which far outruns the supply. These are spheres of work preparation for which years of training and experience are required to produce competence; for such personnel Libya is currently having to rely heavily on recruitment from other countries.

The individual questionnaire of the 1964 population census in Libya included provision to collect details of industry and occupation, and Table A[1] gives figures for citizens and aliens according to occupational division and sex.

As a result of a survey reported on in October 1964[2] it was estimated that of 39 256 employed persons classified as professional, technical or skilled, 9 644 were expatriates. In the Government Sector there were 2 315 expatriates in a total of 24 825. Further augmentation during 1965-1966 of the number of expatriates has been considerable but exact figures are not available.

Estimates of manpower requirements 1964-1969 for the Government and Private Sectors also were prepared and are summarized in Tables B and C.

Although the author of the report, from which we quote, admits the incompleteness of the data on which estimates were based and considers his estimates very conservative, the figures provided certainly underline the grave shortage of professional, technical and skilled manpower, and the problem that faces Libya for education and training of Libyan nationals, which will be further discussed in Chapter XIV of this report.

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[1]General Population Census 1964, Census and Statistical Department, Ministry of Economy and Trade, Tripoli.

[2]Nair, A.N.K. (1964). A survey of requirements of professional, technical and skilled manpower in Libya, 1964-1969, Ministry of Labour and Social Affairs, Tripoli.

TABLE A

TOTAL ECONOMICALLY ACTIVE POPULATION (CITIZENS AND ALIENS)
SIX YEARS AND OVER BY SEX AND OCCUPATIONAL DIVISION

Occupation Division	TOTAL			Aliens			Citizens		
	Total	Female	Male	Total	Female	Male	Total	Female	Male
Professional, Technical and Related Workers	15 229	2 108	13 121	3 399	749	2 650	11 830	1 359	10 471
Administrative, Executive and Managerial Workers	6 188	69	6 119	768	39	729	5 420	30	5 390
Clerical Workers	21 723	1 397	20 326	3 242	1 156	2 086	18 481	241	18 240
Sales Workers	24 349	327	24 022	1 058	161	897	23 291	166	23 125
Farmers, Fishermen, Hunters, Loggers & Related Workers	146 709	3 596	143 113	1 250	30	1 220	145 459	3 566	141 893
Miners, Quarrymen and Related Workers	7 254	16	7 238	329	13	316	6 925	3	6 922
Workers in Transport and Communications Occupations	20 542	114	20 428	866	21	845	19 676	93	19 583
Craftsmen, Production Process Workers & Labourers n.e.c.	77 336	8 659	68 677	4 879	220	4 659	72 457	8 439	64 018
Services Sports and Recreation Workers	40 143	2 694	37 449	1 048	411	637	39 095	2 283	36 812
Workers not classifiable by occupations	45 785	3 911	41 874	720	226	494	45 065	3 685	41 380
Total of Occupations	405 258	22 891	382 367	17 559	3 026	14 533	387 699	19 865	367 834

TABLE B

ESTIMATION OF ADDITIONAL DEMAND FOR PERSONNEL 1964-1969

Occupational Division	Educational level			Total
	University	Secondary school	Below secondary	
Professional & Technical				
Government	1 760	7 797	116	9 973
Private	2 112	863	-	2 975
Administrative & Managerial				
Government	754	354	-	1 108
Private	428	877	-	1 305
Clerical				
Government	-	1 858	87	1 945
Private	-	1 420	6	1 426
Farmers & related workers				
Government	-	44	295	339
Private	-	-	9	9
Mining Occupations				
Government	-	7	2	9
Private	-	-	1 423	1 423
Transport & Communication Occupations				
Government	-	64	1 177	1 241
Private	-	353	396	749
Craftsmen				
Government	-	342	6 333	6 675
Private	-	385	3 650	4 035
Service Occupations including unskilled				
Government	-	-	3 949	3 949
Total Government	2 514	10 459	12 259	25 232
Total Private	2 540	3 898	5 484	11 922

TABLE C

ESTIMATED DEMAND FOR AND SUPPLY OF PERSONNEL DURING 1964-1969

Educational level	Demand for personnel			Supply of personnel (including Libyans Studying abroad)	Shortage	
	Govt. Sector	Private Sector	Total		Govt. Sector (Assuming the entire supply is absorbed in Government) Col. (2)-(5)	Overall Col. (4) -(5)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
University	2 514	2 540	5 054	1 841	673	3 213
Secondary school	10 459	3 898	14 357	7 171	3 288	7 186
Below secondary school						
skilled	8 325	5 484	13 809	2 210	6 115	11 599
unskilled	3 934	-	3 934	adequate	-	-
TOTAL	25 232	11 922	37 154	11 222*	10 076	21 998

* Excluding unskilled.

VI ECONOMIC BACKGROUND, PROBLEMS AND DEVELOPMENT

1. THE GROSS NATIONAL PRODUCT

Libya is a good example of what is sometimes called a "dual economy". A large proportion of the population still lead a simple rural life supplying most of their own needs. The other face of the economy is to be seen in the main cities and in the smaller towns of the coastal area, where a modern economic pattern had started development under the Italian colonial regime, received further support from foreign aid and foreign military expenditure after World War II and now has received new impetus to hasten the process of change, by the discovery and exploitation of oil.

The discovery of oil and sudden increase in the gross national product does not of itself provide an easy or complete solution to the problem of economic development. There still remains the problem of sharing the new prosperity so as to improve the lot of the rural population and of the illiterate labour increasingly attracted to the towns. Libya's capacity to invest money in productive schemes is severely limited by lack of experience and of trained personnel. The highest priority is indeed being accorded to education and training, but there is a necessary time lag before the people as a whole can contribute knowledge and experience to make good use of the capital at their disposal. In the meantime there is a constant danger of taking a short cut and of placing responsibility for planning or execution on the shoulders of persons still lacking the education and training needed to make them effective. A sacrifice of quality in favour of quantity may, in the long run, hamper rather than promote development.

The sudden and rapid growth in the gross national product can be seen from the figures in Table D below. In the case of Libya a sizeable part of the gross domestic product goes out of the country to the oil companies who have invested in Libya; in 1964, for example, this amount has been unofficially estimated as being in excess of £L 60 million.

The rapidly rising revenue from petroleum is demonstrated in Part IV, Table 11, and naturally enough Government expenditure also reflects the favourable economic situation (see Part IV, Table 12).

TABLE D

ESTIMATES OF GROSS DOMESTIC PRODUCT IN LIBYA*

Classified by Industrial Origin
(At factor cost and current prices)

Activities	Gross Value Added in Million £L.		
	1958	1964	1965
Agriculture	13.6	24.5	26.3
Mining and quarrying	3.6	165.9	216.9
Manufacturing	6.0	12.4	13.4
Construction	1.8	11.6	13.2
Electricity and gas	0.8	1.3	1.4
Transportation	10.1	14.4	16.3
Wholesale and retail trade and storage		27.3	31.0
Banking and insurance	1.3	5.0	5.6
Public administration and other government services	6.7	38.0	43.0
Other services	8.2	34.0	41.2
Gross Domestic Product	52.1	334.4	408.3

2. CURRENT REVENUE AND OPERATIONAL AND CAPITAL EXPENDITURE

By law, 70 per cent of Libya's oil revenue is being set aside for development for which a separate budget is drawn up and approved.

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*Statistical Abstract 1965, p. 232.

Tables 11, 12 and 13 in Part IV are abstracted from the "Budget Estimates for the Financial Year, 1965-1966" and from the "Development Budget for the Financial Year, 1965-1966".

3. PLAN FOR ECONOMIC AND SOCIAL DEVELOPMENT

Law No. 5 of 1963[1] for the organization of Planning and Development Affairs, established a National Planning Council to deal with social and economic development plans and to approve overall long-term development programmes for submission to the Council of Ministers and Parliament.

A Ministry of Planning and Development handles all the day to day work of studies, research and statistics and detailed preparation for planning. The Ministry has a large staff of Libyan personnel and of foreign consultants. This is the Ministry which negotiates technical assistance from international and national aid agencies.

Other ministries, including the Ministry of Health, prepare their own development plans which have to receive the concurrence of the Ministry of Planning and Development. Funds for approved development projects can be released only by the latter Ministry. The experience so far shows that available funds cannot in fact be utilized within the period estimated and, with Development's share of oil revenue regularly accruing, there will be little difficulty for the foreseeable future in financing approved projects.

The Development Budget for 1963-1968 is outlined in Table 13, in Part IV.

4. PLANNING MACHINERY

In the Ministry of Health there is a "planning" section under the control of a lay administrator. In fact, however, there exists no planning machinery as such, the section appears only to record decisions made at higher level and takes action to arrange implementation of the decisions. We have been unable to discover any evidence of total or co-ordinated sectorial planning.

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[1]Five-Year Economic and Social Development Plan 1963-1968, p.17, Ministry of Planning and Development, Tripoli.

Ad hoc decisions are made on various projects following mutual consultation between two or three individuals, but there is no body or committee to survey the total sectorial plan, or to ensure that all available data, including consultation with other Ministries, has been collected before decisions are taken. Any inter-ministerial co-ordination that exists appears to be initiated by the Ministry of Planning and Development.

VII POLITICAL AND ADMINISTRATIVE ORGANIZATION

After the end of World War II, when the status of former Italian colonies came up for consideration, the United Nations General Assembly voted on 21 November 1949 that the three provinces (Western, Eastern and Southern) should be constituted as an independent State. Following the adoption by the Libyan Constituent Assembly of a Federal Constitution of the three provinces the independence of the country was proclaimed by King Idris I on 24 December 1951. Under a revised constitution of 1963, the earlier federal system was replaced by a unitary form of government.

Libya is a hereditary monarchy. Parliament is bicameral and consists of a Senate of 24 members, all appointed by the King, and an elected House of Representatives. Ministers are appointed by the King, and the Council of Ministers and the Cabinet are headed by the Prime Minister; they are also responsible to Parliament.

Libya's system of government includes 18 ministries at the centre and most of these have regional offices in each of the eastern, western and southern regional capitals.

Policy decisions and executive powers are centred in the Ministries and there is no clear delegation of powers to departmental or provincial officers. In the three years since the administrative machinery had to be revised to suit a unitary system of government, progress has been made but there is still need for a clear demarcation of functions, duties, powers and responsibilities among different Ministries and Departments and among officers of different grades; inadequate delegation of authority is resulting in Ministers and Under-Secretaries concerning themselves with unimportant and routine matters which should be handled and decided at lower administrative levels. There is also need for clear rules of procedure to ensure co-ordination among Ministries and Departments.

For purposes of local administration the country is divided into ten Muqataa or Muhafathat (provinces). Each one is administered by a Muhafath (governor) appointed by the Ministry of Interior. The Muhafath represents the central Ministries in his province and is administratively responsible for the ministerial personnel assigned to his province.

Each Muhafathat is subdivided into smaller administrative units called Mutassarifiat (districts). There are some 30 such districts in the country; the Mutassaraf of each is responsible to the Muhafath. Mutassarifiat are further subdivided into Mudariat and for urban areas, Municipalities, and for rural areas, Tribes. The Sheikh of each tribe is responsible to the Mudaria; in urban areas the equivalent of the Sheikh is the Mukhtar. All such administrative officials, including mayors of municipalities are appointed not elected.

For each Muhafatha there is a council under the chairmanship of the governor; members of the council are appointed by the Minister of the Interior for fixed terms of office.

Except in large municipalities, local government officials or councils seem to have little executive powers in respect of planning or development of social services, though they no doubt make their wishes known. Such activities as they undertake appear to be confined to routine responsibilities for enforcement of directives from higher authority.

VIII SOCIAL AND HEALTH LEGISLATION

During the period of our mission in Libya we have found it impossible to ascertain exactly what valid legislation affecting the health sector exists in 1966.

Public Health Law, No. 69 of 1958 is a law enabling the issue of "the necessary Regulations for the development and maintenance of Public Health" and covers in its Article (3) a wide field of matters of importance to health.

Of Regulations gazetted under Law No. 69 of 1958 we have been able only to obtain copies of ones concerning:

- Quarantine - providing for action under International Sanitary Regulations;
- Drinking-water - domestic water supplies, collection, storage and distribution;
- Cemeteries, Burials and transport of dead bodies;
- Public Baths and Laundries;
- Milk and milk products;
- Schools' Health and inspection of educational establishments;
- Slaughter Houses and Butcheries;
- Establishment and Administration of Hospitals.

Law No. 60 of 1957 concerns "Practising the Medical Profession", but we have not been able to obtain a copy for study. On the other hand, we have seen an English translation of a Regulation under Law No. 60 of 1957 dealing with practice of para-medical professions.

We are informed that, in Municipalities especially, regulations issued during the Italian regime before Independence still are in force.

In Chapter XIII, paragraph 1.4, we have referred to the Social Insurance Law No. 53 of 1957, and there must be, of course, other legislation dealing with social services and relevant to health service activities.

It is obvious that it will be desirable sooner or later to collect together all existing relevant legislation for study as to the desirability of re-drafting comprehensive legislation for the health sector.

We do not, however, attach high priority to this because at the present time there exists no possibility of creating means of enforcement. First priority for the next seven years is the strengthening of the health services, so that the public will appreciate the value of legal sanctions to safeguard the health of the community.

IX EDUCATION

1. THE SYSTEM

Public School Education is organized on a 12-year basis; six years Primary School (nominally from ages 6 to 12); Preparatory School for the next three years (ages 12 to 15); and Secondary School for the last three years (ages 15 to 18). The six years at primary school are compulsory and preparatory and secondary school is optional. Preparatory and secondary schools provide only general education and there are parallel institutions for technical and vocational training at both levels (see paragraph 3 below).

Education in Government institutions is free in Libya and there are subsidies of various kinds for boarding schools, university board and lodging, etc.

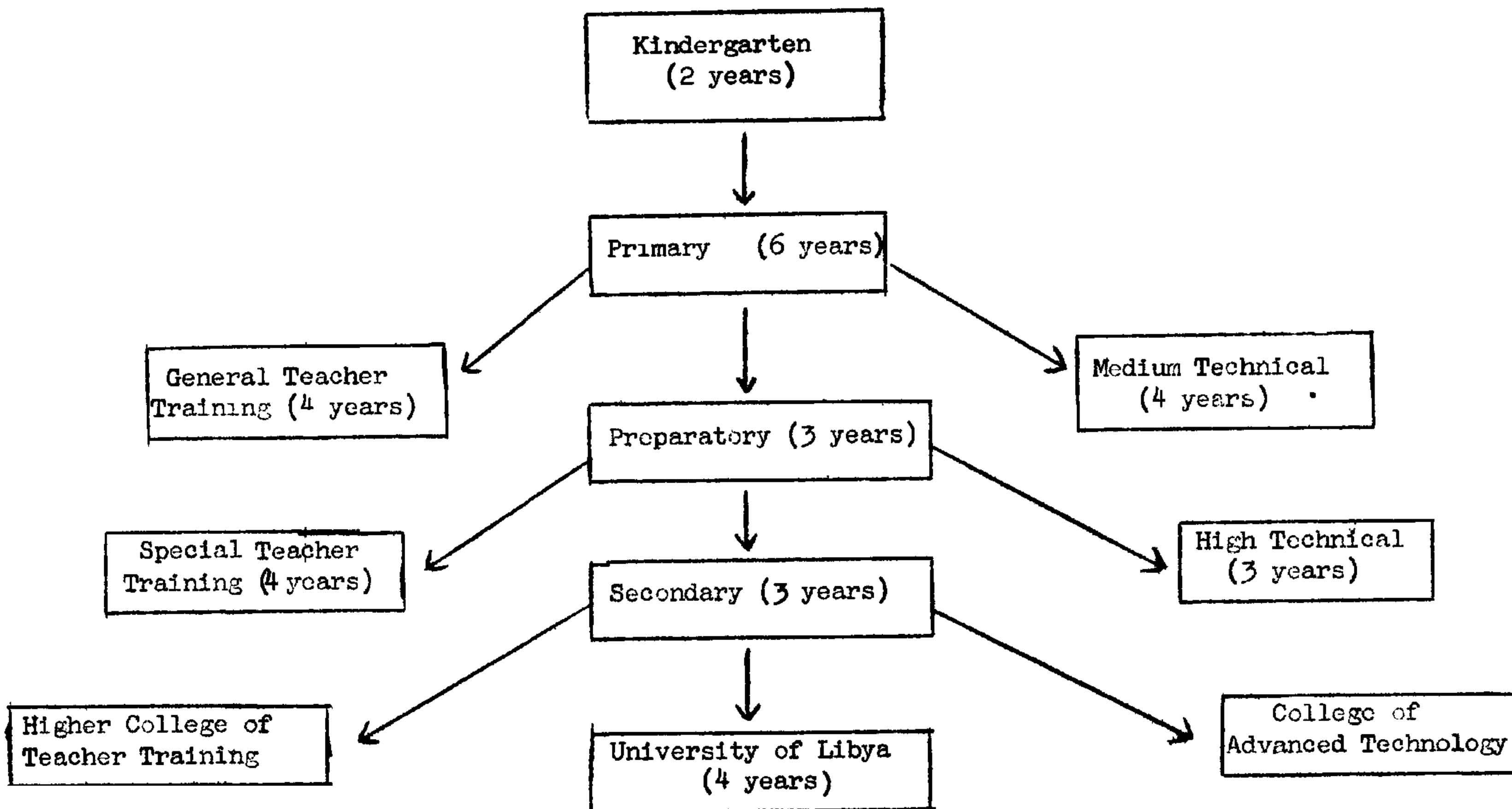
Table E is a schematic diagram of the formal education system. Promotions from primary to preparatory, from preparatory to secondary, and certification at the end of the secondary school are all based on examinations. Many students repeat a year but in general a student must pass to the next grade after being in it for three years or else leave the school system. It will be noted from Table E that those students with primary certificate can go into (1) preparatory school, or (2) general teacher training, or (3) medium technical school. Graduates from preparatory school can attend (1) secondary school, or (2) special teacher training schools, or (3) advanced technical school. Graduates of the secondary schools are eligible to attend (1) the University of Libya with four faculties at present, or (2) the College of Advanced Technology, or (3) the Higher College of Teacher Training.

English has been adopted as the compulsory second language and is taught from preparatory school onwards; otherwise all tuition is in Arabic.

At present the secondary school leaving certificate is about equivalent to General Certificate of Education in the United Kingdom and in the higher

TABLE E

GOVERNMENT SCHOOL SYSTEM



educational establishments the first two years have to include tuition equivalent to that of the Advanced Level required for University entrance in Britain.

Of successful secondary school leavers, those with highest marks receive first option for the University. A promise has been given that the first 30 will be sent overseas for further studies after University Graduation. At present all University graduates have to give their first two post-graduate years to school teaching in Libya.

In Libya's preparatory and secondary schools at present there are some 1 500 teachers and over 80 per cent are expatriates.

2. SCHOOL ENROLMENT

"Enrolment in primary schools has risen much faster than population. From 1958 to 1964 population increased about 24 per cent but the enrolment of boys increased about 67 per cent and of girls 102 per cent.

Enrolment in preparatory schools has increased from about 5 000 boys in 1958 to 16 000 in 1964-1965; number of girls from 182 to 1 503.

Secondary enrolment of boys has increased from 1 536 to 3 513 over the same period and secondary enrolment of girls from 45 to 368[1] ".

Approximate school enrolment in 1964-1965 was:

	Government Schools			
	Day	Night	Total	Foreign Schools[b.]
Primary (1 to 6)	169 191	17 838[a.]	187 029[c.]	7 161
Preparatory (7 to 9)	17 711	3 446	21 157	831
Secondary (10 to 12)	3 881	1 728	5 609	91
Sub-total	190 783	23 012	213 795	8 083
General Teacher Training	1 416	-	1 416	-
Special Teacher Training	972	-	972	-
Medium Technical	703	-	703	-
Advanced Technical	324	-	324	1 144

[1]Statistical Paper No. 8, 1965, Student enrolment data through 1964-1965. Statistical and Accounts Section, Division of Economic and Social Affairs, Ministry of Planning and Development.

a. Primary figures are for 1963-1964; others are for 1964-1965.

b. All foreign school figures are 1962-1963. Totals only are available for 1963-1964: 8 506 (4 625 boys and 3 881 girls); for 1964-1965: 9 334 (4 914 boys and 4 420 girls).

c. To these figures must be added an estimated 24 000 in religious and private schools, exact numbers for which are not presently available.

3. VOCATIONAL AND TECHNICAL TRAINING

Apart from the specific Teacher Training Schools referred to above, there are several kinds of technical or vocational training courses open to primary and preparatory school leavers. These include agricultural, arts and crafts, artisan, clerical and technical training courses of various kinds and the training of auxiliaries for the health services is in this category. Courses for nursing, laboratory, and maternal and child health personnel are being offered at present.

4. HIGHER EDUCATION

The University of Libya was formally established in 1955 under the direct supervision of the Ministry of Education. The University opened in 1955/1956 and now has four faculties.

In Benghazi it has the College of Arts, Letters and Education; the College of Commerce and Economics and the College of Law.

The College of Science opened in Tripoli in 1957; this fourth faculty provides a four-year course for B.Sc. The main subjects being physics, chemistry, botany, zoology and geology. During the first two years about 50 per cent of students fail or discontinue their studies so that an intake of about 100 is reduced to about 50 in the final year. Of the student group of approximately 300 in May 1966, 45 were girls. Tuition during the last three years is in English and examinations are in English.

A Faculty of Agriculture is to open in 1967.

The College of Advanced Technology opened in 1962 in Tripoli and provides four-year degree courses in engineering - civil, mechanical and electrical, and

a four-year course in food technology. In May 1966 there were two girl students in the engineering course.

The <u>Higher College of Teacher Training</u> opened in 1965 and has now (May 1966) 74 students among whom are 17 girls, in its first year. It offers a degree course of four years for teachers in the Arts (primarily languages) and Sciences. It is planned that the College will admit up to 120 students per year.

The following[1] has been the enrolment in the various higher education courses:

School Years	Total	Arts and Education	Service	Commerce and Economics	Law	Advanced Techn.	Higher Teacher Training
1955-56	32	32					
1956-57	80	80					
1957-58	197	117	32	48			
1958-59	251	187	52	112			
1959-60	560	241	77	242			
1960-61	742	317	115	310			
1961-62	917	382	152	383			
1962-63	1 028	365	168	423	72		
1963-64	1 239	404	178	420	132	105	
1964-65	1 684	527	250	538	190	179	
1965-66	1 747	518	295	428	199	217	90

[1]The Development of Education in Libya, Document No. 1, submitted by the delegation of the Kingdom of Libya to the Conference of Ministers of Education and Ministers responsible for Economic Planning in Arab States; Tripoli, 9-14 April 1966.

5. PROJECTION OF SCHOOL ENROLMENT, 1964-1973

A study[1], undertaken in the Ministry of Planning and Development in 1966, took into account the available data up to that year and took note also of the paper "Report on Forecasts of School Enrolment in Libya", which had been prepared in March 1963, by Mr. T.N. Le Seeleur, a UNESCO expert. Perforce the estimates given below are based on a number of assumptions derived from best available information on, for example, birth and infant mortality rates, etc., and the author claims no high degree of statistical accuracy; nevertheless, we accept these projections as a valuable estimate:

PROJECTION OF ENROLMENT IN GOVERNMENT DAY SCHOOLS 1964-1973

School Year	Primary Schools		Preparatory Schools	
	Boys	Girls	Boys	Girls
1964-65*	136 293	32 898	16 200	1 500
1965-66	142 400	43 000	20 300	2 200
1966-67	142 600	53 000	25 600	3 400
1967-68	141 600	63 300	29 700	4 800
1968-69	140 000	73 400	33 500	6 500
1969-70	138 500	83 600	36 100	8 400
1970-71	139 400	94 500	36 400	10 000
1971-72	140 400	104 500	36 200	12 600
1972-73	143 000	112 900	34 800	15 400

* Actual

[1]Unpublished data, Statistics and Accounts Section, Economic and Social Affairs Division, Ministry of Planning and Development, Tripoli, June 1966.

X HEALTH SITUATION

1. DATA COLLECTION

Available figures for mortality and morbidity are most incomplete and together present a rather vague picture of prevalent causes of disease and death. In particular, we have been able to find no evidence on which to make any justifiable estimate of infant mortality or of life-expectancy.

The figures which are quoted below do, however, indicate that a major part of ill-health is due to low standards of environmental hygiene.

2. NOTIFIABLE DISEASES

There is no country-wide legislation on notification of infectious diseases, but Government hospitals have been instructed by administrative circular. It is freely admitted, however, that notifications received represent only a fraction of the total.

From notifications reaching the Ministry of Health in 1965 (Part IV, Table 9), it appears that measles with 8 884 reported cases takes first place. Other diseases are in the following order: diarrhoea and enteritis, 3 272 cases; pulmonary tuberculosis, 2 648; influenza, 2 546; amoebic dysentery, 1 656; mumps, 1 384; bacillary dysentery, 1 271; chicken-pox 860; schistosomiasis, 711; unspecified and other forms of dysentery, 557; etc.

3. HOSPITAL MORBIDITY STATISTICS

Complete hospital morbidity statistics do not exist as yet in the country, but on the basis of "Discharge Registers" in Government hospitals, the Central Statistical Office published data on "Morbidity Statistics in Government Hospitals" in 1954, 1955 and 1956. These statistics were given in three tables:

- Hospital in-patients discharged (died) by sex and disease.
- Male hospital in-patients who died (by cause of death and age).
- Female hospital in-patients who died (by cause of death and age).

Diseases are classified and published according to the "Intermediate 'A' List of the International Statistical Classification of Diseases, Injuries and Causes of Death".

It is justifiable, we feel, to accept the data tabulated and analyzed in these publications as giving a rough picture of the country-wide pattern of prevalent causes of hospital admission. (Part IV, Table 10).

As regards male patients, 62.7 per cent were affected by:

- "Diseases of the Digestive System	17.2 per cent.
- Infective and Parasitic Diseases	16.4 per cent.
- Diseases of the Respiratory System	15.5 per cent.
- Accidents, Poisonings and Violence	13.6 per cent".
	62.7

Female patients were affected by:

- "Deliveries and Complications of Pregnancy Childbirth and the Puerperium	29.1 per cent.
- Infective and Parasitic Diseases	11.9 per cent.
- Diseases of the Digestive System	11.4 per cent".

Because of a larger number of males exposed to the risk of accidents, a significant difference exists between male and female cases hospitalized in so far as "Accidents, Poisonings and Violence" is concerned (males 13.6 per cent; females 3.6 per cent).

XI LONG-TERM OBJECTIVES

1. HEALTH

The preamble to the Constitution of the World Health Organization, to which Libya and other member states are a party, lays down the principle that:

> "Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures".

The same preamble also provides the definition that:

> "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

We have been informed that the Government of Libya accepts fully its responsibility for the health (as defined above) of the people and is anxious to provide services which will guide the country gradually to attain a high standard of public health.

2. PUBLIC HEALTH SERVICES

Hitherto, the concentration of governmental health activities in Libya has been on curative medicine and on the treatment of diseased persons. The Ministry of Health which has had full responsibility only since 1963 after the Libyan constitution was amended to a unitary instead of a federal system of government is now anxious, we have been assured, to develop also promotive and protective health services.

One of the most widely quoted and most comprehensive interpretations of "Public Health" is that of Winslow[1]:

> "Public Health is the science and art of preventing disease, prolonging life and promoting mental and physical health and efficiency through organized community efforts for the sanitation of the environment, the control of communicable infections, the

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[1]Winslow, C.E.A. (1923). The Evolution and Significance of the Modern Public Health Campaign; New Haven, R.I.

> education of the individual in personal hygiene, the organization of medical and nursing services for the early diagnosis and preventive treatment of disease, and the development of social machinery to ensure to every individual a standard of living adequate for the maintenance of health, so organizing these benefits as to enable every citizen to realize his birthright of health and longevity".

This definition stresses the priority to be given to the promotion and protection of health; these are positive activities and represent sound economic investment; it also emphasizes the reality that a public health service is a social service involving the whole community. The individual is a member of a family and a family is a unit in the community; it is mistaken, therefore, to compartmentalize various aspects of health services with administratively and operationally separate authorities; it is also unrealistic to plan to develop health services unco-ordinated with other social services such as education, irrigation and agriculture, food production and distributions, social security, housing and all environmental improvement programmes.

An Expert Committee called together by the World Health Organization in its Fourth Report on Public Health Administration[1] drew up a list of programmes which should be included in the total activities of a modern health service. This list has been discussed with those Libyan authorities most concerned and we have been assured that the achievement of a public health service able to take responsibility for such a comprehensive programme does, in fact, represent the long-term objectives of the Ministry of Health. For this reason we think it worthwhile our providing here, for easy reference, this "List of Health Provisions".

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[1] World Health Organization, Technical Report Series, No. 215, Annex 1, 1961.

LIST OF HEALTH PROVISIONS[1]

"I Services Provided Directly by Health Authorities or Jointly with Other Authorities:

1. Environmental

   (1) Housing
   (2) Town and country planning
   (3) Water supply
   (4) Drainage and disposal of excreta
   (5) Disposal of sewage
   (6) Disposal of refuse
   (7) Protection against river pollution
   (8) Control of insects, rodents and other disease vectors
   (9) Supervision of dangerous trades and trade wastes
   (10) Control of atmospheric pollution
   (11) Control of radiation hazards to health
   (12) Control of noise

2. Personnel and Social

   (1) For the healthy:

      (a) Expectant mothers - prenatal and postnatal
      (b) Children - pre-school, school
      (c) Adults, including industrial workers
      (d) Aged persons
      (e) Periodical health examinations

   (2) For the handicapped:

      (a) Children
      (b) Adults
      (c) Aged persons

   (3) For the sick:

      (a) Short-term illness or disability
      (b) Long-term illness or disability
      (c) Infectious disease
      (d) Mental disease
      (e) Occupational disease
      (f) Rehabilitation services

3. Control of Communicable Diseases

   (1) Quarantine

      (a) National
      (b) International

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[1] A revised list based on that drawn up by the Expert Committee on Public Health Administration (World Health Organization, Technical Report Series, No. 55, 6 - 8; 1952).

(2) General epidemiological control (including notification, immunization, isolation and disinfection)

4. General

(1) Health promotion

(a) Nutrition
(b) Physical education
(c) Health education - physical, mental and social

(2) Regulation

(a) Legislative
(b) Standardization and supervision
(c) Food and drugs

(3) Laboratory services (for both preventive and curative services)

(a) Bacteriological, parasitological and virological examinations and reference
(b) Chemical analysis
(c) Entomological examination

(4) Recording and statistical analysis

(a) Collection of primary data - service records
(b) Survey to identify and define health problem
(c) Assessment of services - personnel, equipment and facilities
(d) Appraisal of results
(e) Statistical analysis

(5) Supplies and equipment

(a) medical (including pharmaceutical and dental)
(b) Environmental sanitation

5. Education of Personnel

(1) Professional

(a) Basic
(b) Post-basic
(c) Refresher

(2) Auxiliary personnel

(a) Basic
(b) Advanced

6. Research

(1) Fundamental
(2) Applied (including operational research, field investigations and studies)

II Other Services that Contribute to Health:

1. Social Welfare - community organization, social services, relief of sudden and urgent necessity

2. Social Security Measures - employment, insurance, job selection

3. Education - scientific knowledge and information relating to health, general education

4. Food Production and Distribution - adequate food supply, and proper system of distribution

5. Reservation of Land - utilization for housing, food production, parks

6. Veterinary Services - animal diseases transmittable to man, dairy products, meat products

7. Labour Standards - working hours, wages, working conditions

8. Recreation - swimming, games, theatres, parks

9. Transport and Communications - access to health, services accident prevention

10. Youth Movements - camps, hostels

11. Irrigation - improvement of crops, mosquito control

12. Environmental Sanitation and Personal Cleansing Services - street cleansing, fly control, public baths

13. Conservation of Natural Resources - housing material, prevention of soil erosion, supply of minerals

14. Population and Family Planning - family welfare, size of family in relation to health, education and development of children.

In our report we hope to indicate the present shortcomings and to make realistic proposals as to what progress towards the long-term objectives might be attempted during the Second Five-Year Development Plan, 1968-1973."

3. HEALTH SERVICES ORGANIZATION

> "The first principle of good administration requires that when a special function is to be undertaken it should be undertaken by one governing body for the whole community needing the service, and not for different sections of the community by several government bodies[1]".

Although this principle was formulated 45 years ago and is world-widely accepted and quoted by those who have studied the organization of social services, only in a few countries following revolution or newly acquired independence, has a fully integrated health service been successfully developed. In the "older" countries, Britain included, various Government Departments have retained and further developed their own health services by means of independent and water-tight machinery. Because each section of a community overlaps to some degree every other section, the specialized health provisions thus established by different departments become full of duplications and overlapping and, worse still, some sections of the community may be left without health provision.

As a newly independent country, Libya should be able, we believe, to take note of the serious mistakes which have been made by many socio-economically advanced countries and take action now to develop a comprehensive integrated health service. Every individual at every age and whatever his occupation is a member of a family and of the community in which he lives. It is inefficient, uneconomical and quite definitely hazardous if in one community several different authorities are providing health services, either for separate age groups, or for different employment categories, or to protect from various kinds of environmental health hazards.

It is, of course, true that specialized activities in respect of special aspects of health promotion have to be developed but they should be organized as various limbs of one body.

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[1] British Ministry of Reconstruction 1919.

4. THE COMMUNITY HEALTH SERVICE

In planning to provide health services it is imperative to study the needs of the community and, of course, any activity that is undertaken for the good of the community obviously will benefit the individual and his family as well.

We believe that the planning of health services can best be approached by deciding first on the services to be provided at the community level and then giving consideration as to how best such peripheral services can be supported and strengthened by a desirable organization at regional and central levels.

Within the First Five-Year Development Plan 1963-1968, the Government of Libya made provision for the establishment of 61 health centres, each with two or three sub-centres.

We support this far-sighted planning; we have studied the "blue-prints" of the building which is to accommodate such a health centre and have noted that provision (though perhaps minimal) has been made for most aspects of a small community health service.

The basic health activities to provide for any community must include:

i. Improvement of environmental sanitation.

ii. Communicable disease control.

iii. Family health care through medical and nursing services for the early diagnosis and prevention of disease, including maternal and child health, school health, health education and immunization programmes.

iv. Medical care for the sick.

v. Maintenance of records for vital and health statistical services.

In each community there should be a hub from which and round which health activities can be organized under unified direction. The local hospital cannot successfully and should not be expected to provide the hub from which services radiate; indeed the hospital providing medical care for the sick is only one of the spokes in the wheel.

The "Community Health Centre" on the other hand can provide the centre from which all community health services radiate under the unified direction of a senior medical officer (hereafter to be called "Medical Officer of Health"), who preferably should have post-graduate public health qualifications and who will be responsible for organization and direction of all promotive, preventive and curative services - including any local hospital, in his area. The organization should at all costs avoid the divorce of the hospital team from the community from which their patients come and to which their patients return and therefore, even though the hospital must have its medical superintendent, the local Medical Officer of Health should have right of access and should receive full co-operation.

> "To maintain balance in organization[1] for the distribution of medical care and to assure the promotion of positive mental and physical health, it is necessary to have at the top health-minded rather than disease-minded persons. Naturally, clinicians must have full responsibility in clinical fields just as hospital administrators have full responsibility in hospital administration; however, in the whole scheme of things, it is the health officer rather than the hospital officer who should plan, and who, at the top should have the last word in advising on allocation of resources. Otherwise public hospitals will become autonomous medical departments, with uncontrolled vested interest in curative medicine, that is to say, disease. Disease is negative and unproductive. It is in the interest of society to limit so far as possible all vested interests in social activities that are negative and unproductive in subject".

The primary objective of the community health centre then is not to provide only an out-patient clinic or dispensary for sick persons but to provide services which will prevent people becoming sick. To achieve this, the services it provides must be out-going into the community and to the family. Its staffing must be planned for this purpose and to provide not only just enough medical and para-medical personnel to sit in the centre waiting to be consulted, but sufficient to provide domiciliary services in order to extend to families in their homes certain promotive measures, including environmental sanitation by the local health staff, to provide more comprehensive care for

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[1]Grant J.B., 1946, Health Care for the Community, American Journal of Hygiene Monograph Series 21, Johns Hopkins, Baltimore, 1963.

the family as a whole. The local Medical Officer of Health will require therefore a health team varying in numbers according to the size and needs of the community, composed of at least:

- One or more general practitioners
- Public health nurses and midwives
- Sanitary inspectors
- Laboratory and X-ray assistants
- Statistical clerks.

5. COMMUNITY PARTICIPATION

It has been demonstrated repeatedly that an effective health programme can be organized only if it secures the involvement of the people. Perhaps one of the most important functions of the community health centre is to make the people aware of their needs and to provide them with a technical consciousness of what is involved in meeting these needs. The level of the people awareness and understanding of health and diseases will determine the consequences which accrue from whatever services are rendered.

It has seemed to us during our travels in Libya that the average citizen tends to expect the Government to provide everything and that he himself accepts no responsibility for the services provided. He regards both Government Services and Government Property, good or bad, as none of his concern. We believe that this lethargy can best be eliminated by developing a technical consciousness within the community through a health committee on which the people themselves are represented. Even in rural villages and among people with little school education, the effort to involve the people themselves in responsibility for health promotion services "pays off" more quickly than health propaganda or imposition of sanctions under rules or regulations.

There exists extensive literature on community development and we need add here only the statement of our conviction that much progress will accrue from the working of a community council of which the local government representatives of the social services - health, education, agriculture, etc. -

are members and on which the community itself also is represented.

6. URBAN HEALTH SERVICES

Whereas it will be necessary to adapt the organization of a Community Health Service to the environment in which it operates, the services and the principles on which its performance depends, remain the same whether applied to a rural or an urban setting. Adequate organization for health care requires that no family should be more than 15 to 30 minutes from the availability of health care services. In urban areas this would require, generally speaking, one health centre for every 15 000-20 000 people, housing some four to six general practitioners and their associated para-medical workers and services. The provision of a comprehensive service integrating preventive, promotive and curative action, is just as important in an urban community as elsewhere. In this connexion we would stress that if a local government or municipality is to have any responsibility for any community health services, it should have responsibility for the comprehensive whole and should be provided with the necessary staff and finances for efficient operation.

7. ORGANIZATION FOR CO-ORDINATED DISTRIBUTION

The distribution of the peripheral community health services above described, must be planned and co-ordinated into a single national system by establishing a two-way flow of professional and administrative guidance between the peripheral units and the base. The peripheral health unit must be serviced and guided from a regional base and must be able to obtain from or at the regional base, all specialized advice or utility it requires. The Community Health Centre must have a two-way link with the nearest local hospital and from the local hospital to the base hospital where all specialized skill is available. The specialists from the base hospital must be enabled to travel to the periphery to provide regular expert guidance. Similarly, the Community Medical Officer of Health must be provided with a two-way link with the base to obtain specialized (e.g. public health engineering or laboratory) support and from the base must flow regular direction and expert leadership.

Efficient administration demands a very considerable delegation of executive powers. It is appropriate and necessary that the central Ministry of Health should be primarily a policy-making centre, planning and giving direction to the development of health services and in order to do this effectively, it must have its full complement of expertise and experience. Successful realization of policy and planning, however, demands delegation of powers of implementation and execution to the peripheral services.

In Libya since 1963, the country is administratively divided into ten Muqataa (provinces) and these are further sub-divided into administrative districts; for historical reasons, however, there still remain three generally recognized eastern, western and southern regions, each with what is a *de facto* capital, namely, Benghazi, Tripoli and Sebha.

It is envisaged therefore, to be developed from what already exists, that each of these three larger population centres also should be provided with its complement of expert staff having the necessary powers to give leadership and direction to all spheres of health services development. In due course, and as circumstances will demand and permit, there must be yet further delegation of powers and provision of expertise in each Muqataa.

For the period up to 1973 our proposals are contained in Chapter XII, paragraph 3.2, and we believe that their implementation will provide for progress towards the long-term objectives outlined above.

8. THE STAFFING OF HEALTH SERVICES

The efficiency of services for the promotion of health and cure of disease depends very little on the buildings in which the staff work, but almost wholly on the standard of service given by the staff themselves.

Excellent medical care can be given by a well trained worker from a mud-hut, appalling service can be rendered by poorly trained staff in the most modern of institutions.

Modern science has progressed to a stage in which complex and powerful drugs, supplies and equipment are available to the medical and health services. Many examples can be given of drugs and of instruments which properly used bestow great benefits but when misused can do untold harm.

Health maintenance can neither be purchased nor bestowed, and the public health cannot progress beyond the effectiveness of education. The social problem in Libya is how to overtake the lag between modern knowledge and its use in the community. There is no short cut to the education and training of health staff and it is a great mistake to think that ill-prepared persons can be used successfully to "fill the gap" until adequately trained staff are available.

In Libya we have seen too many examples of superficially trained persons whose service to the community is doing more harm than good. Not only is the use of the medicaments at their disposal positively hazardous, but the whole image of a health service is being degraded in the eyes of the community.

We have no hesitation in stating that a bad health service is worse than no health service and we have to recommend that no new health facility for a community should be provided until there is an assurance of adequately trained staff to man it.

Chapter XIV contains our recommendations on a programme of training for health personnel.

XII HEALTH ORGANIZATION AND ADMINISTRATION

1. THE MINISTRY OF HEALTH (Present Position)

Only since 1963 has the Ministry of Health in Tripoli assumed responsibility for all health services throughout the Kingdom.

The Minister for Health is responsible to the Council of Ministers and to Parliament for all health matters, but not for other social welfare affairs.

The Under-Secretary of the Ministry of Health is a civil servant and the most senior executive officer responsible to the Minister for all activities of the Ministry's health services. The Under-Secretary is at present the only Libyan medical officer holding executive powers and responsibility in the Ministry.

There are three Assistant Under-Secretaries, all are laymen - (two are in Tripoli and one in Beida); their respective responsibilities are not clearly defined; they assist the Under-Secretary.

The Ministry has four departments each having a post of Director responsible to the Under-Secretary.

1.1 The Department of Administration with a layman Director, is responsible for all personnel affairs and for the administrative servicing (Registry, etc.) of the Ministry's routine working.

A section of Finance is under a Controller, who is responsible directly to the Under-Secretary, for the recurrent and development budgeting and accounts.

1.2 The Department of Pharmaceuticals and Medical Equipment is under the directorship of a qualified pharmacist responsible to the Under-Secretary. This Department is responsible for procurement and distribution of all drugs and medicaments, equipment and furniture for health units throughout the Kingdom. This Department handles a total recurrent

budget allocation of about £L. 1 250 000, with additional sums available from the Development Budget for special projects. In process of creation is an equipment maintenance section. This Department is responsible also for control of pharmacies in the private sector, for enforcement of dangerous drugs and other regulations and for control of narcotics under international agreement.

1.3 The Department of Curative Services has the post of Director vacant at present and is directed by the Under-Secretary himself. This Department is responsible for hospital and dispensary services, for laboratory services and for the training programmes of health personnel.

1.4 The Department of Preventive Services with a Director (a foreign doctor, who has no relevant post-graduate qualification in public health), is nominally responsible for environmental health services, for communicable disease control programmes, for quarantine services, for school health and maternal and child health services, for health education and for health statistics services.

It is necessary to say here that this Department is not functioning and is giving no policy guidance; the Director exerts no powers of direction and has no knowledge of what activities are going on in the services for which he is nominally responsible.

1.5 Committees Advisory to the Under-Secretary

There exist the following:

i. Medical Boards in each of the three regions. Each Board is responsible for advising on the medical problems of individual citizens. Any citizen can request to be sent outside Libya, at Government expense for special medical treatment; it is the Board's duty to examine the evidence and to advise as to whether the nature of the disease or disability justifies seeking treatment in another country.

ii. A Civil Service Board under the chairmanship of the Under-Secretary with a legal adviser and a representative of the Ministry of Civil Service Affairs, deals with all personnel problems.

iii. Advisory Boards on technical matters are convened or are referred to by the Under-Secretary as he considers necessary. The membership varies according to the subject to be discussed. There are in the Ministry three established advisory posts, one of which is vacant, the other two provide for (a) maternal and child health matters and (b) health education of the public.

1.6 Peripheral Organization

In Benghazi, Sebha and in Tripoli there are Controllers of Health Services, administratively responsible to the central Ministry for services in the eastern, southern and western regions respectively. All three Controllers are laymen, without special qualifications; their office organization is said to reflect the Ministry's organization but, in fact, they can call on professional advice only by consulting medical officers who have full-time duties in peripheral health units.

There is, however, a "Medical Board" in each region.

1.7 Local Government Health Services

The Municipalities of Tripoli and Benghazi operate both medical and environmental sanitation services and employ their own staff for the purpose.

In Tripoli the Municipality's technical personnel are on the establishment of the Ministry of Health; in Benghazi they, including the Medical Officer of Health, are employed directly by the Municipality. In Tripoli, in addition to the normal range of environmental health advisers, the Municipality has sixteen general dispensaries and four maternal and child health centres. In Benghazi the Municipality has its own hospital with 58 beds and accommodation for additional 132 beds is under construction.

In other towns the Municipalities are operating some environmental health services, especially refuse disposal, to a greater or lesser degree. The Ministry of Health has environmental sanitation staff out-posted in such towns to co-operate with the municipal officers.

2. DISCUSSION

The basic problem in the Ministry of Health's administration is occasioned by the gross lack of professionally and technically qualified Libyan staff. Many key posts for which one would regard expertise as essential are either vacant or are occupied by Libyan officers who have no professional qualifications.

The appointment in key posts of expatriate officers with adequate qualifications will be effective only if executive powers are delegated to them; so far foreigners holding established posts in the Ministry have been quite ineffective because they have not been permitted to exercise initiative, or to have responsibility for execution.

This has resulted in an imposible burden on the Under-Secretary's (the only Libyan Medical Officer) shoulders. He has so many decisions to take on operational matters that he has little time to give to the essential consideration of policy making, of broad planning of the health services or of co-ordination.

We have been informed that there are 180 Libyans studying abroad to become doctors and that in mid-1965 there were 29 Libyan doctors in Libya. It would seem that the time is not too far distant when there will be Libyans available to qualify for and to fill essential posts, and therefore the risk might be taken in the meantime to appoint expatriates and to give them executive powers.

In this connexion we have recognized the obvious desirability of employing foreigners who can use the Arabic language easily. Unfortunately, the supply

of Arabic-speaking professional trained personnel is limited. Arabic-speaking countries themselves have a shortage of experienced staff to fill key positions of leadership. The fact that has to be faced is that, for experienced expertise in various health spheres, foreigners who do not have Arabic will have to be recruited.

We would suggest that the Government should arrange perhaps with the University for a three-month "orientation course" on the language, traditions and customs of the country, to provide all newly arriving expatriate staff with a worthwhile introduction on which to develop further study of Arabic. Foreigners who are to work with Government should be warned beforehand that they will be expected to learn Arabic and the Government should consider offering longer term contracts to make this worthwhile and to allow expatriate officers to make a better contribution to the development of the social services.

3. RECOMMENDATIONS

3.1 Reorganization of the Ministry of Health

To strengthen the expertise and operational efficiency of the Ministry, we recommend firstly the merger of the present Departments of Curative and of Preventive Services into one Department of Health Services, under an Assistant Under-Secretary (Director-General Health Services).

The Ministry of Health after reorganization would have four departments (see organigram below) each with several sections and sectional chiefs:

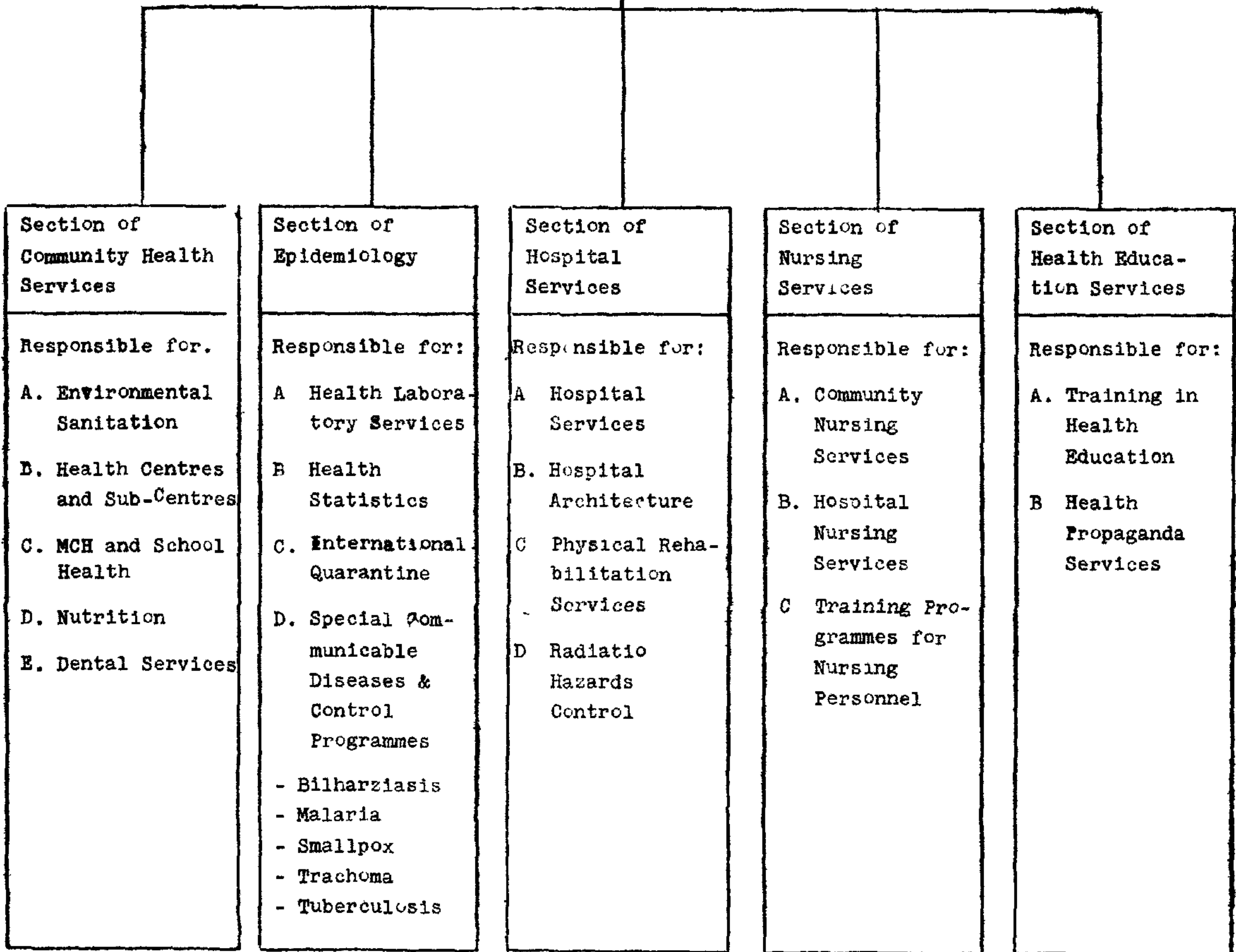
3.1.1 Department of Administration responsible for:

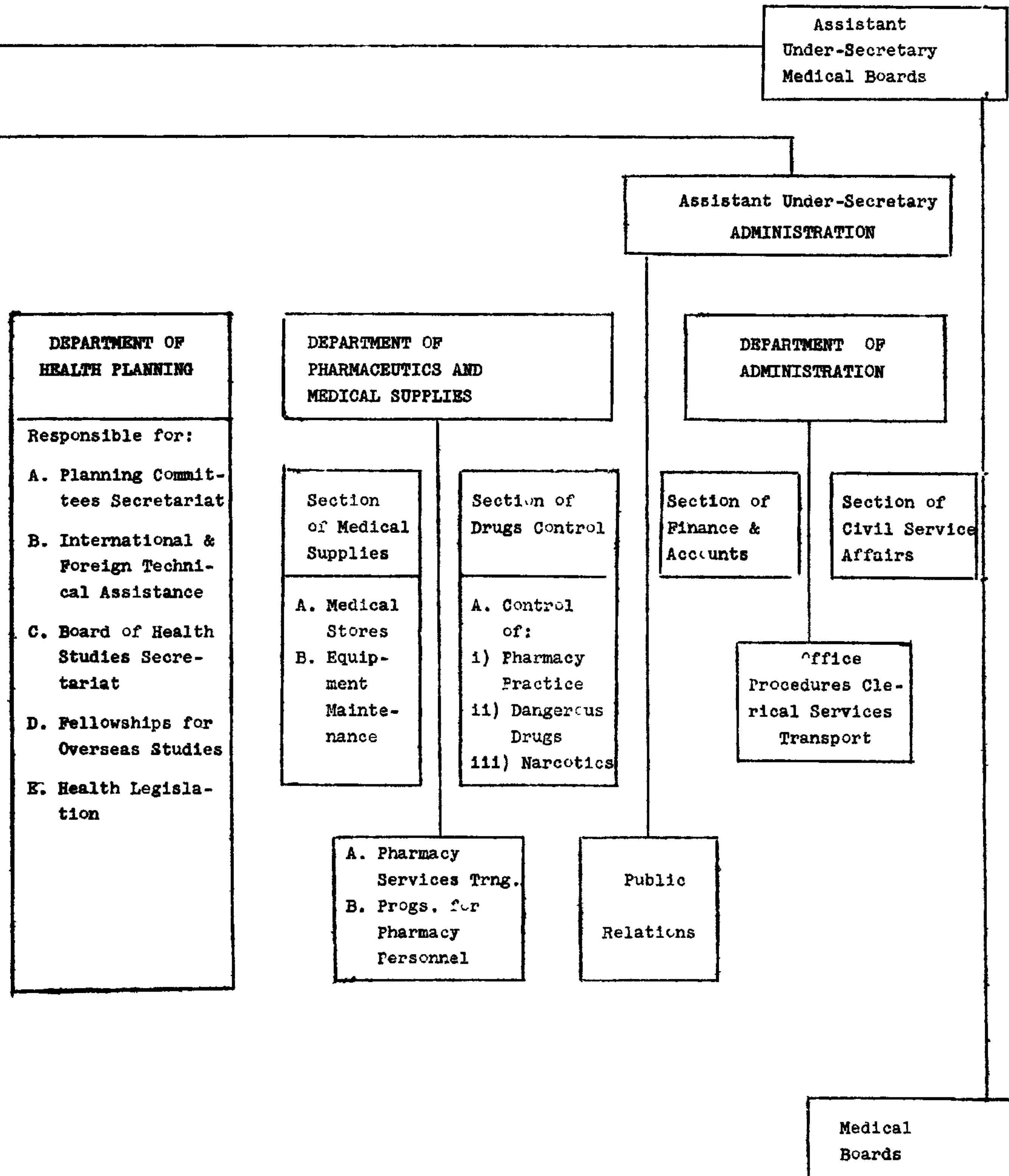
- Office Procedures and Registry
- Clerical Services
- Finance and Accounts
- Civil Service Board and Personnel Affairs

WHO EMRO

ORGANIGRAM

MINISTER FOR HEALTH




Assistant Under-Secretary Medical Boards
Assistant Under-Secretary ADMINISTRATION
DEPARTMENT OF HEALTH PLANNING
Responsible for:
A. Planning Committees Secretariat
B. International & Foreign Technical Assistance
C. Board of Health Studies Secretariat
D. Fellowships for Overseas Studies
E. Health Legislation
DEPARTMENT OF PHARMACEUTICS AND MEDICAL SUPPLIES
Section of Medical Supplies
A. Medical Stores
B. Equipment Maintenance
Section of Drugs Control
A. Control of:
i) Pharmacy Practice
ii) Dangerous Drugs
iii) Narcotics
A. Pharmacy Services Trng.
B. Progs. for Pharmacy Personnel
Public Relations
DEPARTMENT OF ADMINISTRATION
Section of Finance & Accounts
Section of Civil Service Affairs
Office Procedures Clerical Services Transport
Medical Boards

- Transport
- Public Relations

3.1.2 Department of Pharmaceuticals and Medical Supplies (see paragraph 5 below) responsible for:

- Medical Stores
  Drugs, medicaments and reagents
  Equipment
  Furniture
- Pharmacy Services and Training of Staff
- Control of Pharmacy Practice
  Dangerous Drugs
  Narcotics
  Equipment Maintenance Workshops
  Electro-medical equipment (including X-rays)
  Other equipment

3.1.3 Department of Health Services (see paragraph 3.2 below) responsible for:

- Community Health Services
  Environmental sanitation services
  Health centres and sub-centres
  Maternal and Child Health and school health
  Dental services
  Nutrition
- Epidemiology
  Health laboratories
  Health statistics
  International quarantine
- Special Communicable Disease Campaigns
  Bilharziasis control
  Malaria eradication
  Smallpox eradication
  Trachoma control
  Tuberculosis control
- Hospital Services
  Hospital architecture
  Physical rehabilitation services

- Nursing Services
  - Community nursing services
  - Hospital nursing services
  - Training programmes for nursing personnel
- Health Education Services
  - Training in health education
  - Health propaganda

3.1.4 Department of Health Planning (see paragraph 6. below) responsible for:

- Planning Committee Secretariat
- International Foreign Technical Assistance
- Health Legislation
- Board of Health Studies
- Fellowships Studies Overseas.

It is recommended that a Committee of Representatives of the Ministries of Health, Finance, Planning and Development and Civil Service Commission should be appointed to examine the financial and related aspects of the proposals regarding the reorganization and staffing of the Ministry of Health.

The Committee will also examine the question of reassignment of some of the Libyan officials, who are not technically qualified, and are now occupying some of the positions which should be occupied by specialists. It will also examine the questions relating to the recruitment of expatriates staff and their gradual replacement by Libyan specialists.

It is recommended that in view of the difficulties which may be encountered in the recruitment of adequately qualified staff, the reorganization of the Ministry should be undertaken gradually. It should depend upon the availability of qualified staff for the various specialized sections and on the developments of health services in general. However, the main departments, i.e. (a) the Department of Administration, (b) the Department of Pharmaceutical and Medical Supplies, (c) the

Department of Health Services, and (d) the Department of Health Planning should be established immediately and, as far as possible, should be staffed by qualified Libyan nationals. They can be technically assisted through early recruitment of expatriates as chiefs of the main specialized sections. The recruitment of the chiefs of the sub-sections should depend upon the availability of qualified staff and workload. This situation should be periodically reviewed.

3.2 1968/1973 - Recommended Staffing Requirements for Department of Health Services

The Assistant Under-Secretary (Director-General) who will head this Department, should be a senior medical officer, who has had post-graduate training in public health.

3.2.1 Section of Community Health Services

The Chief of this Section should be a medical officer with post-graduate public health qualifications and experience.

On his staff he will require at least the following professionally qualified officers:

- A public health engineer (see Chapter XIII, paragraph 2, and Part II)
- A dental surgeon with qualifications and experience in public health dentistry
- A medical nutritionist (see paragraph 9 below)
- A non-medical nutritionist
- Three regional medical officers of health with post-graduate qualifications in public health (see paragraph 3.2.6 below)
- A medical officer with post-graduate qualifications and experience in maternal and child health.

3.2.2 Section of Epidemiology

The Chief of this Section should be a medical officer with post-graduate public health qualifications majoring in epidemiology.

On his staff he will require at least the following professionally qualified officers:

- A chief of health laboratory services (medical or non-medical) who will have special qualifications and experience in organization of a health laboratory service (see paragraph 8 below).
- A chief health statistician who has had experience in vital and health statistics organization (see paragraph 7 below).
- A chief tuberculosis medical officer who is a chest physician with experience of organizing a tuberculosis control service (see Chapter XIII, paragraph 5.15).
- A chief trachoma control medical officer with specialist qualifications in ophthalmology and/or health (see Chapter XIII, paragraph 5.14).
- A chief malaria eradication medical officer (see Chapter XIII, paragraph 5.8).
- A malacologist (biologist scientist) could be on a periodical advisory basis (see Chapter XIII, paragraph 5.2).
- A chief smallpox eradication medical officer (see Chapter XIII, paragraph 5.13).

3.2.3 Section of Hospital Services

The Chief of this Section should be a medical officer with experience in hospital administration.

On his staff he will require at least the following professionally qualified officers:

- An architect specialized in hospital architecture (see Part II).
- A medical officer with experience of physical rehabilitation services (to begin with as a short-term consultant only).

3.2.4 Section of Nursing Services (see also Chapter XIII, paragraph 3.2 and Part III)

The chief of this Section should be a professionally qualified nurse, having advanced preparation in administration, preferably a

degree in nursing, and with at least five years' experience of a progressive nature in an administrative nursing position.

On her/his staff she/he will require at least the following professionally qualified staff:

- Three regional nursing officers (see 3.2.6 below) - one in each region, who are public health nurse/midwives with advanced preparation in administration and preferably with five years' experience in an administrative nursing position.

The advisory services of (see Chapter XIII, paragraph 3.7 and Part III):

- A senior nurse educator
- A nurse educator
- A senior public health nurse educator whose services could be on a basis of recurrent short-term consultantships.

3.2.5 Section of Health Education Services (see also paragraph 10 below):

The chief of this Section should be a university level professionally qualified health educator and preferably a medical officer with post-graduate qualifications in health education.

On his/her staff he/she will require at least the following professionally qualified officers:

- A health educator with special qualifications or experience of health education in schools, to co-operate or work with the Ministry of Education.
- Three health educators - one in each region for training of health personnel in health education (see paragraph 3.2.6 below).
- Two health educators for miscellaneous duties.

3.2.6 Regional Offices:

To strengthen the activities of the regional offices of Controller of Health Services, the following professional posts

are required in each of the three regions:

- A medical officer of health, who is a fully qualified doctor and has post-graduate qualifications and experience in public health administration (see paragraph 3.2.1 above).
- A sanitarian superintendent, who is a professionally qualified sanitarian (as used in Britain or America) to supervise the work of the public health inspectorate under the direction of the regional medical officer of health (see Part II).
- A nursing officer, who is a professionally qualified public health nurse-midwife, with advanced preparation in administration and preferably with five years' experience in an administrative position (see paragraph 3.2.4 above).
- One or two nursing supervisors, who are professionally qualified public health nurse-midwives and who have had post-graduate preparation in midwifery and in public health nursing administration (see Part III).
- A health educator with professional qualifications (see paragraph 3.2.5 above).

4. HEALTH BUDGET

As may be seen from Tables 14 and 15 in Part IV the Ministry of Health in 1965-1966 had an approved ordinary and special expenditure budget of £L. 5 860 000 out of a total estimated governmental expenditure of £L. 70 085 000, representing about 7.4 per cent of the total governmental expenditure budget. The Ministry of Health's share of the 1963-1968 Development Budget is similarly nearly 7.4 per cent.

Tables 14 and 15 in Part IV are copied from the approved Budget Estimates for the Financial Year 1965-1966. To an outsider the itemized breakdown of the total is not very illuminating and one can note only the total of £L. 3 032 000 for Personal Emoluments representing nearly 52 per cent of the total.

The present system of budgeting and accounting does not permit the costing separately of particular branches or units of the health services. For example, the "Personal Emoluments" heading is not broken down into unitary or even

provincial establishments. In spite of repeated request we have been unable within five months to discover what is the approved establishment of personnel to account for the approved budgetary item.

Even hospitals have no fixed budget or fixed establishment of staffing; one can make a check on the spot of what staff there is available at any one time, in any particular unit, but there is no means of comparison or evaluation. Generally speaking, there is a shortage of staff everywhere and particularly of para-medical technical personnel; one does, however, come across individual units which appear to have an excessive complement of doctors.

This situation makes difficult the best use of the available technical personnel and makes it impossible to identify priorities on a country-wide scale. As training programmes develop and more and more staff become available, the lack of approved unitary establishments will become a real problem.

5. THE DEPARTMENT OF PHARMACEUTICALS AND MEDICAL SUPPLIES

An important and valuable measure of administrative organization has been completed already in the form of an approved formulary of pharmaceutical preparations and specialities for use in the health services. It is now necessary to "streamline" the reception, storage and issue of all forms of medical supplies.

For this project we believe that new storage accommodation and additional machinery and staff will be essential.

5.1 RECOMMENDATIONS

1. 1966/1967 - The engagement of a consultant or consultants to advise on the planning of new accommodation for storage of medical supplies and equipment; and on mechanical facilities for handling and accounting; with a view to construction of new stores in 1968/1973.

The consultant(s) should be experienced in large-scale operations for storage and accounting and might best be obtained from a large commercial firm operating in this field.

ii. 1968/1973 - Under the Director of the Department of the Ministry of Health, should be developed a Drugs Inspectorate to control all pharmacies providing drugs and medicaments to the public and especially to control the importation and use of dangerous drugs and narcotics. This Inspectorate can be built up only slowly and as professionally qualified staff become available. The immediate target should be for the recruitment of eight fully qualified pharmacists.

iii. 1968/1973 - Further development of a section for maintenance of all medical equipment and especially for electro-medical equipment including X-rays. We understand that such a section should be headed by a professional electrical engineer with special training, particularly in the field of radiological equipment. We suggest, however, that expert consultant advice should be sought on how best to organize such a project.

iv. 1968/1973 - New medical stores' accommodation should be provided in Benghazi and in Sebha but administrative responsibility for stores and staff should remain for the time being with the Ministry's Director of the Department.

6. PLANNING OF HEALTH SERVICES

6.1 Findings

The Ministry of Health has at present a "Planning Office" under the direction of a lay administrator. The total permanent staff includes only one assistant and a secretary.

This unit does not at present fulfil the role foreseen in Article 6 of Law No. 5 of 1963; it is an office which records the decisions of the higher authority and which then follows up with the necessay measures for implementation of building projects only. It does not deal with organizational, staffing or training problems or plans.

There is no permanent planning body or committee to deal with the broad field of development of health services. Co-ordination with the Ministry of Planning and Development, or with other Ministries is "ad hoc".

It appears that proposals for new projects, whatever their nature, are decided on by the Minister or by the Under-Secretary of the Ministry after such personal consultations as may be thought fit for any particular project.

6.2 Discussion

> "Planning is, in fact, the first phase of the administrative process which also comprehends organization, operation and evaluation. Its composite purpose is said to be: "To 'rationalize' the activities on which planning is imposed; to make subject to calculation what was previously left to chance, to organize what was previously unorganized, to replace spontaneous adjustment with deliberate control[1]." It might be said, then, that the planning of public health services means the careful, intelligent interpretation and orderly development of these services, in accordance with modern knowledge and experience, to meet the health needs of a nation within its resources. That being so, it is a continuous, dynamic operational process and not merely a starting point[2]."

If this concept of planning were accepted, it follows that there must be permanent machinery able to assemble data; to evaluate efficiency; to co-ordinate expertise and to guide decisions on development programmes. Orderly development can be achieved only by a concerted approach taking into consideration the whole picture of health

[1] Eckstein, H. (1958) The English Health Service, Cambridge, Mass., Harvard University Press, p. 262.

[2] Planning of Public Health Services, World Health Organization, Technical Report Series, No. 215, 1961.

needs and resources. It demands also full consultation of all concerned in the ultimate provisions of the Development Plan.

To progress towards this objective it is obvious that the present Planning Unit requires considerable strengthening to become a Department of Health Planning.

The Government has requested technical assistance from the United Nations Development Programme, for 1967/1968 and following years, of a "high level expert on Health Planning" to be attached to the Ministry of Health. This Health Planning Expert should be able to advise on and guide the development of the planning machinery referred to above and to assist the Ministry of Health with negotiations for technical assistance from WHO.

6.3 RECOMMENDATIONS (see also paragraph 3.1 above)

i. 1966/1967 - With the Planning Unit of the Ministry providing the Secretariat, a permanent Health Planning Committee should be established by the Minister for Health.

Such a Committee should hold regular fixed meetings, say, once every two months, and additional meetings convened when occasion arises. The Committee should be empowered to call as necessary for the attendance of experts and to appoint sub-committees for consideration of special projects.

We would suggest that the permanent membership might be:

- The Under-Secretary, Ministry of Health (Chairman),
- The Assistant Under-Secretary (Director-General) of the Department of Health Services,
- The Chief Nursing Officer, Ministry of Health,
- The three Controllers of Health Services,
- Three senior Medical Officers of Health, one from each region,

- The Chief Medical Officer of INAS,
- A representative of the Ministry of Planning and Development, .
- The Director of the Department of Health Planning, Ministry of Health (Secretary).

ii. 1968/1973 - Strengthening of the Department of Health Planning to enable it to deal with the responsibilities suggested in paragraph 3.1.4 above.

iii. 1966/1973 - The Ministry of Health on behalf of the Government has special responsibilities by virtue of Libya's membership of the World Health Assembly and under Article 11 of Chapter V of the Constitution of the World Health Organization, for all negotiations with WHO, and for representation at the WHO Regional Committee. The Planning Department should be in a position to keep the Under-Secretary of the Ministry of Health fully informed and, on his instructions, should undertake the detailed work of preparation of requests to WHO in co-ordination with and through the WHO Representative in Libya. The Ministry of Planning for the sake of co-ordination should be fully informed, but the link with the World Health Organization should be directly from the Ministry of Health.

7. HEALTH STATISTICAL SERVICE

7.1 The Problem

The present Statistical Section of the Ministry of Health has made a real effort to collect administrative, mortality and morbidity statistics, but it has been severely hampered by lack of proper organization for the routine collection and reporting of data. There has been little co-operation from hospitals, peripheral health units or services and no organization to ensure uniformity of reporting standards. Additional

problems are created by the diversity of nationalities employed in hospitals and health centres and the variety of languages in which records may be kept.

There is no nation-wide organization for the collection of vital statistics and no national legislation for registration of birth and deaths. A proposal is at present (May 1966) under discussion for legislation leading to country-wide registration of births, marriages and deaths with an organization under the Ministry of the Interior. Such vital statistics as are available come from the larger municipalities of Tripoli and Benghazi, but even these are incomplete.

7.2 Discussion

Adequate vital and health statistics are essential to the efficient planning and organization of health services and priority must be given to strengthening the whole organization of data collection and processing. The Ministry of Health must develop this sphere of work in order to obtain valid information on, for example:

- In-patients in health institutions: numbers, sexes, ages, length of stay, diagnoses, deaths.
- Out-patients at hospitals, health centres, dispensaries: first attendances, subsequent attendances, numbers, sexes, ages, treatment.
- Health Personnel: numbers in each category, qualifications, place of employment.
- Pharmaceutical services: situation, staff, numbers, prescriptions issued.
- Dental services: situation, number of patients, ages, sexes, diagnoses, treatments.
- Communicable Diseases
- Vital Statistics
- Morbidity and Mortality Statistics from special studies and surveys.

The Statistical Section should also be able to arrange teaching programmes for health and other staff; prepare regular statistical publications; and control data collection in peripheral units and services.

7.3 Hospital Morbidity Statistics

Undoubtedly one of the first activities to be developed is that for collection, processing and analysis of hospital morbidity statistics. This activity could be more easily established at the present time, with some initial effort and with minor additions to the present hospital documentation. A real effort is worthwhile because such a programme could serve now as the only reliable source of information on morbidity in Libya.

7.4 RECOMMENDATIONS (see also paragraph 3.2.2 above)

i. 1967/1968 - Appointment of a fully qualified and experienced health statistician, who should have a university degree in statistics with post-graduate training in public health; or, should have a medical degree with post-graduate training in public health and statistics.

Should the Government so wish, WHO might be requested to undertake to assist a special project.

ii. 1968/1973 - With the guidance and advice of the professional health statistician, to arrange for training and appointment of staff in order to strengthen the central statistical unit of the Ministry of Health and to improve collection and submission of information from hospitals.

Three statistical technicians, three junior statistical technicians, and a draughtman would be the minimum required in the central unit.

iii. 1968/1973 - To start on improving hospital morbidity statistics, the General Hospitals of Tripoli and Benghazi should be chosen for first attention. Consultant guidance from a foreign hospital librarian should be sought and arrangements made for the training of hospitals' records clerks.

8. HEALTH LABORATORY SERVICE

8.1 Findings

There exists so far no health laboratory service as such and those laboratory units that are at present available are inadequately staffed or organized to deal even with present demands which perforce are minimal.

There is a comparatively newly built Central Laboratory in Tripoli with Bacteriological and Chemical Departments. There is no Histopathology Section. The Laboratory is required to provide both diagnostic and analytical service for the whole of the Western Provinces. It is open from 8.30 to 14.30 hours five days a week, open until 11.00 hours on Sundays and closed altogether on Fridays.

The Bacteriological Department covers bacteriology, haematology, serology and biochemistry and deals with 6-7 000 specimens per month. Available accommodation is not inadequate, equipment is excellent except for a shortage of expendible items. At the time of our visit the staff consisted of one bacteriologist, one biochemist, nine technicians and seven assistant technicians.

In the 1 300-bed General Hospital in Tripoli there is a Medico-Legal and Histopathology Section and a small Blood Bank (open from 08.30-14.30 hours six days a week) with a Haematological Laboratory. Some of the various departments of the hospital have created their own "clinical siderooms" to help serve their routine requirements.

In Benghazi there is a Central Health Laboratory close to the General Hospital. The accommodation available is very limited. At the time of our visit the staff consisted of three doctors and nine technicians. The service provided covered haematology, biochemistry and serology; bacteriology was being organized. The Laboratory was dealing with some 200 specimens per working day.

In Sebha there was a small laboratory under the direction of a pathologist and undertaking 600-700 examinations per month. Technical staff consisted of one laboratory technician and three assistant technicians.

The Beida General Hospital now has a pathologist on the staff and diagnostic services are being developed; in other hospitals throughout the country, a few have the services of a laboratory technician who can provide for routine clinical tests of bloods, urines and stools.

8.2 Discussion

It is self-evident that very high priority needs to be given to the development of the health laboratory services and to their staffing. The present training course in Benghazi for assistant laboratory technicians (to which we refer also in Chapter XIV, paragraph 7) is quite inadequate to fill the present needs. Each of the larger hospitals needs diagnostic laboratories on the spot and the main laboratories in the regions require to be strengthened to provide for public health requirements and to act as reference laboratories for the medical-care services. The objective must be to have enough staff for two shifts so that laboratories can be open morning and afternoon.

8.3 RECOMMENDATIONS (see also paragraph 3.2.3 above)

1. 1966/1967 - The appointment to the Ministry of Health of a Director of Health Laboratory Services who will be responsible for organizing a national laboratory service to provide for all the needs of the health service.

WHO has established an Expert Committee on Health Laboratory Services and their Third Report deals with the "Planning, Organization and Administration of a National Health Laboratory Service[1]". This publication indicates how planning could proceed and there is no need here to elaborate details.

ii. 1966/1967 - Provision of additional professionally qualified staff to the Central Health Laboratory, Tripoli, to enable it to be open 12 hours a day with two shifts.

iii. 1968/1973 - Provision of additional accommodation in the Central Health Laboratory, Tripoli, for a water and sewage laboratory to facilitate regular testing of domestic water supplies.

iv. 1968/1973 - Construction of new laboratories, one in Benghazi and one in Sebha, providing adequate accommodation for a regional public health and diagnostic reference laboratory. These laboratories also should have special sections to deal with water and sewage as well as food and drug control and should be planned to facilitate practical teaching of trainee technicians.

v. 1967/1973 (see also Chapter XIV, paragraph 7) - Establishment of three-year training courses for laboratory technicians, in Tripoli, in Benghazi and in Sebha, with the necessary residential and theoretical teaching accommodation.

9. NUTRITION UNIT

9.1 The Problem

The state of nutrition and nutrition education in the country has been surveyed in different ways by several consultants over the past ten years. A comparatively recent report[2] was that of an FAO consultant

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[1]World Health Organization, Technical Report Series, No. 236, 1962.
[2]Yang, Y.H., 1963. Report to the Government of the Kingdom of Libya on Food and Nutrition Policy. FAO, Rome, 1963.

in 1963. It is a fact, however, that socio-economic change is and has been occurring very rapidly in Libya and new factors arise year by year to change social habits and environment. There is good reason to believe that the nutrition of a certain proportion of the population may have actually deteriorated during the last three years, primarily because of:

(1) Migration from rural to urban areas and from farming to wage earning.

(2) A steadily rising cost of living.

Previous studies in 1957 and 1958 have identified protein-calorie malnutrition, rickets, anaemias and xerophthalmia as specific deficiency presentations of endemic malnutrition in Libya, but the fact is that rapid change in this oil-producing country makes studies of eight and nine years ago already out of date.

The Government is making every effort to increase food production within the country, but substantial amounts of food have to be imported. In 1964 importation of food and live animals valued at £L. 13 436 000 amounted to 12.0 per cent of total imports[1] and represented an increase of nearly £L. 3.3 million over 1963.

The Government is also anxious to strengthen all activities towards improvement of nutrition and nutrition education, and has requested WHO's assistance for a project (already started) towards this end. Several Ministries have activities, all of which could contribute to solution of the problem and therefore real co-ordination through a National Food and Nutrition Committee or Council is very desirable. It is essential, we believe, that the Ministry of Health should accept full responsibility for nutritional research and education and should take the initiative to develop co-ordination of planning in all fields.

[1] Statistical Abstract 1964, Ministry of National Economy, Census and Statistical Department.

One of the primary requirements on which to have a nutrition improvement programme is a clear knowledge of the epidemiology of malnutrition in Libya. For this purpose it will be necessary to organize nation-wide sample surveys during different seasons on the nutritional status of communities, food production and consumption, food patterns and habits and weaning practices.

While this epidemiological research continues, expert nutritional guidance can be given to feeding programmes in schools and residential institutions, and educational programmes for the staff of health and education can be strengthened.

9.2 RECOMMENDATIONS

1967/1973 - The establishment under the Ministry of Health with the advice and assistance of WHO, of a nutrition research and co-ordination division or institute able to provide for:

i. Co-ordination with other Ministries and Departments.

ii. Programmes of nutrition education for the public and especially for schools and university departments, teacher training institutes and schools for the training of health services personnel.

iii. Advice on diets in hospitals, schools residential institutions.

iv. Laboratory requirements for nutrition studies.

v. Epidemiological research on malnutrition.

1968/1973 - The training of Libyans to fill the posts necessary for the above objectives:

- One medical nutritionist: a medical officer to take one year's special training.
- One public health nurse: a nurse who has post-basic public health qualifications and who, in addition, will have to take one year's training in nutrition.
- Two biochemists: B.Sc. graduates from the College of Science, to have two years' training in biochemistry of nutrition.
- Four non-medical nutritionists: B.Sc. graduates from the College of Science, to have two years' training in nutrition.

- Four hospital dietitians: graduates in science or in home economics, to take two years' training as dietitians.
- Two food technologists: graduates of the College of Advanced Technology, to take special further training abroad.

10. HEALTH EDUCATION

10.1 Findings

At the present time the Health Education Section of the Ministry of Health is under the leadership of a doctor and has two staff members who have had special training; one was trained at the American University of Beirut and the other in the United Arab Republic (Egypt). Shortly to return from the United States of America will be another Libyan, who is there taking an MPH course in health education; two other Libyans are under training in the United Arab Republic (Egypt). Outside of Tripoli the staff consists of two sanitarians (with no special training in health education), one in Benghazi and one in Sebha. At the end of 1963, a Health Education Council was set up and £L. 35 000 was earmarked in the 1963-1968 Development Budget for the Health Education Section of the Ministry of Health.

Present activities include a twice weekly radio programme and regular radio talks by doctors; occasional special features on radio and television; articles in the press; special posters and publications; film shows in schools, training institutions and social clubs.

10.2 Discussion

The activities of this Health Education Section are essentially in the sphere of health propaganda. We feel it necessary to explain therefore our concept of Health Education. Health propaganda is a valuable activity which should be continued but health education goes further. We believe that all health personnel should be giving health education to the public during the performance of their daily work among patients

and their families· health education is listened to if given by those who also are providing a health service. Similarly, we consider that part of a teacher's educational duties is health education of pupils and students.

To achieve this objective the Health Education Section of the Ministry of Health should include as an essential activity the training of health personnel in the technique of health education. The primary duty of a professionally qualified health educator is not himself to give health education, but to teach others the techniques he has learned and thus to take part in the programmes for training of health personnel and for teacher training.

10.3 RECOMMENDATIONS (see also paragraph 3.2.5 above)

i. 1966/1967 - Two more Libyans should be chosen to proceed abroad to study for university level qualifications in health education; this to facilitate participation in the teaching faculties of training programmes for health personnel.

ii. 1966/1967 - The Ministry of Education should be persuaded to seek the services of an experienced consultant to advise on curriculum content and on methods for inclusion of health education in teacher training institutions and schools.

iii. 1968/1973 - The objective should be to have, in addition to present staff, one professionally qualified health educator in each of the three regions, and one professional health educator with special experience of health education in schools, to co-operate and work with the Ministry of Education.

11. HOSPITAL ADMINISTRATION

The improvement of administration within hospitals is very desirable and is especially urgent for the big hospitals in Tripoli and Benghazi.

The provision of hospital care is undoubtedly the most expensive and least productive sector of essential health services and for this reason alone deserves special consideration for improvement in efficiency. However, efficient administration not only reduces costs, it also produces better service to the patient and to the community.

Hospital administration nowadays is regarded as a profession in its own right and special courses of training are available in many countries.

It is not essential that a hospital administrator should be a medically qualified doctor; whether he be a doctor or a layman, special training is necessary but the layman will require longer training and experience.

11.1 Discussion

Hospital administration in any hospital of over 100 beds deserves a full-time professional administrator; the work cannot be done satisfactorily as a part-time activity of a clinician.

The nursing service in a hospital deserves priority for attention, because a patient's comfort and speedy recovery depend so much on the efficiency of nursing. We are convinced that the matron, who is the nursing administrator, is also an essential member of the administrative staff for any hospital. She, too, needs special training and experience.

In Libya a start should be made on the costing of various sectors and units of the health services and such a development might well commence with the hospital services. One way of beginning would be to choose a specific hospital in which to develop costing procedures to measure expenditure on the various components of medical care and supporting services.

11.2 RECOMMENDATIONS

i. 1968/1973 - The selection of at least three medical officers or, alternatively, university graduates, to undertake special

training in Hospital Administration. The objective being to have full-time administrative superintendents in Tripoli General Hospital, in Benghazi General Hospital and in one selected 120-bed hospital where a special effort will be made to cost the services provided and to create a pattern which later can be applied in all hospitals.

ii. 1968/1973 (see also Chapter XIII, paragraph 3.7 and Part III) - The appointment of a senior matron to Benghazi and to Tripoli General Hospitals and to the selected 120-bed hospital referred to above. Such a matron should be a fully qualified professional nurse-midwife, with advanced preparation in administration and at least five years' experience in nursing administration at a senior level.

iii. 1968/1973 - The procurement from WHO of the consultant services of a professional hospital librarian to advise on arrangements to be made for creation of a hospital's records organization in one or more selected hospitals to begin with (see also paragraph 7.4 above).

12. MEDICAL BOARDS

12.1 The Problem

Libyan citizens have a unique privilege of being able to request medical treatment abroad at Government expense, and this for the ostensible reason that necessary treatment facilities are not available in Libya.

It is not only the cost of treatment that is provided by the Government but also the cost of travel and sojourn in a foreign country. The number of persons now benefiting from this privilege can leave no doubt that it is being seriously abused.

The whole system affects adversely the work of the Ministry of Health and the development of health services in Libya for the reasons that:

a. Medical Boards reviewing such requests involve a quite disproportionate and unnecessary amount of the time and effort of senior civil servants; and

b. the system undermines, rather than develops the "goodwill" of the public towards the Libyan health services.

It would be reasonable to maintain a facility whereby genuine cases of need can be sent for treatment abroad, but the initiative should come from the doctor and specialist in charge of the patient and not from the patient himself.

12.2 RECOMMENDATIONS

i. Medical Boards should be given instructions from the highest authority to insist on adequate medical and specialist evidence of genuine need for specific effective treatment unavailable in Libya, and on evidence of its availability in a specified centre abroad. The arrangements for such treatment abroad should be made by the Ministry of Health and not by the patient.

ii. 1967/1968 - A specific sum should be budgeted under a specific budget item for this expenditure and the budgeted amount should not be exceeded.

iii. 1968/1973 - The amount estimated for this budget line should be reduced each year by the Council of Ministers and as development of Libya's health services proceeds.

XIII HEALTH ACTIVITIES AND RESOURCES

1. MEDICAL CARE

1.1 General Practice

1.1.1 Discussion

In June 1965 (see Part IV, Annex VII, Table 5[1]) there were 33 doctors (all foreigners), 14 dentists (one Libyan) and 36 pharmacists (two Libyan) in full-time private practice and the vast majority were in Tripoli or Benghazi. Private practice is permitted to Government and Municipal medical officers, who in June 1965 totalled 359, and therefore the number of practitioners working in the private sector is augmented considerably from this source; outside of the main cities any private practice which exists is in the hands of government medical officers.

In our opinion, the medical profession has no cause for pride in the general picture of private practice in Libya and foreign doctors as a whole should be ashamed of the contribution they have made to this country. As it is to be seen today, especially in Tripoli, the private practice of medicine represents commercialized exploitation of an unsophisticated public, There are, of course, exceptions to our rather sweeping statement and many foreign doctors provided for government service under bilateral agreements between Libya and foreign states are undertaking no private practice at all.

Because of lack of staff there exists no effective means of controlling private practice or of dealing with most of the unprofessional conduct; we can suggest only that a beginning be made to encourage the profession to become responsible for its own reputation.

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[1] Unpublished statistics from the Ministry of Health.

1.1.2 RECOMMENDATION

Libyan doctors and dentists should be encouraged to form a Libyan professional association without further delay. This association, in due course, should be given powers through new legislation to control registration of all practitioners and to uphold the ethical standards of professional conduct of all registered practitioners. Deletion from the Register of any foreign doctor should involve automatically his expulsion from Libya.

1.2 Hospitals

1.2.1 Discussion

Although in Libya there is undoubtedly an overall shortage of hospital beds, the number available - 2.6 per 1 000 population - compares not unfavourably with many other countries (e.g. Iran 1.2 and Venezuela 3.6[1]). There exists no internationally recognized desirable standard and the ratio of beds to population varies even in socio-economically advanced countries (e.g. Netherlands 7.6; United States of America 9.1; United Kingdom 10.5; Canada 11.0; France 13.4; and Sweden 15.9 per 1 000 population).

Part IV, Annex VII, Table 9 shows the distribution of existing and planned hospitals and this study suggests that, for future planning of general hospitals at least, more consideration should be given to the size of the community to be served.

Existing approved plans do not lead to excessive provision anywhere and we understand that commitments have gone too far to permit any major change.

In four cases, however, tenders have been invited for construction not of additional accommodation to adequate hospitals

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[1]These figures and those quoted below refer to 1961/1962 and are derived from a study not yet published.

which already exist, but for the building of completely new 120-bed hospitals. In Derna, Misurata, Sebha and Tobruk we believe that it would be far more efficient and economical of supporting services and of staff (a cogent consideration) to add the desired number of beds to the existing hospitals. In the latter three places we know that the present hospital sites allow for expansion and we consider that in Derna it would be preferable to replace the old hospital by a new one of 450 beds. We therefore urge that reconsideration should be given to these plans.

The hospitals and hospital buildings in Libya vary widely in age and functional suitability but the outstanding deficiency common to all hospitals is the tragic shortage of trained para-medical staff and the resulting very low standards of diagnostic facilities and of patient care.

With adequate staffing, existing hospitals could give much better service and so considerably reduce the time spent in hospital by individual patients with a resultant better "turn-over".

As discussed elsewhere in this report, the provision of trained para-medical personnel must take many years and therefore we make no proposals for inclusion in the 1968/1973 Development Plan, of new hospitals involving any immediate increase in the total of staff. We do, however, make recommendations for particular projects to replace or to improve existing hospital units, and when new building on a new site is involved, we suggest a size consonant with estimated future requirements, even if available staff will prohibit full use immediately of all the new accommodation.

1.2.2 RECOMMENDATIONS

1. 1966/1967 — Changes in first Five-Year Development Plans
We recommend reconsideration of the plans for new 120-bed hospitals in Derna, Misurata, Sebha, and Tobruk so that:

(a) the plan for Derna be delayed until a new general hospital of 450 beds (bringing the ratio to 10 per 1 000) can be designed to replace the old one; and

(b) redraw plans so that, instead of new hospitals, additional accommodation be added to existing hospitals in Misurata, Sebha and Tobruk with concurrent rebuilding of the service departments of kitchens and laundries, etc.

ii. 1966/1967 and 1968/1973 - Improvement of Existing Hospitals
There are small hospitals serving some communities for which no firm plans have been made but for which, in due course, new hospitals will be required. Because of the gross shortage of staff referred to above, we consider that new building should be delayed and, in the meantime, the existing accommodation should be improved especially with regard to services such as water supplies, drainage, refuse disposal, kitchens and laundries.

We suggest formation of a team, including a Public Works Department engineer, to inspect all such hospitals, e.g. Brak, Nalut, Ghadames and Sirte, to estimate their requirements and to arrange for their improvement.

Whereas new 120-bed hospitals are planned for Agedabia, Gharian, Zawia and Zuara, no decision has yet been taken on the future of the hospitals presently in use. If the existing hospital buildings are to continue being used for in-patient care, then they also badly need improved facilities for which the same team could arrange.

iii. 1968/1973 - Paediatric Department, General Hospital, Tripoli
The present building dates from the Turkish period and is entirely unsuitable for the medical care of children.

We recommend that a new childrens' hospital, with modern planning which allows mothers to stay with children, should be built on a new site. It should be built to accommodate 300 patients, but the services (e.g. kitchen, laundry, laboratory, etc.) should be planned to allow for future expansion up to, say, 450 beds. In a modern childrens' hospital a biochemical laboratory within the building is essential.

iv. 1968/1973 - Infectious Diseases Hospital, Tripoli

The existing department in the General Hospital is totally unsuitable for accommodation of patients with infectious diseases. The existing accommodation, including the tuberculosis department above it, should cease in due course to be used for any type of patient care.

(a) A new infectious diseases hospital, on a modern pavilion system, should be built on a new site.

(b) Those tuberculosis patients for whom hospitalization is essential (see Chapter XIII, paragraph 5.15.2) should be accommodated in the Busetta Hospital.

v. 1968/1973 - Traumatology Centre

The Emergency Hospital in Tripoli at present is housed in an entirely unsuitable building, where magnificent work is being done under very difficult conditions.

We are aware of the plan for a new 1200-bed general hospital in Tripoli, but we consider that a separate traumatology centre, to be situated as near as possible to the new general hospital, will be fully justified.

The rising toll of road accidents (see Chapter III, paragraph 6) is likely to continue and the traumatology

centre should become also a teaching centre for doctors in outlying hospitals.

We recommend a 300-bed hospital and centre together with a blood transfusion centre to be built on a new site.

vi. 1966/1967 - <u>Gargaresh Psychiatric Hospital, Tripoli</u>
1968/1973

This is the only mental hospital in Libya. In due course another such hospital will be required in the eastern region but, because of the difficulties of staffing, we make no proposal for the second Five-Year Plan 1968/1973.

We recommend:

(a) an experienced psychiatric consultant should be requested - together with the present Medical Superintendent of the Gargaresh Psychiatric Hospital - to study the staff, building and equipment requirements of this hospital, bearing in mind that in working out staff requirements for psychiatric institution, due regard should always be given to the linguistic, cultural and social needs of the patients. The psychiatric consultant should preferably collaborate with an architect regarding the building, especially for the separation of chronic, children and infectious (e.g. TB) patients, for occupational therapy and for adequate recreational and exercise facilities;

(b) implementation of the plans for new construction and additional staff should take place in 1968/1973, by which time it should have been possible to prepare plans ready for issue for tender.

1.3 Out-patient Clinics and Dispensaries

1.3.1 Discussion

In Part IV, Table 4B, can be seen the number in mid-1965 of medical care centres, without in-patient accommodation, and their distribution according to the 10 Muqataa (provinces) of the Kingdom.

On the whole the geographical coverage thus obtained is not unsatisfactory. The service at present provided from such centres, however, is far from satisfactory.

The accommodation in use at present varies widely but none that we have seen can be considered adequate; few dispensaries in the rural areas of any of the three regions have a piped water supply and none have a safe water supply.

All of the para-medical staff in such clinics and dispensaries are inadequately trained and many of them must be regarded as a danger to the public. Until arrangements can be made for re-training and for better professional supervision, there will be little value to accrue from physical improvements. We do not propose therefore that any "development funds" should be set aside for this purpose.

The first Five-Year Development Plan 1963/1968 budgeted £L. 2 500 000 for the building of health centres; the estimate was made to cover 61 centres and 138 sub-centres, experience has shown, however, that the £L. 2 500 000 will be sufficient for at most 15 health centres with two or three sub-centres each.

For the reasons given in Chapter XI, paragraph 4, we support this policy of establishing centres which will provide not only curative medical care, but which can also initiate and develop activities for health protection and promotion.

Taking into consideration long-term developments, the present building specifications for these centres will provide minimal accommodation for a small community. It will be desirable in the light of experience to revise the existing standard building plans and, to obtain valid experience for this purpose, a special study should be made of a particular community.

1.3.2 RECOMMENDATIONS

i. 1966/1967 - that the present plans go forward for the 15 health centres at Garabulli, Mizda, al Gariat, Giado and Ghadames in the western region; at al Jaghbub, Jalo, Kufran, Gardis Abid and Um Saad in the eastern region, and at Um al Araneb, Berghen, Waddan, Brak and Ubari in the southern region.

ii. 1966/1967 - that one of these centres be chosen as a "pilot project" with special priority for full staffing and that careful statistics be there collected, and a close study be made of community needs and of the best way of meeting them. The kind of study required might be modelled on that suggested in the Third Report of the WHO Expert Committee on Public Health Administration[1].

iii. 1968/1973 - that the programme as originally envisaged for 61 health centres be continued with adequate funds voted for the purpose. A revision, in the light of experience, of accommodation requirements may necessitate a new building plan and this should be undertaken as soon as relevant information becomes available from the studies suggested in our recommendation 'ii' above.

[1] World Health Organization Technical Report Series, No. 194, Geneva 1960.

1.4 National Social Insurance Institution

1.4.1 Findings

The Social Insurance Law No. 53, 1957, established a National Social Insurance Scheme "for the purpose of protecting employed persons in the event of sickness, employment injury, maternity, death, invalidity, old age and unemployment[1]."

Article 2 of the Act as amended by Law No. 21 of 1962 provides that: "All persons who are gainfully employed under a written or implied contract of employment shall be compulsorily insured . . . . this provision shall also apply to the workers of the Government, the Provinces and the public bodies".

Article 3. as amended, then gives a list of exceptions such as domestic servants, certain categories of foreign nationals, etc. and excepts also Government and para-governmental officials "provided that the scope of insurance may by resolution of the Council of Ministers be extended wholly or in part to these officials".

The Law established a National Social Insurance Institute (INAS) which has administrative and social autonomy; its governing body is composed of representatives of the Government, employers and insured persons. The Director of the Institution is appointed by the Council of Ministers "on the recommendation of the competent Minister", who is at present the Minister of Labour and Social Affairs.

Insurance is grouped in four branches:

(a) cash payments during sickness and maternity;
(b) medical care;
(c) old age, invalidity and death (i.e. pension);
(d) unemployment (application of which has been postponed).

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[1] Translation of the Arabic text of the Law made by the International Labour Office and published in its Legislative Services (1957 - Lib.1.).

It is financed by compulsory contributions from employers and employees and provision exists for a subsidy from the Treasury (not yet required).

Having paid six contributions an insured person is entitled to the full range (including dental) of medical care. Having paid 12 contributions, the dependent family of the insured also is entitled to full medical care. For the time being, however, staff and facilities permit only provision to families of maternal care before, during and after delivery, and of medical care for children under two years of age. At the time of our enquiry in March 1966 there were said to be about 75 000 insured employees and INAS, calculating as an average one wife and two children per each insured, estimated that 300 000 persons were covered for medical care.

In large towns INAS has its own out-patient clinics and its own medical staff (in June 1966 they employed 77 full-time doctors and were expecting shortly 17 more) and in some smaller community centres INAS pays fees, based on the number of insured persons in the area, to the local Government doctor. The Policlinics in Benghazi and Tripoli have their own full-time specialists in certain fields, as well as general practitioners. INAS doctors receive emoluments comparable to those payable in Government Service but an allowance is paid in lieu of private practice, which is prohibited. In the larger towns INAS clinics are open from 08.00 hours to 20.00 hours with staff in two shifts; they also have doctors on-call at night.

All treatment, including medicaments, is free. INAS has its own medical stores and its requirements, amounting in 1964/1965 to about £L. 300 000 for drugs and medicaments, are subjected to international tender every two years.

Until recently all INAS insured persons needing in-patient hospital treatment were sent to Government or other hospitals at INAS expense. It is now planned that in main centres INAS will have its own hospitals.

In February 1966, a hospital in Tripoli, at one time the property of an Italian Social Insurance Institution and taken over as a British Military Hospital after the war, was handed back to INAS; it is to have obstetrical, ophathalmic, ENT, surgical, medical and paediatric units, of which the first four are already operating. It is hoped to have 250 beds available by the end of 1966 and further plans envisage new building for 300 beds with a final total of about 450. Similarly, in Benghazi a private hospital rented by INAS should be operating with 125 beds before the end of 1966, and plans have been made for the building of a 250-bed hospital which will replace the one now rented.

1.4.2 Discussion

At first sight the medical care activities of INAS would appear to involve the kind of undesirable duplication and overlapping referred to in Chapter XI,paragraph 3 of this report. We have, however, given the matter careful study and are of the opinion that for the foreseeable future the medical care facilities provided and proposed by INAS will be of real value, complementing the services provided by Government.

From what we have seen, we conclude that INAS is providing a good standard of medical care and that it is not competing with Government other than through the higher standards of the service it provides. What is even more cogent to our argument is the fact that the people want this service, which is obviously fulfilling a felt need in the community.

We believe that experience in other countries has shown that there are definite social advantages to be gained from a direct contribution to medical care services by the consumers of those services; it is one way by which the technical consciousness of the community can be fostered and developed. This form of financing is preferable, in our opinion, to meeting the costs out of general revenue with the public unaware of their own contribution and of the effort involved.

We have examined existing proposals for the provision of new hospitals (including ones in the private sector) in Benghazi and in Tripoli, and we found that if all are implemented, there will be no excessive ratio of hospital beds to population.

According to the law, the Minister of Health appoints a member of the INAS Governing Body, agreement already has been reached whereby INAS salaries are no higher than those in the Government health services and there is therefore a basis already established for continuing co-operation. We are recommending elsewhere (Chapter XII, paragraph 6.3) that a permanent health planning body be established and INAS should there be represented so as to ensure that all planning in the health sector will be properly co-ordinated.

1.4.3 RECOMMENDATION

For the foreseeable future there should be no change made in the present policy or plans whereby INAS will provide and expand medical care services.

There should be, however, a greater effort towards co-operation between the medical care department of INAS and that of the Ministry of Health.

1.5 Services provided by Oil Companies

The Oil Companies employ doctors to look after their employees, especially at the oil producing sites and special oil ports.

Oil Companies' employees are insured by INAS and therefore the policy so far is that Oil Companies' doctors provide only "first-line" and emergency medical care.

2. ENVIRONMENTAL HEALTH

2.1 The Problem

Second only to the problem of lack of trained health personnel is the need to improve environmental sanitation. Although an exact estimate of infant mortality is not possible, available information suggests that it is very high; some doctors have stated that it must be up to 50 per cent in some areas and all are agreed that infantile gastro-enteritis is the chief cause of death in infancy and early childhood. These diarrhoeal diseases are attributable to poor environmental sanitation and especially to polluted drinking water. A safe water supply will do more for the improvement of child health than any maternal and child health clinic.

During the first decade of Independence more than 30 Libyans were trained abroad in environmental sanitation; between 1957 and 1963 about 75 sanitation workers were given courses in the Health Training Institute, Benghazi, where the sanitation training course was discontinued in 1963. Comparatively few of the above are now working in the field for which they were trained. Those who are still in service lack professional leadership and support and have considerable difficulties in the enforcement of regulations.

There is no need here to describe in detail the state of environmental sanitation in Libya, which has been well documented in previous reports, for example:

- Lindsay, D.K., 1952, Health Conditions and Health Services in Libya, A/AC.32/TA.23/Rev. 1, United Nations Mission in Libya.
- Morse, C.A. 1952, A Report on Environmental Sanitation in Libya, 13/AC.32/TA.36, United Nations Mission in Libya.
- El Moribo, A., 1956, Present Status and Programme of Environmental Sanitation in the United Kingdom of Libya, EM/ES.Sem/10, WHO, Alexandria.
- International Bank for Reconstruction and Development, 1960, The Economic Development of Libya, Johns Hopkins Press, Baltimore.
- Teodorovic, B., 1966, Environmental Sanitation in Libya, WHO, Alexandria (see Part II).

Since 1952 many and various activities have been undertaken, but no measurable impact has yet been made on the general pattern of environmental factors affecting health.

We consider that priority now should be given to improvement of domestic water supplies, to drainage and disposal of excreta, to sewage, to refuse disposal, to housing and town planning and to training of Libyans for environmental sanitation work. The control of communicable diseases is dealt with in Chapter XIII, paragraph 5, and other aspects of the environmental health situation can be summarized as follows:

2.1.1 Housing and Town Planning

Very large housing construction programmes are under way in both private and public sectors. The "King Idris Housing Project" approved in 1965 is for construction of 100 000 houses in both urban and rural areas. The National Agricultural Settlement Authority (NASA) has also a housing programme. This year the Ministry of Planning and Development has contacted consultant firms for studies leading to preparation of master plans for some 30 areas in the country and, in addition, 154 general layout plans.

The rate of progress is rapid and, unfortunately, the Ministry of Health without expert staff is in no position to influence the

planning being undertaken in other Ministries.

2.1.2 Domestic Water Supplies

Effective provision and control of sources and distribution of drinking water is a priority requirement for improvement of the public health. Legal powers exist to enable the Health Services to control drinking water but very little is being done in this regard; even the testing for control of urban supplies is irregular and, indeed, infrequent. Treatment of water at source of urban supplies is carried out by other than the health authorities and is not subject to regular controls by health departments.

A Supreme Water Board is in the process of development under a Royal Decree of September 1965. The Ministry of Health is represented on that Board. The fact is that the Ministry of Health is ill-equipped, having neither expert personnel nor adequate health laboratory resources to control either the provision or safety of drinking water.

2.1.3 Drainage and Disposal of Excreta

The provision of water supplies to urban areas and for irrigation is proceeding very rapidly. We have seen many examples of installation of new supplies without any provision for adequate drainage; the results are increasingly serious health hazards, including the spread of diseases such as bilharziasis. The disposal of human excreta is most commonly into cesspits of very variable standards, or into pit-latrines; everywhere these are causing sanitation problems through bad construction and misuse. Little activity is undertaken to compost or otherwise safely to dispose of animal excreta.

2.1.4 Disposal of Sewage

In the larger towns sewer construction projects are in process of construction. In order that effluents may be used for irrigation and dried sludge for fertilizers, the trend is to construct sewage purification plants. Such plants require expert maintenance if they are not to become a danger to the public health. The Ministry of Health is at present unable to exert any control over present planning or future maintenance.

2.1.5 Disposal of Refuse

In urban areas refuse disposal is in the hands of Municipalities; the efficiency of the service provided varies greatly. Final disposal is almost everywhere by uncontrolled dumping and too often dumping areas are very near to the settled areas of suburbs, and little effective control is being exerted by the health authorities. In Tripoli and Benghazi projects are under way for compost-producing plants.

2.1.6 Food Hygiene

In municipal areas control of food hygiene is perhaps better exercised than other environmental sanitation activities. Imports, markets, shops, restaurants and hotels are being inspected and regular medical examination of food handlers is a condition of employment in the larger towns. Individual establishments producing canned or bottled foods and drinks are subject to controls but in most cases the industry itself ensures the safety of its own products. The production and sale of raw milk and milk products is the subject of existing legislation, but with the inspectorate and laboratory facilities available it is difficult for the health authorities to ensure adequate control.

2.1.7 Radiation Hazards

"In most countries, diagnostic uses of X-rays make the largest contribution to the dose received from all man-made sources of radiation[1]."

X-ray sets are everywhere in Libya and a large number are in use in private clinics and institutions. There exists at present in the country no means of controlling the importation or use of X-ray equipment, nor of investigating the safety of existing installations.

Consideration will have to be given very soon to the provision of expertise and legislation to enable the Ministry of Health to take all appropriate action to deal with the hazards to health of ionizing radiation from all sources and a start should be made now towards control and inspection of existing usage.

2.1.8 Occupational Health

The health inspectorate in municipal areas are exercising a certain control over industrial establishments with regard to basic provision of ventilation, cleanliness and latrine facilities. Little control is possible at present over the health hazard to employees of the actual industrial processes on which they are engaged.

2.1.9 Sea Pollution

This very soon will become a serious problem and already pollution from sewage and rubbish constitutes a health hazard in Tripoli and Benghazi. The situation demands careful study, as also does pollution from oil discharges already visible on some of the sea shores.

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[1] Fourth Report of the WHO Expert Committee on Radiation, 1963, Public Health Responsibilities in Radiation Protection, World Health Organization, Technical Report Series, No. 254.

2.2 RECOMMENDATIONS

In Part II to the report are to be found the details of our proposals which can be summarized as:

i. strengthening of an Environmental Sanitation Unit in the Ministry of Health and in the regional offices (see also Chapter XII, paragraph 3.2.1 and 3.2.6),

ii. improvement of health laboratories (see also Chapter XII, paragraph 8);

iii. provision of public health expertise to the Ministries of Public Works and Housing, and to the National Agricultural Settlement Authority (NASA)[1];

iv. training of sanitation personnel (see also Chapter XIV, paragraph 5),

v. as soon as possible, a Libyan doctor who has or can be sent overseas to obtain public health qualifications should be sent for special training in the field of radiation. In the meantime, expert advice should be sought on how to organize radiation protection services in Libya.

3. NURSING SERVICES

3.1 History

During the Italian colonial regime nursing services in Libya were organized largely by religious Sisters and, as far as we can ascertain, few if any of these Sisters had had formal professional nursing education. The religious Sisters supervised the work of Libyan "infermieri" and of Libyan midwives who were given in-service training and, in due course, a certificate of proficiency following a practical examination.

[1]It is in these Ministries and in NASA that planning and execution of large scale water supply, drainage, sewerage and housing projects are proceeding and it is essential that the Ministry of Health should insist on the provision of public health engineers to work within the relevant departments to safeguard the health aspects of these programmes.

This system of training of nursing personnel, recruited from persons with little if any education beyond primary school has continued up to now. During the military administration after the Second World War, British and French nursing sisters also arranged training courses for Libyan nursing personnel.

After Independence and from 1952 onwards, WHO has provided nurse educators. Four schools have been established:

- 1 school for female assistant nurses
- 1 school for male assistant nurses
- 2 schools for preparation of "MCH assistants".

Also, since Independence, a considerable number of foreign nurses have been recruited from such countries as China, Britain, Italy, Pakistan, Spain and Yugoslavia for direct service roles in hospitals.

3.2 Organization and Administration

The National Social Insurance Institution (INAS) and a small number of private institutions are employing nursing personnel but otherwise all medical care services are governmental. In the Government Service, nursing personnel may be classified civil servants, or unclassified employees, seemingly without regard to preparation, qualifications or years of service. The regional office of the Controller of Health Services is responsible for allocation and transfer of nursing personnel within the region.

In January 1965 a post for a nursing officer was established within the Ministry of Health and a foreign nurse was appointed. However, there is no accepted definition of the title or functions of the post and it is not clear what are the responsibility or powers of the office. An MCH section also has been established in the Ministry and is staffed by a WHO Nursing Adviser with a Libyan qualified nurse as assistant to

the WHO Adviser. This section is said to be responsible for nursing supervision of MCH centres throughout the country but, again, its exact responsibilities and powers have never been clarified.

In hospitals there is no recognized system of nursing administration under a matron. In most hospitals the nursing service is the responsibility of the Medical Director of the hospital, or even of the medical head of individual departments in a large hospital. In some hospitals where a team of foreigners is working, arrangenents have been made whereby nursing services are under the direction of a matron. Where teams of foreign nurses are assigned to hospitals in which there still remain Italian religious Sisters, difficulties arise as a result of the lack, in Libya, of any established pattern of nursing administration.

There is no public health nursing programme in Libya. Dispensaries and health centres provide curative services and are staffed by male nursing orderlies under the supervision of a doctor, who may visit once a week, or once a month or even less frequently.

3.3 Nursing Personnel

There exists legislation[1] for the licensing of "midwives" and "nurses" but it does not define the qualifications required of such persons and places the "recognition" of qualifications at the direction of the Ministry of Health. In the Ministry there is no body or office with professional expertise to scrutinize credentials; even for recruitment of foreigners, the Nursing Section within the Ministry is not consulted.

The result is that in Libya today nursing service is being provided by foreign and national personnel of widely variable standards of training and experience. In Part IV, Annex VII, Table 7 and Table 8, we give

[1]Regulation concerning practice of professions relating to the Medical profession published in the official gazette No. 16 of 25 September 1958, under Law No. 60 of 1957.

the numbers as in mid-year 1965; it is quite impossible, however, to analyze these figures as regards professional or auxiliary categories. Among the persons included in those figures are:

(a) foreign nurses and midwives, professional and auxiliary;

(b) Libyan nursing personnel, graduates of the School of Nursing,, Tripoli;

(c) Libyan health assistants, graduates from Suk-el-Giuma School for MCH workers;

(d) Libyan assistant midwives, graduates from Berka School for MCH workers;

(e) assistant male nurses trained on the job in hospitals before and after Independence;

(f) nursing orderlies and dressers trained on the job in hospitals during the British Military Administration;

(g) assistant nurses, cleaners or servants who have been taught to carry out one or more activities such as injecting;

(h) professional nurses with international agencies who serve as teaching staff in schools for nursing personnel, and in an advisory capacity to the Ministry of Health.

The male nurse graduates of the Health Training Institute, Benghazi, are not included in these figures as the first class graduated in April 1966.

3.4 Nursing Education

Any formal training is operated and controlled by the Ministry of Health; selection of candidates for each of the schools is made by the teaching staff of the school but is subject to approval and additions from the Ministry; the fact is that entrance requirements can be described best as "flexible".

For the schools of nursing for females in Tripoli and for males in Benghazi, both giving a three-year course, entrance requirements originally were fixed at nine years of basic education and later reduced to six years. Minimum age requirements are 14 years for girls (occasionally lowered on

intervention by the Ministry of Health) and 17 years for boys. There is no minimum standard curriculum controlling hours of theory and practice; each school uses a separate one.

For the schools for MCH assistants in Suk-el-Giuma, Tripoli, and in Berka, Benghazi, entrance requirements are for six years of basic education and for a minimum age of 13 years. Both criteria have been lowered on intervention from the Ministry of Health. The two schools operate independently and differ as regards teaching hours for theory and practice, and in curriculum requirements.

Apart from formal training courses the in-service training of other categories of personnel continues and "certificates" are issued on the basis of an oral and practical examination by the local hospital staff. There is no agreed pattern of teaching and no provision of special teaching staff.

3.5 Nursing Care

Nursing care should include at least the provision of a clean environment for the patient, the observation and reporting of symptoms and the giving of medication and treatments as ordered by the physician. It includes much more, of course, but even the simple activities for making the patient comfortable and for helping him to regain his health are basic to good nursing.

By these simple standards nursing care in Libya is at an elementary level.

In some hospitals patients are receiving the essentials of nursing care, but in most we saw little nursing care at all being given. Perhaps the chief reason for this is the extreme shortage of nursing personnel and the very low standard of training of the majority of nursing staff. It did appear to us, however, that there was an attitude

of indifference to the comfort and care of the sick and a lack of a sense of responsibility for them. We attribute this to the absence of any organized nursing administration under professional nurse leadership.

Public health nursing includes working with individuals and their families in the homes, in schools, in clinics, and in the community in general. It is basically a health promotion service directed towards the family as a unit. A public health nursing programme with this objective has not yet been developed in Libya.

3.6 Discussion

There are more men than women employed in nursing in Libya in contrast to most countries in which nursing has been largely a female occupation. Recruitment of male students presents fewer problems than recruitment of female students. There are cogent reasons for this situation. Until recently Libyan girls and women have been secluded, devoting their time to home activities. In public they appear cloaked by the traditional baracan. Degrees of seclusion vary from one region to another but there is still a strong tradition in favour of concealment and seclusion of womenfolk.

With the increase in educational facilities available to girls there has been an increase in school enrolment of girls at all levels. There is keen competition to recruit any female graduates. Teaching attracts most of them, some go into secretarial work, others go on to university, and many marry. So far nursing has not attracted any recruits from the secondary educational level. The director of a Teachers' Training College pointed out that if a girl reaches university entrance level she elects to go into medicine, which is a respected and lucrative profession, rather than nursing, which is held in low esteem. One cannot dispute the logic of this argument under present circumstances.

Nursing by its nature of providing care to the sick includes activities which bring the nurse into close contact with the patient. Some of the activities are considered menial and in this culture, families do not wish to expose their daughters to a profession which requires participation of this kind.

In ten years the School of Nursing in Tripoli has attracted only 83 students. The highest proportion of these have six years of basic education. With entrance requirements at this level it is doubtful if nursing could attract enough recruits to provide nursing services in a lifetime.

Professional nursing education is based on general education with a strong science foundation. Basic sciences are given in Libya in the first year of secondary school and to prepare professional nurses it is necessary to attract students from this secondary school level. So far this has been impossible.

Other factors which seriously affect nursing are poor working conditions in hospitals and health centres. A low salary scale which includes glaring anomalies between categories of nursing personnel, without regard to preparation or responsibility, contribute to the poor situation. Perhaps the most basic problem has been lack of nursing administration which is essential for planning and executing a service. Nursing advice is seldom sought on such important matters as nurse recruitment, and nursing personnel policies.

Similar problems have existed in other countries and have been overcome by the combined efforts of professional nursing organizations, the Government and the public. In Libya there are not enough qualified national nurses to form a professional nursing organization. The responsibility for leadership in this field must be taken by the Government, assisted by Libyan qualified nurses and Libyan doctors, and by the public.

Much can be learned from the experience in other countries through international and foreign nurses working in Libya. The establishment of a national authority on nursing could bring together representatives from Libyan nurses and doctors, international and foreign nurses, government departments and the public to stimulate interest in the improvement of nursing in this country.

Having assessed the situation in Libya we feel that priority in planning has to be given to three aspects with specific objectives.

i. provision for immediate nursing needs by recruitment of foreign qualified personnel, requiring:

(a) establishment of minimum employment standards to be used in the recruitment of foreign qualified nurses;

(b) establishment of a recruitment policy which will include the active participation of the Chief Nursing Officer;

(c) provision for an orientation course for all foreign nurses that will include Arabic language and customs;

ii. establishment of a sound nursing education programme for the preparation of Libyan nurses, requiring:

(a) the consolidation of all schools and institutions which prepare nursing personnel in Libya at the present time (4 schools)

(b) the adoption of a three-level system of nursing education as the basis of nursing services:

- consolidation of the present schools to be the first step,
- on-the-job training programmes for auxiliary personnel in hospitals, dispensaries and health centres to be the second step,
- the establishment of a basic four-year programme within the University of Libya leading to a baccalaureate degree in nursing;

iii. development of an organizational structure for nursing administration, requiring:

(a) the establishment of a nursing structure at all levels beginning with the establishment of a Chief Nursing Officer in the Ministry responsible for all nursing service, curative and preventive;

(b) the establishment of clear-cut policies and written descriptions of function and responsibility lines of communication.

3.7 RECOMMENDATIONS

Our recommendations which are given in detail in Part III can be summarized as follows:

i. 1967 - To provide for a unified policy to create high level standards of nursing care, the establishment by the Minister for Health of a "National Board of Nursing" with sub-committees for:

- Establishing minimum employment standards for the practice of nursing in Libya.
- Establishment of national minimum standards for nursing education.
- Creating a recruitment policy for foreign nursing personnel.
- Planning a three-level system of nursing.

ii. 1967/1968 - Arrangements for an "orientation course" for foreign nursing personnel recruited to work in Libya.

iii. 1968/1973 - Creation of an organizational structure of nursing administration at the centre and in the regions (see also Chapter XII, paragraph 3.2.5 and Part III).

iv. 1967/1968 - Adoption of a three-level system of nursing education and services in Libya (see also Chapter XIV, paragraph 6.2 and Part III).

v. 1967/1968 - Establishment of a single unified training programme for auxiliary nursing personnel (see also 4.1.2 below and Chapter XIV, paragraph 6.2 and Part III).

vi. 1967-1968/1973 - Establishment of four new schools of nursing (see also Chapter XIV,paragraph 6.2 (iii)).

vii. 1967-1968/1973 - Fellowships for Libyans to study abroad (see also Chapter XIV, paragraph 6.2 (viii) and (ix)).

viii. 1968/1973 - Facilities for nursing personnel to improve their basic education (see also Chapter XIV, paragraph 6.2 (x)).

ix. 1967/1968 - Strengthening of Nursing Services at the Psychiatric Hospital, Gargaresh (see also Chapter XIII, paragraph 1.2.2 and Part III).

x. 1968/1973 - A Nursing Manpower Study (see Part III).

4. SPECIAL HEALTH CARE PROGRAMMES

4.1 Maternal and Child Health (MCH)

4.1.1 Discussion

A special maternal and child health programme within a community health service is fully justified on the grounds that special hazards to health arise during the processes of reproduction and of early growth.

MCH administrative patterns developed early in this century and, at the start, activities were in the hands of voluntary agencies in countries with comparatively well developed medical and hospital services for sick children; MCH activities were directed only to prevention of illness and disability through nutritional guidance and education of mothers in preparation for child-birth and child care; the sick mothers and children went directly to general practitioners or to hospitals.

In 1957 the WHO Expert Committee on Maternal and Child Health dealt with the need to integrate preventive and curative activities

and the Report of the Committee states inter-alia:

> "The Committee deprecated the separation of preventive and curative services, particularly in countries where illness is rampant and medical care facilities are inadequate. In these countries, it is unwise to exclude treatment services in MCH clinics. But attention must be given, not only to the immediate illness for which advice is sought, but mainly to the general health of the mother or child, the prevention of further illness, and the attainment of good health. By treating the disease, confidence is established and co-operation secured for continuing health supervision."

and stated also:

> "The Committee considered that all MCH services, including school health, especially at the local level, should be an integral part of the general public health services, and that both should have as their aim the health supervision of the family as a unit."

Maternal and child health centres are distributed throughout Libya with the exception of the southern (Fezzan) region which lacks any special programme. There are 15 MCH centres in the western region but three of these are not functioning owing to lack of staff. In the eastern region there are 12 centres. All centres outside of Tripoli and Benghazi suffer from inadequate professional supervision. There are two MCH centres under the Ministry of Labour and Social Welfare and plans exist for additional centres and MCH centres under the Ministry of Health.

There are two training centres for "MCH Assistants", one in Suk-el-Giuma, Tripoli, and the other at Berka, Benghazi. A total of 109 MCH assistants were graduated up to 1965, 69 of these presently are employed in MCH activities, 29 are employed in hospitals or dispensaries and 11 have left the health service.

As we have seen them during our travels in Libya, MCH assistants are failing to fulfil the objectives for which they were trained.

The further away the MCH centre from professional supervision and guidance, the less the attendance at the clinics. The service which they can offer is in fact not what the community wants.

It seems to us that this cannot be blamed on the MCH workers themselves; we have been forced to the conclusion that the present policy for training and utilization of these workers does not and cannot succeed in producing an effective programme.

The training these girls, recruited from primary school leavers, receive does not fit them to give comprehensive care to mothers and children; their youth, immaturity and lack of basic education does not make them acceptable as health educators. The isolation of most of the MCH clinics from other medical care services prevents them playing their proper part in a community health service.

We wish to ensure that the recommendations which follow should not be misunderstood. We are convinced of the real need in Libya for a special MCH programme and our proposals are not that it should be discontinued, but that it should be strengthened by a longer and more comprehensive training programme and by reorientation of the policy of utilization.

In countries where there are adequate resources of professional health workers, MCH activities in the community are carried out by Public Health Nurses, who have longer training than that required for an ordinary registered nurse in a hospital. At less than professional level also the MCH worker who will be working in the community requires longer training than her counterpart who will be working in a hospital.

4.1.2 RECOMMENDATIONS

i. 1967/1968 - that the present training programme for MCH assistants be upgraded in favour of a longer training

comparable to that of the other training schools for nursing personnel, and with more experience added. The objective would be to prepare what we suggest might be called a "Community Nurse-Midwife", who would be able to give comprehensive medical care to mothers and children within the family unit. Further reference to this proposal is contained under our proposals for "Training of Health Personnel" in Chapter XIV, paragraph 6.

ii. 1967/1973 - that students undertaking preparation for such work, preferably, should be recruited from a community to which they will return and that an undertaking be given to this effect.

iii. 1967/1973 - that efforts be continued to provide professional supervision and guidance to MCH activities wherever carried out.

iv. 1968/1973 - that MCH programmes be established only in close association with general health care units (centres or hospitals) from which services are being extended to family units and the community as a whole, and where professional guidance and supervision can be given to MCH activities.

4.2 School Health Services

4.2.1 Findings

Libya has an ambitious plan for its school health service and school-feeding programme. It envisages one doctor for every 5 000 student population and one nurse for every 1 000 students; by 1968 this would mean a school health service staff of some 60 doctors and 300 nurses.

The technical personnel are to be on the establishment of the Ministry of Health, but the service is to be administered by the Ministry of Education.

It has been proposed to establish two "School Health Centres" - one in Tripoli and one in Benghazi - each to be fully equipped with X-ray and laboratory services and to have a full complement of specialists in ophthalmology, dermatology, bacteriology, radiology, chest diseases, internal medicine and dentistry. In addition, the proposal is to have three mobile units similarly equipped.

There is a good school-feeding programme already working and it is proposed that there will be, as part of the Ministry of Education a "School Feeding and Hygiene Department" with its own staff of health inspectors and "inspectors of nutrition". The school-feeding programme is at present costing some £L. 600 000 per annum and it is proposed to provide "long life" milk at an estimated cost of £L. 1 500 000.

4.2.2 Discussion

> "Selection of one segment of the population for special health services presupposes clear understanding of the reasons for such selection[1]."

During the period of growth up to adulthood children are constantly undergoing change and these changes can be influenced positively towards health. Preventive and promotive measures at this age should have a beneficial lifelong effect and may be more easily carried out than if deferred until growth is complete.

Bringing children together in groups increases sharply the hazards of communicable disease and of accidents, an important cause of death and disability in this age group. On the other hand, the fact that children are collected in school makes them

[1] Expert Committee on School Health Services, World Health Organization Technical Report Series, No. 30, 1951.

more easily accessible to organization of health care than at home.

In a country such as Libya, a school health programme has obvious advantages and should be of real value towards developing confidence in and acceptance of other public health activities.

To be really productive of improved health for the nation the school health services must not be allowed to develop as a narrowly segregated service; every effort should be made to develop the service as part of a community health programme and not divorced from it.

It is most important also to regard a school health service as primarily a promotive and preventive activity; curative services have to be provided for a community as a whole and although it is essential to ensure that curative medical care will be available, we can see no point in establishing a separate curative service for school children apart from their families.

For promotion of health the service should concentrate on general measures related directly to the health of the child _in_ school and at least on: environmental hygiene, nutrition, health supervision of pupils and staff, communicable disease control (including immunization), directed physical activities, safety control and conduct of health instruction.

The school health service in Libya is at a very early stage of development and we would not be justified in making any inference from what we have seen. We should say, however, that the little we saw of the school feeding programme gave a favourable impression but, on the other hand, the activities, admittedly at a very early stage, of doctors, dentists and nurses in the service, appeared to us to be misdirected; in one place they were sitting in an

ill-equipped clinic, waiting for and treating patients, both students and education department staff of all levels, sent to them because of personal symptoms.

We record this only to stress again that a school health service staff must be primarily engaged on improvement of health and prevention of disease; to achieve such objectives the staff must go to the schools to develop a programme within the school.

4.2.3 RECOMMENDATIONS

i. If (and we think it undesirable as a long-term policy) the School Health Service is to remain under the administration of the Ministry of Education, then at least at the periphery its activities should be integrated with other community health services through close co-operation immediately and, in due course, through placing it under the direction and guidance of the local Medical Officer of Health (see Chapter XI, paragraph 4).

ii. The School Health Service should concentrate from the start on improvement of hygiene of schools, on nutritional promotion, on protection of health through a comprehensive immunization programme, on an anti-trachoma campaign and on health education in schools. (See also Chapter XIII, paragraphs 5.4, 5.13, 5.14 and 5.15).

iii. The proposal for special "School Health Clinics" with specialized staff should be abandoned; instead, existing hospitals and health centres should be strengthened as necessary with the proposed additional staff, so that school children in need of curative treatment can be referred to them.

5. COMMUNICABLE DISEASES CONTROL

No epidemiological study of communicable diseases in Libya yet has been undertaken. For achievement of such an objective the collection of data for health statistics and the health laboratory services will have to be greatly improved. To make a beginning in this direction we have included recommendations in Chapter XII, paragraphs 7 and 8, of this Report.

Generally speaking, the diagnosis of most of the communicable diseases, both in hospitals and out-patient units, is based only on clinical findings. It is comparatively rare, because of lack of facilities and staff, for a clinical diagnosis to be confirmed by specific laboratory tests. With the exception of those for tuberculosis, malaria and bilharziasis, any figures quoted in what follows are based on clinical diagnoses.

In this section of our Report we wish to refer to certain communicable diseases to which the population is at risk and which we regard as of special importance in Libya.

5.1 Amoebiasis

Entamoeba histolytica infection is undoubtedly widespread but it is impossible to estimate the amount of morbidity caused. In the Sebha General Hospital we were informed that it constituted one of the major reasons for hospital and out-patient attendances. General improvement of environmental sanitation will be the only measure which can lead to control.

5.2 Bilharziasis

5.2.1 The Problem

Surveys, including one conducted between December 1965 and March 1966 by consultants from the World Health Organization, reveal that bilharziasis is endemic in certain areas of Libya, that it is-

already a serious problem in the Southern Provinces and that unless efficient control activities be instituted, it is likely to become a real problem also in the Jebel El Akhdar Province.

The following information is extracted from the two reports of the WHO consultants:[1,2]

Bilharziasis was found in two places in the Western Provinces, namely Tarhuna and Tauorga: in the former the infection (probably imported from a neighbouring country) was of S.haematobium and in the latter S.mansoni. In the Tarhuna area no snail carriers were found; in Tauorga large numbers of suitable carrier snails were identified and at the time of the survey, prevalence of human infection was 30 per cent in the persons examined.

In the Derna area of Jebel El Akhdar ample numbers of snail vectors were found and evidence of infection (S.haematobium) in both school children (7 per cent) and adults (1.7 per cent) of those examined.

In the oases and wadis of the Southern Provinces the infection rate (S.haematobium) is very high with evidence in some places of up to 86 per cent in school children. The snail vectors were found mostly in irrigation tanks and only in those where the water is comparatively "sweet"; the "pH" of the water is markedly a limiting factor in the distribution of snails.

It appears then that bilharziasis in Libya should be comparatively easy to control by some changes in methods of irrigation and by using molluscicides. While immediate action should be taken for treatment of infected persons and for selective use of molluscicides, a further epidemiological study of the disease in Libya is highly desirable.

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[1]Halawani, A.A., (1966), A Survey of Bilharziasis in the Kingdom of Libya, EM/BIL/24, WHO, Alexandria.

[2]Yasuraoka, K., (1966), A Survey of the snail vectors of Bilharziasis in Libya, EM/BIL/35, WHO, Alexandria.

5.2.2 RECOMMENDATIONS

i. 1967/1968 - the establishment with help from experienced workers (at least one epidemiologist and one malacologist) through WHO of a pilot project to study the epidemiology and to try out methods of control especially in the Southern Provinces.

ii. 1967/1968 - instructions to be issued to medical officers in known endemic areas on diagnosis and treatment of the disease.

iii. 1967/1968 - the disease to be made notifiable.

Urgent action is required to prevent further spread of the infection, which is very prevalent in certain countries on Libya's borders.

5.3 Diarrhoeal Diseases

The prevalence of serious diarrhoeal diseases (see Chapter X, paragraph 2) is very high, especially among infants and children; some doctors in Libya regard acute enteritis as the greatest single cause of infant mortality. In the 100-bed infectious diseases department of the Tripoli General Hospital admissions of cases of "acute entero-colitis" have averaged 207 per annum over the last five years.

Little direct preventive action can be taken to lower the morbidity; improvement of environmental sanitation, especially of fly control and the provision of safe water supplies must remain the main line of attack. It is important, however, that MCH workers and all staff working with children be given special training in rehydration methods.

5.4 Diphtheria, Tetanus and Whooping Cough

5.4.1 The Problem

We group these infections together merely because action to prevent them can be combined as one operation. It is well known

that all three infections are endemic in Libya and are a cause of considerable morbidity and death, especially of infants and young children.

In the Infectious Diseases Department of the Tripoli General Hospital admission of cases of neo-natal tetanus averaged 60 per annum from 1960-1964, inclusive, and the death rate was 58 per cent. Tetanus in the higher age groups accounted for 79 admissions over the same period with a death rate of 42 per cent.

In the same unit admission of cases diagnosed as diphtheria averaged 25 per annum and the death rate was 26 per cent.

At the present time immunization with "DPT" is proceeding in a rather haphazard manner. Both in MCH centres and in other out-patient units immunization is provided largely only on request and all such health units are ill-equipped with staff to follow up those who do not return to complete a full course.

5.4.2 RECOMMENDATIONS

i. 1967/1973 - Every effort should continue to obtain a better coverage of young children but until staff and facilities become adequate for the purpose, the school health service can provide an easy means of immunizing at least that age group. We have been assured that it is the intention to provide this measure in schools and we consider that as soon as possible the service should be geared to cover first the primary school entrants.

ii. 1967/1973 - Whenever opportunity offers, the health services should develop training courses for the traditional midwives of the community so that by improved cleanliness the incidence of neo-natal tetanus can be reduced.

5.5 Enteric Fevers

Typhoid and paratyphoid infections are common throughout the country. The Infectious Diseases Department in Tripoli has averaged 66 admissions per year over the last five years. In spite of the availability of modern antibiotics the death rate in hospital has been 3.7 per cent.

With a reliable vaccine, morbidity and mortality may be reduced but, by itself, vaccination cannot control the prevalence of infection; control can follow only improvement in environmental sanitation.

5.6 Infective Hepatitis

This virus infection is unusually common in Libya; admissions to the General Hospital, Tripoli, have averaged 45 per annum over the last five years.

Poor environmental sanitation and lack of adequate control over drinking water and milk play a big part in the aetiology, but one must also remember that transmission occurs as a result of poor sterile technique when giving injections. Having seen injection techniques, as practised in many health units, we cannot avoid the suspicion that the health services themselves may be partly responsible for transmission of viral hepatitis.

5.7 Leprosy

5.7.1 The Problem

We have been distressed to find that in Libya official policy for dealing with leprosy appears still to be based on concepts of the disease which are very long out of date.

As usual, and as commonly found in other countries, the medical profession is largely at fault. The ignorance of most doctors on the epidemiology of leprosy is so abysmal that they allow the misconceptions of hundreds of years ago to colour their own and other

peoples' ideas on this subject. One would think that modern text books had never been written.

Leprosy is just one of the communicable diseases among many others; it may in its advanced form, be very ugly, but it is one of the least easily transmitted of communicable diseases and is far less of a hazard than, for example, tuberculosis. In these modern days effective treatment is available. Provided that a patient can receive treatment at an early stage, he can be cured without any residual mark of the disease.

Here lies the key to the problem of how leprosy can be controlled so that it will disappear from the community: all measures taken should be directed to encouraging patients to report to a doctor early and at the first suspicious sign, and be directed to making facilities for treatment easily available without interference to a patient's normal everyday avocation or livelihood.

Legal and social sanctions against leprosy patients defeat their supposed objective; they do not prevent transmission and result only in patients hiding the disease at the stage when it most easily can be cured. There exists little epidemiological and no operational evidence that the compulsory isolation of leprosy patients is a sound or even reasonable measure in the interests of the public health.

In any case, leprosy is not a serious problem in Libya. It is known to exist and probably is far more prevalent than is realized; but it does not constitute so great a problem that a special programme need be instituted.

If only the medical profession and, in turn, the public were properly educated, the disease could be controlled by providing all necessary treatment in existing out-patient clinics and in general hospitals.

Until such time as this is possible the emphasis of medical care activities should be a provision of facilities for out-patient treatment and of providing hospital accommodation only for the short-term admission of leprosy patients needing special care because of complications or intercurrent disease.

> "As stated in the Eighth International Congress of Leprology (1963), 'efforts at hospitalization should not be permitted to drain the budget and the efficiency of out-patient treatment centres, which form the core of leprosy control'.
>
> Leprosy patients needing temporary hospitalization for acute complications of leprosy or intercurrent diseases should be admitted to general hospitals. Patients needing attention for special reasons, such as maternity and reconstructive surgery, should also receive the same consideration[1]."

5.7.2 RECOMMENDATIONS

i. There should be no special legislation to deal with leprosy; it should be treated as any other communicable disease and merely be placed on the schedule of any regulation concerning communicable diseases in general. This has been the recommendation made by four successive conferences organized by WHO during the last ten years, and by the WHO Expert Committee on Leprosy[2].

ii. 1968/1973 - The present leprosy hospital near Tripoli has 100 beds in an old army barracks. This hospital should be extensively altered and improved, not to increase the total accommodation but to produce a hospital in the true sense, able to deal with medical and surgical complications of leprosy.

iii. 1966/1973 - We advise against the establishment of any new specialized leprosy hospital anywhere else in Libya. In

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[1]World Health Organization, Technical Reprot Series, No. 319, 1966.

[2]World Health Organization, Technical Report Series, No. 189, 1960.

both the eastern and southern regions a real effort should be made to persuade surgeons and physicians in general hospitals to accept leprosy patients needing special care.

iv. 1968/1973 - "Skin Diseases Clinics" should be established, one in Benghazi, one in Sebha and one in Tripoli under the care of a dermatologist with special experience of leprosy. Each of these clinics should also have the services of a Public Health Nurse, to organize treatment and follow-up of known patients and contacts. WHO might be requested to assist with recruitment of staff having adequate experience.

v. 1967 - A consultant leprologist, experienced in diagnosis, treatment and control of leprosy should be engaged to tour all hospitals in Libya, to give all doctors up-to-date guidance on the handling of leprosy patients. WHO might be requested to provide a consultant.

5.8 Malaria

5.8.1 The Problem

Prior to World War II malaria was known to exist in foci along the coastal areas of Libya and this was confirmed by the Army Health Services in 1943. Little is recorded prior to 1954 about the epidemiology of malaria in the desert oases and now in 1966 it is in certain areas of the Southern Provinces where continued transmission of malaria is a known problem.

In 1954 the Health and Sanitation Division of the United States Operational Mission (USOM) initiated the first malarial control programme employing residual insecticides. This work was in the Tauorga area of the Western Provinces and by 1960 malaria apparently had been eradicated.

In the Eastern Provinces malaria was said to be endemic chiefly in the Kufra Oasis, Wadi Derna and Latrun. A spraying programme, under the Libyan-American Joint Services Organization, was initiated in 1958 in those areas and transmission was successfully interrupted.

In the Southern Provinces a residual spraying control programme was initiated by USOM in 1955 and continued through 1957. In 1958 the programme was temporarily discontinued to allow for a pre-eradication survey preparatory to an eradication programme to be launched under an agreement with WHO. The pre-eradication survey led to delimitation of malarial areas and to the estimate that a total population of some 31 000 in the Southern Provinces were exposed to the risk of malaria infection.

Resumed spraying operations were discontinued in 1964 although an adequate surveillance programme had not been developed. The fact that few cases were detected between 1959 and 1962 gave a false impression of eradication having been achieved, but focal outbreaks in 1964 and localized epidemics in 1965 have clearly revealed that the problem still requires energetic action.

PROVED CASES OF MALARIA - 1958-1965; SOUTHERN REGION

Cases	1958	1959	1960	1961	1962	1963	1964	1965
P. Falciparum	17	5	7	8	11	26	252	379
P. Vivax	4	4	2	6	4	3	19	31
P. Malariae								1
Mixed Infection							1	2
Total	21	9	9	14	15	29	272	413
No. of Slides Collected	331	492	2492	1842	4135	9710	15573	18489

Although the increase in the number of proved cases of malaria largely reflects an improved surveillance organization, it also reveals continued transmission of the disease; the 1965 figures are known to include those of a recognized epidemic in the Ghat area near the Algerian border; it is strongly suspected that this epidemic started from infection brought by an immigrant.

5.8.2 Discussion

So far the epidemiology of malaria in Libya has not been clearly demonstrated. Clinical diagnoses of malaria still are being reported from time to time by hospitals in the Eastern Provinces and very occasionally from hospitals in the Western Provinces. The important vectors also have not been fully identified and though A. multicolor is probably the main vector in the southern region this has not been proved.

A. multicolor is found breeding chiefly in the residual water of abandoned shallow wells in the "wadi" areas. Fully to control such breeding places would entail a sizeable logistics problem which would have to be maintained indefinitely. The eradication campaign might better be continued with the main attack on the vector through regular spraying operations using residual insecticides and on the parasite by giving as necessary, presumptive and radical treatment with anti-malarial drugs.

There appears to be no difficult technical problem to prevent successful eradication of malaria within Libya, but in bordering countries malarial control or eradication programmes are in different stages of operation and even when the infection has been eradicated successfully within Libya, constant surveillance will be necessary to prevent transmission from parasite-carrying immigrants.

Present conditions in Libya are attracting many immigrants from neighbouring countries (including, we are informed, a considerable number of illegal immigrants avoiding border controls and regularly crossing into the eastern region). This situation demands a constant watch and permits no facile assumption that the coastal areas of the eastern and western regions,are, or will remain free of malaria.

5.8.3 RECOMMENDATIONS

i. 1966/1967 - Continue in 1966 in the southern region residual spraying operations - aimed at total protection of populations at risk.

ii. 1966/1968 - Continue to strengthen and maintain thereafter surveillance operations - both "active" and "passive" - aimed at total coverage of the southern region.

iii. 1966/1967 - Press ahead with the establishment and development of frontier checking stations on the main caravan routes, especially at Barakat near Ghat, and at Gatrun on the Algerian and Chad borders.

iv. 1966/1967 - Undertake in 1966, if possible, a full investigation of the situation in the eastern and western regions, especially in those areas known to have been malarious in the past.

v. 1967/1968 - Undertake an epidemiological study, including entomological investigation, of malaria in Libya with a view to a final all-out effort to eradicate the disease within the Kingdom and to provide guidance as to how best to maintain that eradication.

WHO should be requested to give further assistance for implementation of the recommendations 'iv' and 'v' above. We are here, in fact, echoing and basing our recommendations on those in the report of the WHO Malariologist from the Eastern Mediterranean Regional Office who visited Libya in February 1966[1].

5.9 Measles

This infection is common and constantly recurring and its complications are an important cause of mortality in young children. Over the five-year period 1960-1964 the General Hospital, Tripoli, had an 81 per cent death rate in children admitted with broncho-pneumonia as a complication of measles.

Measles vaccine now has been greatly improved so that it can be used effectively and without complications. Nevertheless, we do not recommend its general use in Libya at the present time. The duration of immunity following vaccination has not yet been proved but, in any case, widespread vaccine as a control measure could be effective only if it were possible to ensure that herd immunity be maintained by vaccination year by year of the new-born additions to the population. It will be a long time before health services will be sufficiently well staffed to cope with an on-going programme of this magnitude.

5.10 Acute Meningitis and Encephalitis

Large numbers of cases of acute meningo-encephalitis are constantly being reported from hospitals in Libya. During 1965 there were 95 such cases admitted to the General Hospital in Tripoli. The aetiology has not been clarified but it would seem that a large proportion are in fact meningococcal, but not assuming epidemic proportions. This is indeed an example of a problem which cannot be investigated without a greatly improved laboratory service.

[1]Unnumbered "Report on a Visit to Libya, 10-25 February 1966, H.J. Van der Kaay, Malariologist, WHO Regional Office, Alexandria.

5.11 Poliomyelitis

"Polio" is endemic and from time to time epidemic, in Libya. The probability is that the great majority of children, who do not die, become immune with or without paralysis, at a very early age. Improvement of environmental sanitation in some urban areas may delay the age of exposure to infection and result in epidemic outbreaks; on the other hand, the virus itself can undergo changes in virulence.

The disease appeared in epidemic form in the Tripoli area from 1963 into 1965. Admissions to the General Hospital, Tripoli, of patients in the acute stage were: 1963-- 148; 1964 - 237; 1965 - 176.

In the absence of real knowledge of the epidemiological situation, we would not recommend any nation-wide campaign of vaccination. A successful campaign needs careful preparation for total community coverage within a very short period. It will be preferable to embark on such a campaign only when needed to contain an epidemic outbreak within any particular local community.

The immunization of young children should, however, be encouraged at Health and MCH centres but every effort should be made to ensure that a child receives the full number of immunizing doses. If a child receives less than the optimum, and especially if only one dose, satisfactory immunity is not established and parents are lulled into a false sense of security which in the long run can only adversely affect the whole reputation of the health service and lead to distrust of all preventive immunization activities.

5.12 Rabies

5.12.1 The Problem

Rabies is all too common in Libya and is responsible for an unnecessarily large amount of mortality and of effort to save lives.

There have been cases of human rabies admitted to the General Hospital, Tripoli, every year (with one exception) since 1960 and including 1966. Moreover, the hospital admits an average of 17 cases annually for dog-bite and vaccination.

5.12.2 RECOMMENDATIONS

i. 1968/1973 - Although the disease can be carried by other animals, the important chain of transmission to man is the dog. The licensing of domestic dogs should be conditional on proof of regular immunization, and licensing should be strictly enforced wherever there is an organization to handle it.

ii. 1968/1973 - The Ministry of Health should try to arrange with the appropriate authorities for regular destruction of pariah dogs.

5.13 Smallpox

5.13.1 The Problem

There has been no epidemic outbreak of smallpox in Libya for several years but situated as the country is, smallpox remains a perpetual hazard. If the general level of immunity is allowed to diminish, a renewed outbreak could develop into a serious epidemic.

5.13.2 RECOMMENDATIONS

i. 1967/1973 - Every effort should be made through hospitals, health centres and MCH centres to ensure that the new-born are in fact vaccinated during the first six months of life.

ii. 1967/1973 - Evidence of successful vaccination against smallpox within the preceding three years should be an enforced condition of entry to primary schools. The

school health service should proceed now on a campaign to ensure that the total school population has been or is vaccinated.

iii. 1967/1973 - The health services should continue to import only freeze-dried vaccine of proved thermostability and potency, but all health personnel should be carefully taught the technique of use and that once this vaccine has been reconstituted for use it is no longer heat-stable, and its potency deteriorates repidly on exposure to heat and light.

iv. 1968/1973 - During this period a nation-wide vaccination campaign should be organized as part of the global campaign to eradicate this disease. WHO could be asked to assist with such a project.

5.14 Trachoma

5.14.1 The Problem

The prevalence of trachoma and of its complications is very high throughout Libya and is said to affect 75 per cent of the population. In the western region examination during 1965-1966 of 57 243 school children revealed a prevalence of 61.8 per cent of active or cured trachoma, and mostly in the age group 10-15 years[1].

For specialized anti-trachoma activities there are at present two doctors and one technical assistant in Tripoli, and one doctor in Benghazi.

The present campaign is concentrated on schools but with the staff available, coverage is very limited. The doctor in charge, who has been in the campaign since 1958, states that he has seen a

[1] Information received at the office in Tripoli of the Anti-Trachoma Campaign.

considerable decrease of trachoma in the Tripoli area; the campaign in the area covered has certainly had an impact but he also attributes part of the improvement to bettering standards of living.

This disease is of great economic as well as of public health importance and deserves an all-out effort to expand the anti-trachoma services.

5.14.2 RECOMMENDATIONS

i. 1966/1967 - An immediate increase in staff of five ophthalmologists and nine general practitioners.

ii. 1968/1969 - An epidemiological study, with WHO assistance, to guide the best approach to the total problem.

5.15 Tuberculosis

5.15.1 The Problem

In 1959 a survey[1] was conducted to obtain epidemiological information on the prevalence of tuberculosis in the Eastern Provinces. A random sample of the population consisting of nine clusters of approximately 300 persons each was examined by tuberculin testing, miniature X-ray examination and microscopic examination of sputum. The best estimate for the prevalence of active tuberculosis among the population of which the random sample represented approximately one per cent, was calculated to be 1.83 per cent. The true value was situated within confidence limits of 1.19 per cent and 2.4 per cent at the 95 per cent probability level. Comparison of results from urban communities with those from rural communities indicated a prevalence of 2.7 per cent in the former and 0.8 per cent in the latter.

The results of tuberculin testing are shown in the Table below and revealed that in the age-group 15-19 years almost one half of

[1] EM/TB/58, 1961, Regional Tuberculosis Prevalence Survey Report in Cyrenaica, WHO, Alexandria.

the people were infected with tubercle bacilli (this does not mean, of course, that they had all developed the disease) and the percentage in the age group 40 years and more was approximately 80 per cent of the population.

Age Group (Years)	Number Tested	Number Infected	Percentage
0-4	390	22	5.6
5-9	361	79	21.9
10-14	284	111	39.1
15-19	191	90	47.1
20-29	298	173	58.1
30-39	276	203	73.6
40 and over	643	509	79.2

Figures for 1964[1] collected at the Chest Clinic, Benghazi, where the majority of persons attending may have been motivated by symptoms, give the following tuberculin test results:

Age Group (Years)	Number Tested	Number Infected	Percentage
0-5	526	102	19.4
6-15	841	332	39.5
16 and over	3982	3384	85.0

The experience of the Central Anti-Tuberculosis Clinic in Tripoli, where about 36 000 persons are examined annually, leads

[1] Halet, J.A.L., 1964, Unpublished report on WHO-assisted Tuberculosis Control Project.

the Director to the conclusion that the prevalence of active tuberculosis amounts to 15 per thousand[1].

In July 1965 a meeting in Tripoli of doctors working in the field of tuberculosis in Libya, agreed that the probable overall prevalence of active pulmonary tuberculosis was 15 per thousand.

This reasonably reliable information checked from all sources, is adequate for planning purposes at this stage; it reveals a serious tuberculosis problem in all, and especially urban, areas of the country; any more accurate survey figures would not solve any immediate planning needs. As of now the important problem is clearly identifiable as that of creating a service which can control and treat even the known foci of infection; there is nothing to be achieved by diagnosing tuberculosis unless one has the means of treating it for long enough to control infectivity.

5.15.2 Tuberculosis Control Policy

Any chronic disease which may incapacitate individuals for productive employment for a year or years, is a serious economic as well as a grave public health problem. In dealing with the problem of tuberculosis, however, it is necessary to remember that the carriers of the disease are human beings. This fact means that planning must take into account not only statistical data and modern diagnostic and therapeutic advances, but also the known experience of human behaviour. Very many and usually the majority of patients, for personal or domestic as well as economic reasons, will not or cannot remain in an institution long enough for the adequate treatment of pulmonary tuberculosis; very many persons, both educated and uneducated, cannot be counted on to take drugs regularly over a long period especially when, as for tuberculosis,they are required to do so for at least one year.

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[1]Kissopoulos, A. (1965), Lotta Contro La Tuberculosi, No. 1 - 2 .

It has been proved during the last ten years that for the vast majority of cases of pulmonary tuberculosis, whatever the patients' circumstances, regular out-patient treatment is just as effective as in-patient care. A modern tuberculosis control programme should therefore give first priority to the provision of ambulatory/domiciliary treatment (using hospitalization only when absolutely essential for care), and on persuading (not mere telling) of patients to continue taking prescribed medicines.

It has been shown by work the world over that BCG vaccination does bestow a very considerable resistance to tuberculosis. The tuberculin test figures available from Libya indicate that tuberculosis infection is occurring at a very early age and that by 15 years of age over one third of the population is already infected. A sustained and country-wide BCG vaccination campaign is clearly desirable in Libya.

Recent work in several countries has shown that vaccination with BCG can be given safely without prior tuberculin testing. Recent trials have shown also that simultaneous BCG and smallpox vaccination does not cause any additional complications and suggested that the immunizing effect of the vaccines is not diminished thereby. This should be borne in mind in connexion with any large-scale vaccination campaigns.

5.15.3 Present Situation

In mid-1965[1] there were in Libya: 19 doctors working in the specialized field of tuberculosis; 617 beds for tuberculosis (305 in general hospitals and 312 in two specialized tuberculosis hospitals); 157 beds in Tripoli and 155 beds in Shahat; three specialized tuberculosis clinics (Tripoli, Benghazi and Zawia) and four mobile X-ray units.

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[1] Statistics provided by the Ministry of Health.

A service which can ensure adequate treatment for all known tuberculosis patients is still lacking in Libya and this is mostly due to lack of staff. The presently available diagnostic and treatment centres have to be largely "static" - waiting for patients to attend of their own accord; there is not yet sufficient staff to organize a home-visiting and follow-up service which can trace patients' contacts or known patients who default, or to ensure regular treatment for patients who cannot easily attend the tuberculosis clinic.

All anti-tuberculosis centres visited by us provided a similar picture: treatment of patients attending the centre but no organization for finding patients or contacts who failed to attend; regularity of patients' attendance poor; no certain knowledge as to whether any out-patient was in fact taking the drugs given to him; 15-30 per cent of known patients lost sight of and whereabouts unkown; hospitalized patients leaving before completion of treatment and no knowledge of subsequent history unless patients returned; those returning usually revealed extension of and more intractable disease.

Development plans include: the provision of an additional 630 beds (300 in each of the eastern and western provinces and 30 more in the southern); the construction of anti-tuberculosis clinics at Gharian, Sebha, and Derna (already in building) and at Misurata, Homs, Tarhuna, Zuara, Jefren, Agedabia, El Marj, Beida and Tobruk.

5.15.4 Discussion

Anti-tuberculosis activities as up to now developed cannot be expected to make any real impact on the disease as a public health problem; on the contrary there is a grave danger that the problem may be accentuated because partial or inadequate treatment tends to

render the tubercle bacillus resistant to the efficient drugs. Spread in the community of microbes resistant to treatment will exacerbate the whole problem of control.

A tuberculosis control service should be organized:

(1) Preventive Activities

To arrange for a sustained country-wide BCG vaccination campaign for children. Pending development of widespread maternal and child health activities which can provide BCG vaccination for pre-school children, it will be easy and effective through the school health service, to arrange a campaign for BCG vaccination of all students at present in schools and for all new entrants to primary schools.

(2) Curative Activities

By organizing a home visiting service from each existing anti-tuberculosis clinic. A very large number of trained auxiliary workers will be required to concentrate primarily on ensuring the regular treatment of known infective patients, to follow up such patients in their own homes, to trace contacts and arrange for their protection, to trace defaulters and to ensure the availability of regular treatment. It has been conclusively proved that the greater the distance of a patient's domicile from a source of treatment, the less regularly will he take his drugs; it becomes essential therefore to involve all general health centres so that the treatment can be made available to known patients wherever they may be. A WHO-assisted pilot project on these lines being developed in the Eastern Provinces and should provide guidance on operational methods. Nevertheless efforts should begin immediately to

organize similar services wherever there is a tuberculosis centre and especially in the Tripoli and Suk-el-Giuma districts, with their 376 177 and more inhabitants.

5.15.5 RECOMMENDATIONS

i. The present pattern of anti-tuberculosis work in Libya must be changed from one of static curative activities, which can never control the disease into a dynamic public health service concentrating on prevention - through protective vaccination and reduction of the reservoir of infection by treatment of known foci (i.e. of persons with "open" tuberculosis).

To achieve this, all tuberculosis clinics should be changed both in practice and in name, to: "Tuberculosis Control Centres".

ii. 1968/1973 - Posts for a "Senior Medical Officer (Tuberculosis Control)" should be established in Tripoli, Benghazi and Sebha, to have responsibility for supervision and organization of tuberculosis control activities throughout the region. If such a senior medical officer is stationed in an existing clinic, then there should be at least one other medical officer to relieve the senior man of routine clinical duties. His primary responsibility should be to supervise the organization of treatment services for known patients wherever the patients be domiciled; he should also arrange for the setting up and maintenance of a regional tuberculosis register.

1968/1973 - A medical officer should be appointed to each Tuberculosis Control Centre or, where distances and workload permit, one medical officer might cover two centres.

To each Tuberculosis Control Centre, starting as soon as possible in Tripoli, should be appointed an experienced professionally qualified public health nurse who will have the responsibility for:

(a) training "tuberculosis home visitors" for domiciliary work as described in paragraph 5.15.4 above.

(b) organizing domiciliary treatment, and case and contact tracing services.

The persons filling such posts for medical officers and public health nurses in the Tuberculosis Control Service require special orientation to modern control methods. Short orientation could be arranged through WHO as required.

iii. 1968/1973 - It will be difficult enough to find adequate staff for existing tuberculosis hospitals and centres and for those envisaged in the first Five-Year Development Plan 1963/1968. We therefore advise cancellation of the plan to provide 630 additional beds and that no new building of specialized centres should be included in the 1968/1973 Plan.

iv. 1967/1968 - There should be organized with the help of WHO, if desired, a small-scale statistically controlled trial of BCG vaccination of a representative population sample irrespective of individual reaction to the tuberculin test. This trial would aim to ascertain that in Libya as in other countries, BCG vaccination can be carried out in a mass campaign without prior tuberculin testing. A special team should be recruited for this purpose.

v. 1968/1973 - Using a special team in each region to begin with, the School Health Service should conduct a BCG vaccination campaign aimed at total coverage of the present school population. During the operation of such a campaign the special teams should train all school health service staff so that, in future years, it will become a routine that all new students to primary school will receive BCG vaccination simultaneously with smallpox vaccination as a condition of entry to school.

vi. 1968/1973 - Staff working in maternity hospitals and in MCH centres where supervision by a doctor is available, should be trained to undertake BCG vaccination of infants and young children so that all such children who attend an MCH centre can be vaccinated in early childhood.

vii. 1966/1968 - Immediate arrangements should be made to give BCG vaccination to all health staff and especially to all new students entering the various schools for training of health personnel.

viii. BCG vaccination of tuberculin negative contacts of known tuberculosis patients should, of course, continue and a renewed effort be made to ensure that all such contacts be covered.

5.16 Venereal Diseases

Venereal diseases are all too common in Libya, as in other countries, and the problem is as difficult to deal with.

Treatment facilities are available and we suggest that the only useful effort towards control will be through health education and propaganda.

For an obvious reason, and not as a means to control of the disease, we suggest that as soon as laboratory services permit, a blood test be

included as a routine ante-natal measure for pregnant mothers.

5.17 International Quarantine

5.17.1 Discussion

Libya has four main seaports and three airports receiving international traffic; there is also a long land border with the United Arab Republic, Sudan, Chad, Algeria and Tunisia.

Because of international commitments it is especially important that the quarantine control at the sea and airports be further strengthened so as to be handled by well trained and understanding personnel.

On the main traffic routes crossing land borders it is essential also to strengthen health supervision of passenger traffic; here also it is important that the personnel employed should have an understanding of the objectives of their control measures.

5.17.2 RECOMMENDATIONS

i. We do not consider it necessary, nor desirable, that there should be physical accommodation at ports and entry points for isolation of passengers who may be suspect of carrying infection; those few cases which can be "spotted" in transit can be sent to the nearest general hospital where there should be at least one or two isolation beds.

The important part of a quarantine organization is:

(a) The provision of facilities for immunization on the spot against the internationally recognized quarantineable diseases in respect of which a passenger can present no valid certificate of vaccination.

(b) The establishment of a line of communication whereby the entry of an immigrant can be quickly notified to the health authority at the place of his destination in Libya.

At certain points on land borders of Libya special attention has to be given to protect Libya from the introduction of malaria. This problem is dealt with under the heading of "Malaria" in paragraph 5.8 above.

ii. 1968/1973 - Selection of sanitary inspectors of known ability and adequate education for special training on operation of health checking procedures for immigrants.

XIV PREPARATION OF HEALTH PERSONNEL

1. DEFINITIONS

The preparation of Libyans to staff the health services is the most important of all priority problems but programmes in this sphere will be effective only if the conditions of service of Government staff can be made more attractive (see paragraph 3.3 and 3.4 below).

For the sake of clarity it is necessary to give our definitions of terms used in the recommendations throughout our report.

Professional medical and para-medical workers

Para-medical: refers to health workers who are not medical officers but who carry out professional health duties in co-operation with and in support of medical officers.

Medical Officers: a professionally qualified (i.e. via university level medical school offering not less than a five-year preparation) practitioner of the art and science of medicine in all its branches.

Medical Officer of Health: a medical officer with post-graduate qualifications in public health, whose primary duty concerns development of community health services, including environmental health services and prevention of disease.

Specialist: a medical officer or dental surgeon who has post-graduate qualifications as a specialist in any branch of medical or health practice, including Public Health.

Dental Surgeon: a professionally qualified practitioner of the art and science of dentistry.

Nurse: a professionally qualified male or female nurse who has had not less than full secondary school education (i.e. secondary school leaving

certificate), and who has completed a minimum three-year basic nurse training programme in a recognized (by the State in which the school is situated) school of nursing.

Public Health Nurse: a professional nurse who has received additional post-graduate preparation and experience in public health, in a course of training officially recognized in the country of study.

Midwife: a professional nurse (see above) who has had, in addition, at least one year of nationally recognized preparation in midwifery.

Public Health Engineer: a university level graduate of engineering, who has had basic or post-graduate preparation in public health.

Public Health Inspector: one who has had not less than full secondary school education and who has completed a minimum three-year course of preparation which is officially recognized in the country where study took place.

Pharmacist: one who has been professionally qualified at university level, or the equivalent, in a school of pharmacy officially recognized in the country where study took place.

Laboratory Technician: one who has had not less than full secondary school education and who thereafter has received special training in medical laboratory technology for not less than three years in a centre officially recognized in the country of training.

Radiologist: a medical officer who has received specialist training leading to a post-graduate qualification in radiology recognized in the country where the qualification is awarded.

Radiographer: one who has not less than full secondary school education and thereafter has received special training in radiographic techniques for not less than three years in a centre officially recognized in the country of training.

Physiotherapist: one who has not less than full secondary school education and who has had thereafter special training in physiotherapy for not less than three years in a centre officially recognized in the country of training.

Occupational Therapist: one who has had not less than full secondary school education and who thereafter has had not less than three years' training in a centre officially recognized in the country of training.

Health Statistician: a medical officer who has post-graduate training in public health and a specialist qualification in statistics, or

alternatively,

one who has a university degree level qualification in statistics and post-graduate training in public health and health statistics.

Statistical Technician: one who has not less than secondary school education followed by special training in statistical processes.

Medical Nutritionist: a medical officer who has obtained a post-graduate degree or diploma in nutrition.

Non-medical Nutritionist: a science graduate from a university level institution, who has post-graduate qualifications in nutrition.

Health Educator: a university graduate who has obtained post-graduate qualification in health education.

Auxiliary: the term auxiliary worker is used by the United Nations family of organizations to designate a paid worker in a particular technical field, with less than full professional qualifications in that field and who assists, and is supervised by a professional worker.

Thus, for all the para-medical professions, concerning which a definition is given above, there are everywhere used on the permanent establishment of national health services auxiliary health workers with

less than professional qualifications but forming recognized cadres in the health service.

Such commonly used auxiliaries are described in the Third Report of the WHO Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel[1].

2. DISCUSSION

The Tables in Part IV, Annex VII, show the mid-1965 numbers of health workers in various categories. It has not been possible to identify their status in terms of our definitions above.

According to the information we have received, there are in Libya at present (1966) some 30 medical officers who are Libyan nationals, and there are some 180 Libyans abroad who are studying to become doctors. Similarly, our information is that in mid-1965 there was one Libyan dentist and six Libyan pharmacists in the country, and Libyan nationals studying overseas in 1966 numbered 33 in dentistry and 33 in pharmacy.

We are aware that there are a very few Libyans who have studied, or are studying for full professional qualifications (as defined above) in other para-medical professions, but the paucity of their numbers leads us to believe that in Libyan there is as yet no appreciation of the fact that the modern medical sciences demand professional cadres of para-medical workers and that a health service in the second half of the Twentieth Century cannot develop without them.

The barrier to rapid progress of development of health services is indeed the small output of secondary school certificated boys and girls, who only are eligible to undertake professional studies abroad.

In our opinion, the fact that boys and girls of less than secondary school level are becoming available for training as para-medical workers, should not be allowed to hide the need for full professional training. It is, we

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[1]World Health Organization, Technical Report Series, No. 109, 1956.

consider, superficial thinking to believe that good basic education is less necessary for other health professions than it is for medical officers, dental officers and pharmacists.

When the training of auxiliary cadre workers is undertaken it is necessary that the objectives should be fully appreciated.

Experience all over the world, including that of socio-economically advanced countries, shows that auxiliary level workers always will be needed in community health programmes. They are not needed to fill a temporary gap, they are required for permanent posts in a health service where their performance will be under the control and guidance of professionally trained supervisors.

Our proposals for formal courses of training for auxiliary health personnel presupposes that:

(a) the particular category of auxiliary health worker always will be required and can be offered a career;

(b) that category of worker will be under the supervision, close or distant, of a professional worker.

Auxiliary health workers may be needed also for shorter-term programmes with a specific target-dated objective, for example, in a campaign for the eradication of a particular communicable disease. Such workers can be given single purpose training for duties which do not require a permanent establishment of posts. Such auxiliary workers usually are given "in-service training" and cannot look forward, without further education and training, to career prospects.

3. PERSONNEL POLICIES

3.1 The Problem

The Ministry of Health has assumed nation-wide administrative responsibilities only since unification of Government services in 1963.

There has been little time for building up a consistent personnel policy, or in which to co-ordinate and distribute supervisory powers.

During our visits to health services throughout the Kingdom we were impressed and distressed by a too obvious lack of morale in the health services. There were, of course, outstanding exceptions in some places but, generally speaking, a sense of duty was remarkable by its absence.

We attribute this to two main factors:

(a) distant administration centralized in the Ministry of Health or Regional Controller's offices, exercised largely by lay administrators and without delegation of authority;

(b) the terms of service, including emoluments, of all grades of civil servants; these are non-competitive with conditions prevailing in private sectors, and do not give proper "weight" to technical training.

3.2 Personnel Administration

Local Supervisors and even Medical Superintendents of large hospitals have little delegated authority and no disciplinary powers of any kind over personnel of any level. This means in practice, that whatever his performance, good or bad, a staff member is neither rewarded nor corrected; his prospects remain unaltered.

We consider that a code of discipline should be drawn up and utilized, whereby the delegation of disciplinary powers is clearly laid down and limited according to supervisory posts, according to employees' service grades and according to nature of punishment permitted. It also is most important that a local supervisor should be supported by his seniors so that adverse or favourable confidential reports can be effective in improving performance.

It is realized with sympathy that no one would wish to place disciplinary powers over Libyan Government employees in the hands of foreigners; the problem, however, needs to be faced since the employment of foreigners in technical supervisory posts will be inevitable for some years to come. We can suggest only that it be clearly demonstrated that action will indeed be taken by Libyan authorities as a result of good or bad reports made by foreign supervisors.

Another circumstance which is bad for morale is the employment of an unnecessarily large number of "daily-paid" workers variously classed as watchmen, assistants, messengers, etc. We have seen a small health centre with over 30 such staff, over and above the very few necessary technical personnel.

We can appreciate the Government's concern that the high per capita national income should be properly distributed and permeate to the least privileged citizens. We have to suggest, however, that the employment of persons with no opportunity to give a needed performance deserving a regular wage is undermining the whole morale of Government service. A straightforward unemployment benefit would be preferable.

Yet another cause of low morale is the private practice that is permissible to professional Government officers. The almost inevitable result is a low standard of performance of Government duties in favour of the more remunerative private work. Private practice should be prohibited for Government servants but this can be enforced reasonably only if the Government's conditions of service are improved.

Yet a further circumstance affecting the performance of health staff is the lack of any means of reimbursement for overtime working; our personal experience has shown that Government servants actually resent being asked to prolong attention to Government duties over and above the offical working hours, which total only 36 hours per week. The absence

of overtime remuneration coupled with the grave shortage of technical staff can mean even that a sick person will be unable to obtain medical care at a Government centre except between 08.00 or 08.30 and 14.30 hours six days a week. It too often means also that essential diagnostic services such as for X-ray or laboratory investigations will be available only during the same hours and will be entirely closed down on Fridays and Public Holidays.

3.3 Terms of Service

The greatest problem, the solution of which deserves first priority, is unquestionably that of the preparation and recruitment of Libyan personnel to staff the health services. As pointed out in Chapter XI, paragraph 8, there can be no commendable short-cut to solving the problem but at least, the barriers hampering its solution should be removed.

The career possibilities and remuneration of Government Service at present offerable to professional or qualified Libyan health personnel, cannot and will not attract the better educated young men and women. Even taking into consideration unseen emoluments such as free accommodation, etc., governmental emoluments are non-competitive with those pertaining to the private sector, especially in the executive and professional grades.

To expect in 1966 that a Libyan, who has spent six or more years since leaving secondary school to become a fully qualified doctor, should enter Government Service in Grade III at £L. 1 020 per annum, is unrealistic and may be calamitous in its results.

It is indeed not a question only of attracting Libyan physicians into Government Service, there is also the even greater need of attracting secondary school leavers into the para-medical professions.

We have inquired as to the present employment of a large number of Libyans who, with foreign technical assistance, received special training

overseas prior to 1961; we have found that the great majority have left Government Service to find more remunerative employment in quite different occupations from those for which they were trained. It has been a tragic waste of previous endeavour but it should now stimulate urgent action to rectify the position.

3.4 RECOMMENDATIONS

For effectiveness, all our proposals for education and training programmes depend on a solution to this problem, a problem which has been raised already by the Under-Secretary, Ministry of Health. We realize that amendment of the conditions of service of employees in the health sector can be considered only as part of a general review of all departments of Government.

i. 1967/1968 - We appreciate the magnitude of the task, but are compelled to recommend that an authoritative body be appointed forthwith to revise salaries and allowances taking into consideration present day "market prices", the services needed by the community and to create a more flexible structure which will give appropriate weight to the number of years of school and university education and of post-graduate training leading to the qualifications needed for each category of posts. The same body could establish also rates of overtime remuneration.

There exists in Libya a problem already experienced in other countries, that there are posts presently filled by officers who have less than the desirable education and training; to meet this dilemma some such device as a "personal salary scale", not directly tied to post requirements, could be adopted as an interim measure until such officers will be otherwise accommodated.

ii. 1968/1973 - As soon as the emoluments of all categories of staff in the Health Ministry will have been satisfactorily revised, private practice of any kind should be prohibited to all Government Officers.

iii. 1968/1973 - Uniform rates of pay should be established for all foreign professional medical and para-medical staff, whatever their nationality, employed by the Government in Libya. Such rates of pay should give proper weight to years of post-graduate experience and to post-graduate specialist qualifications. All foreign medical and para-medical personnel should then be prohibited any form of private practice.

4. DOCTORS, DENTISTS AND PHARMACISTS

4.1 Training for Professional Cadres

An internationally recognized desirable ratio of practitioners to population is impossible to fix; one can only study the figures from other countries and decide, rather arbitrarily, on a minimum target for the foreseeable future.

For Libya we suggest that at this stage a target might be:

7 medical officers per 10 000 population

3 dental surgeons per 10 000 population

3 pharmacists per 10 000 population

This, for 1.5 million population Libya would require (figures in parenthesis are of the mid-1965 count of all nationalities): 1 050 doctors (409), 450 dentists (36), and 450 pharmacists (57).

The gradual replacement of foreigners by Libyans obviously is desirable, even on mid-1965 figures, this would require 380 Libyan doctors, 35 dentists and 51 pharmacists.

The gap to be filled is huge and although the sending of Libyans for training abroad is the only plan which can be adopted for the present, there exists full justification for the creation in Libya of a University Faculty providing for the training of doctors, dentists and pharmacists. To combine the three professional schools in one Faculty should help to make the best use of staff and facilities provided. We go further (see Chapter XIII, paragraph 3.7 and Part III) and recommend that associated with this project should be a Department of Nursing to prepare university-level graduates in nursing.

4.1.1 Medical Officers of Health

The environmental and community health services, somewhat neglected hitherto, deserve high priority for development. If our recommendations are to be followed (see Chapter XII, paragraph 3.2) many foreign medical officers with post-graduate qualifications will be recruited within the next seven years. It will be urgently desirable that as many Libyan doctors as possible should obtain post-graduate qualifications in Public Health through fellowships to study abroad.

4.1.2 Radiologists

To strengthen the radiology services and to initiate radiation control activities (see Chapter XIII, paragraph 2.1.7), at least two Libyan doctors should be chosen for studies abroad to obtain post-graduate specialist qualifications in diagnostic radiology and in radio-therapy.

4.1.3 Pathologists and Bacteriologists

If our recommendations on a Health Laboratory Service (see Chapter XII, paragraph 8) are to be implemented, a considerable number of expatriate specialists will have to be engaged. As soon as possible Libyans should be trained to replace them.

4.1.4 RECOMMENDATIONS

i. 1967/1968 - To create a medical school requires very careful preparation and planning, and we would stress that the planning period should not be hurried. An approach (at the World Health Assembly, May 1966) to WHO has been made already and we suggest that the first step should be the visit of a short-term consultant team to be followed by a nucleus of experts staying in Libya for detailed planning over the period 1968/1973. A realistic target might be to have all plans prepared for physical construction to start as soon as possible with a view to the opening of the new faculty sometime during the period 1973/1978.

It appears unavoidable that most of the teaching faculty will have to be made up of foreigners to begin with, and experience has shown that an agreement establishing a long-term link between the medical school of Libya and a foreign medical school, facilitates both staffing arrangements and the training of Libyan for the teaching posts.

ii. 1967/1973 - We understand that the placement of students in medical schools (where teaching is in English and/or Arabic) abroad is becoming increasingly difficult. We would suggest that the Government should make an offical approach to one or more suitable schools (e.g. in Malta) for an agreement whereby an annual quota of Libyan students will be accepted.

iii. 1968/1973 - Say, five Libyan doctors be given fellowships to study for post-graduate qualifications in public health.

iv. 1968/1973 - At least one Libyan doctor be provided with a fellowship to obtain specialist qualifications in radiology.

v. 1968/1973 - At least one Libyan doctor be found to undertake post-graduate studies in the field of clinical pathology and bacteriology. He should be given also an opportunity to study the organization of the Health Laboratory Service in Britain.

4.2 Training of Auxiliary Cadres

4.2.1 Auxiliaries for Medical or Dental Officers

In many countries the training and use of workers to undertake some of the functions of fully qualified medical officers or dental surgeons have given rise to real difficulties - administrative, psychological and social. Taking all available evidence into consideration, we cannot recommend that any action be taken to start or restart the training in Libya of this category of worker.

In many countries both professional and auxiliary workers are trained and used in the sphere of dental public health and are often called "dental hygienists". These workers represent a distinct para-medical profession and are not in the true sense auxiliaries for dental surgeons. The time undoubtedly will come when consideration should be given to developing a para-medical service of this kind, particularly in schools, but we make no recommendation for 1967/1973.

4.2.2 Auxiliaries for Pharmacists

We consider that the time has come to formalize the training of assistant pharmacists who at present receive their training largely on an in-service basis.

4.2.3 RECOMMENDATIONS

i. 1967/1968 - Action be taken to draw up an approved curriculum of training for assistant pharmacists to take place only in recognized centres where staff is adequate to permit teaching. The aim should be to establish a nation-wide standard of examinations leading to a recognized certificate and registration.

Proposals on this subject might be submitted to the proposed Central Health Studies Board (see paragraph 10 below).

5. PUBLIC HEALTH ENGINEERS AND PUBLIC HEALTH INSPECTORS

5.1 The Problem

We have been unable to identify in the Health Service any professionally trained public health (sanitary) engineers or inspectors (sanitarians). We are aware that two Libyan nationals have been trained professionally as public health engineers but neither is now working in Libya in the profession to which he belongs.

The crying need in Libya for experts in the field of environmental health demands urgent action for training of Libyan staff for environmental health.

5.2 RECOMMENDATIONS

i. Public Health (Sanitary) Engineers

1968/1973 - At least three civil engineering graduates from the College of Advanced Technology be provided with the means of studying abroad for a post-graduate qualification in public health engineering.

ii. Assistant Public Health (Sanitary) Inspectors

1967/1968 - Action should be taken through WHO for detailed planning to start three-year training courses for preparatory school leavers to become assistant public health inspectors. The planning should be to open the first school in Benghazi in 1968, and to establish schools in Tripoli and in Sebha during 1968/1973.

For implementation of this project a consultant should be engaged as soon as possible to advise on the detailed planning including that of tutorial and residential accommodation to be constructed during 1968/1973. The commencement of a first course of training in Benghazi need not await new construction; arrangements for class-room accommodation can be made in the Health Training Institute and students could be given an allowance to enable them to live privately in the town.

iii. Public Health Inspector Supervisors

1968/1973 - A selected number of existing staff in the sanitary inspectorate in Libya and a selected few from the graduates of the new school proposed in 'ii' above, should be sent abroad for post-graduate studies in public health.

6. NURSES, PUBLIC HEALTH NURSES AND MIDWIVES

6.1 The Problem

Nursing personnel constitute the largest group of workers in a Health Service. Because of the huge need for these health workers in Libya and the importance of the essential services they provide, we have devoted to Nursing a special report and set of recommendations, which can be found in Chapter XIII, paragraph 3 and Part III.

After examining figures from various countries, we make the suggestion that a desirable ratio of 20 nursing personnel (including midwives) per 10 000 population might be taken as a reasonable figure for comparison with what at present exists in Libya. The mid-1965 figure shows 1 656 nursing personnel, including professional and auxiliary categories and, of that number, 438 were aliens; this can be compared with a desirable 3 000. The "short-fall" is in fact worse than that because more than half of the present nursing personnel comprise a very low standard of auxiliary with a background of scanty and rather haphazard in-service training.

The need for strengthening, both in quality and in quantity, the community and hospital nursing services deserves high priority for action. In the context of our recommendations we should state here quite clearly that we find ourselves unable to classify the existing nurse-training schools in Benghazi and in Tripoli as able to produce a professional nurse (see our definition in paragraph 1 above). In stating this, we do not here criticise the standards of teaching; the fact is, we consider that 12 years of basic education with a secondary school leaving certificate as being the minimum from which further preparation can produce a professional nurse.

6.2 RECOMMENDATIONS

As confined to the preparation of Libyan nursing personnel, our recommendations which are elaborated in Part III, Chapter XII can be summarized as follows:

Schools of Nursing in Libya

i. 1967/1968 - A policy decision be taken for the adoption of a system of three levels of nursing personnel, both male and female, with training courses established in Libya to provide:

(a) University level preparation (4 years) of professional nurses to serve in teaching, administration and clinical specialty capacities.

(b) Auxiliary level preparation (3 years) of preparatory school leavers (this should be possible within the next seven years and until then the minimum should be full primary school education) to form the main cadre of nursing personnel providing patient care in hospitals and in the community. In due course, it should become possible to recruit secondary school leavers and then these training courses could be up-graded to professional level.

(c) "Aide" level preparation by systemized in-service training of boys and girls, who can read, write and count , to serve under supervision of doctors or nurses in hospitals or in specific preventive pro-grammes, such as tuberculosis control.

ii. 1967/1968 - The provision by WHO, if the Government so requests, of a senior and experienced Nurse Educator, to work with the Chief Nursing Officer in the Ministry of Health and, with the team planning for a university faculty of medicine; to plan a basic collegiate programme of nurse training at the university level; and to co-ordinate nursing education programmes in Libya.

iii. 1966/1967 - A policy decision to be taken with reference to our recommendation in Chapter XIII, paragraph 4.1 and Part III to abandon the present training of MCH Assistants and to use their existing training schools, staff and facilities in co-ordination with the existing nurse training schools, to prepare

all-purpose nursing personnel and to provide basic public health experience and additional training for the community nurse-midwife to whom we have referred in Chapter XIII as above.

iv. 1967/1968 - The provision by WHO, if the Government so requests, of an experienced nurse educator to assist with the co-ordination and integration of the auxiliary nurse education programmes and to guide the formation of methodical in-service training programmes for the nursing aides to which reference is made above.

v. 1968/1973 - Having agreed to the policy proposed at our recommendation 'i' above; to strengthen the Schools of Nursing in Tripoli and Benghazi, to provide a uniform training on a common curriculum (with the exception only of midwifery for girls and public health for boys) with national examinations, and to open additional schools:

- One for male nurses in Tripoli
- One for female nurses in Benghazi
- One for male nurses in Sebha
- One for female nurses in Sebha

vi. 1968/1973 - To decide on and establish facilities in approved centres for the training of nurse aides.

vii. 1966/1967 - The above proposals will necessitate augmentation of the number of nurse educators and construction of residential and teaching accommodation. Should our proposals be agreed, a consultant as referred to in recommendation 'iv' above must be requested as soon as possible to advise on the number of teachers needed, on means of recruitment and on the building accommodation required.

Fellowship Studies Abroad

viii. 1967-1968/1973 - An effort should be made to find male and female students (say, five boys and five girls to begin with), who have completed secondary school or who have graduated in arts or in science at the University, to undertake studies abroad, preferably with a university school of nursing, leading to graduation as professional nurses.

ix. 1967-1968/1973 - Selected nurses who have graduated from the School of Nursing, Tripoli, and from the Health Training Institute, Benghazi, should be sent overseas for additional post-basic training. Some countries will provide special courses for international students who do not possess university entrance educational level.

x. 1968/1973 - To prepare more such nurses for further studies overseas, formal arrangements should be made whereby both nursing students and nursing personnel in service may be able to obtain regular additional tuition so as to raise their level of general education.

7. MEDICAL LABORATORY TECHNOLOGISTS

7.1 The Problem

As far as we have been able to ascertain there are very few, if any, Libyan laboratory technicians who hold what can be regarded as professional qualifications.

The need for well trained laboratory technicians is urgent and it is necessary to say here that we consider the training course at present provided in the Health Training Institute, Benghazi, is far too short to be effective. In the hospitals and laboratories in Libya in which these newly trained laboratory technicians are working, we have been told

invariably that the results of the tests they perform cannot be trusted. It is useless to have laboratory technicians unless one can trust their findings.

7.2 RECOMMENDATIONS

i. 1966/1973 - Of the students at present abroad studying to become doctors, there may be a few who cannot "make the grade" for entry to, or during medical school studies. An effort should be made to divert such students into training in the country of study as medical laboratory technologists.

ii. 1967/1968 - The present short course of training for laboratory assistants should be discontinued. The course should be upgraded to a three-year course of training for preparatory school leavers only.

iii. 1968/1973 - A second school for assistant laboratory technicians should be created in Tripoli at the same standard and with the same examinations as in Benghazi.

8. PHYSIOTHERAPISTS

8.1 The Problem

Physiotherapy services are conspicuous by their absence in most of Libya's hospitals and we have suggested in Chapter XII, paragraph 3.2.3 that a consultant be requested to advise on the organization and development of physical rehabilitation services. Even without such an organization a start should be made towards the training of Libyans as professional physiotherapists.

8.2 RECOMMENDATION

1968/1973 - Two or three graduates from the University's College of Science be given facilities for training abroad as professional physiotherapists.

9. RADIOGRAPHERS

The need for well trained radiographers and assistant radiographers is urgent.

RECOMMENDATIONS

i. 1966/1967 - WHO should be consulted for expert advice on the creation of training facilities as near professional level as possible.

ii. 1966/1973 - As suggested above for laboratory technologists, attention should be given to diverting Libyan students abroad, who fail to "make the grade" in medical studies, into training as professional radiographers.

iii. 1965/1968 - We would propose that subject to advice received as a result of the recommendation at 'i' above, three-year training courses for preparatory school leavers be started in Beida and in Tripoli. WHO might be requested to provide teachers.

10. BOARD OF HEALTH STUDIES

10.1 Discussion

In our preceding recommendations, we have proposed the establishment, before the end of the Second Five-Year Plan 1968/1973, of several schools for the training of auxiliary health personnel, viz:

- Schools for Nursing
- Schools for Environmental Sanitation
- Schools for Laboratory Technology
- Schools for Radiography
- Schools for Pharmacy

and have suggested that all schools should provide three-year training courses for preparatory school leavers or, temporarily only, for primary school leavers.

We consider that great advantages would accrue from the establishment of an authoritative body to guide the development of these programmes, so as to give desirable co-ordination and to ensure nationwide comparability of entrance requirements, standards of training and of examination.

We envisage, for example, that if all training courses are for three years, the first year of basic studies might be according to a curriculum with probable resulting economy in staff and facilities.

We envisage that such a body would consider also the utilization of personnel so trained in order that graduates from these schools may be assured of an adequate and attractive career with safeguards against competition from lesser trained personnel.

10.2 RECOMMENDATION

1967 - The establishment of an authoritative body which might be called "The Board of Health Studies". The permanent membership of the Board might be composed of:

- A senior medically-qualified representative of the Ministry of Health
- A senior representative of the Ministry of Education
- A senior medically-qualified representative of Hospital Services
- A senior medically-qualified representative from Government or Municipal Public Health Services.

It would be preferable that the two first-named of the above should be the same persons as will be sitting on the proposed Board of Nursing (see Chapter XIII, paragraph 3.3 and Part III).

The Board of Studies intentionally proposed as small in membership would, of course, be expected to call for the attendance, as required according to the Agenda, of various representatives of the teaching faculties, or of the utilizing branches of health services.

PART II

ENVIRONMENTAL SANITATION

by

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March - May 1966

I INTRODUCTION

1. APPROACH TO THE STUDY OF ENVIRONMENTAL SANITATION IN LIBYA

The fourth report of the WHO Expert Committee on Public Health Administration entitled "Planning of Public Health Services"[1] gave in its Annex I a "List of Health Provisions" as services provided directly by health authorities or jointly with other authorities; the following is an extract of the part of the list referring to Environmental Services:

"1. Environmental

(1) Housing
(2) Town and country planning
(3) Water supply
(4) Drainage and disposal of excreta
(5) Disposal of sewage
(6) Disposal of refuse
(7) Protection against river pollution
(8) Control of insects, rodents and other disease vectors
(9) Supervision of dangerous trades and trade wastes
(10) Control of atmospheric pollution
(11) Control of radiation hazards to health
(12) Control of noise".

Of the above mentioned services in the field of environmental sanitation the existing Public Health Law of Libya of 27 May 1958 includes under Article (3) concerning "Public Health Executive Regulations" the following matters to be regulated by regulations issued by the Council of Ministers on the request of the Ministry of Health:

"1. Control of epidemic and infectious diseases and prevention of.

2. Development of domestic water supplies, collection, storage and distribution of.

3. Disposal of used waters and refuse.

4. Sanitary conditions of buildings.

5. Cleanliness of dwelling places, public and private roads.

7. School health and inspection of educational institutions.

[1]World Health Organization Technical Report Series No. 215, 1961.

8. Licensing of public establishments and establishments likely to cause dangers to safety, or disturb the tranquillity, or injurious to health.
9. Slaughter-houses, butcheries and tanneries.
10. Sterilization of milks.
11. Control of food in shops and market.
14. Construction of hospitals, ambulatories and management of.
15. Control of public baths and laundries, and control of latrines in Mosques.
17. Earth filling, drying or drainage of pools, swamps or any stagnant waters".

As can be seen, the existing Public Health Law of Libya enables the operation of most of the environmental services recommended by the WHO Expert Committee as programmes to be provided by the Ministry of Health. In fact, and as will be shown in the following pages, most of these programmes remain to be developed by the Ministry of Health or are partly undertaken by other Ministries with little official co-operation from the health services. The indispensable sanitary control which is the primary responsibility of a public health service is hardly in the first phase of development. The present weakness of this part of Libya's health services is reflected as a general poor state of environmental health throughout the country and shown by sanitary controls proving inadequate to promote improvement.

In the absence of reliable figures of vital and health statistics it is hard to appraise the exact influence of the existing state of environmental sanitation on population morbidity and mortality. However, taking the results of scientific investigations of such relationships in other countries under similar conditions, a general assumption can be made with sufficient justification. In the case of Libya, these relationships follow the same pattern as in other developing countries in the world at present, whereby the micro-biological environmental factor dominates the state of health, with the usual differences between strictly urban communities and those in suburban and rural

areas, as a result of better control of such environmental factors in an urban setting.

In trying to ascertain the actual state of environmental sanitation in Libya, the writer was compelled to accept, as often before, the "descriptive" method. This involved a search for information on the various factors forming the Libyan environmental health, by way of survey, interrogation, review of existing literature and reports and by personal contacts. Through these means the short period of the assignment from 21 March to 15 May 1966 has been put to most effective use.

2. SCOPE AND METHODS OF THE ENVIRONMENTAL SANITATION SURVEY

In the limited time available from 21 March to 21 April 1966, during which the regions of the Southern and Eastern Provinces were visited by the author (and other members of the WHO health services planning team), it was not possible to make detailed or extensive inquiries. It was possible to assemble existing information from many persons and agencies and to interpret the information for the purpose of the survey.

Some difficulty was encountered in obtaining precise data. It is therefore possible that some erroneous statements may be incorporated in this report, and it must be accepted that all the information included is the best that could be obtained in so brief a survey.

3. SOURCES OF WRITTEN INFORMATION

Of available sources of written information on the subject of environmental health and of particular fields of sanitation in Libya two kinds were used: mimeographed papers of United Nations' and other agencies' experts, and printed publications. The United Nations' papers used besides the ones cited in the text of the report itself are listed below and for more complete information on the subject of environmental sanitation the reader is referred especially to the paper by Mr. Morse.

The United Nations documents were:

- C.A. Morse: A Report on Environmental Sanitation in Libya, UN Mission in Libya Report Series No. 13 A/AC.32/TA.36 of 2 December 1952.
- Extract from A/AC.32/TA.23/ Rev. 1 (4 April 1952).
- J. Buxell: Report on Sanitation Training in Libya. Memorandum of 31 January 1955 to Regional Director of EMRO.
- A. El Moribi: The Present Status and Programme of Environmental Sanitation in the United Kingdom of Libya, paper for Regional Seminar on Environmental Sanitation, EM/ES.Sem/10 of 10 October 1956.
- El Halawani, A.A.: A short summary of survey of Bilharziasis in the Kingdom of Libya, March 1966, preliminary report.
- Yasuraoka, K.: A brief summary of survey of snail vectors of Bilharziasis in the Kingdom of Libya, March 1966, preliminary report.
- Van der Kaay: Summary of Malaria situation in the Southern Region of Libya 1966, preliminary report.

"The Economic Development of Libya" (Johns Hopkins Press, Baltimore 1960, sec. 1963), a report to the International Bank for Reconstruction and Development, has been most useful and informative, especially for problems treated on pages 30, 100, 288, 396, 508, of that publication.

Publications prepared under Libyan-American Joint Project 670-11-190-089, Assistance to the Ministry of Agriculture:

- Tileston, F.M., Jones, J.R., Brown, L.A.: Planning and Policy Guidelines for Water and Soil Development in Libya, Agricultural Report No. 3., Tripoli, 1963.
- Tileston, F.M., Mclaughlan, C.: Water and Soil Development, Concrete Canal linings on Small Farms, Libya, Agricultural Report No. 3c, 1964.
- US-AID Agricultural Staff: Guidelines for Water and Soil Conservation Development in Libya, Agricultural Report No. 3d, 1964.
- Fletcher, H.C., Tileston, F.M.: Water and Soil Development, Watershed Management Flood Protection for the Wadi Gattara, Libya, Agricultural Report No. 3e, 1964.
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Publications of the U.S. Operations Mission to Libya:

Stewart, J.H.: Land and Water Resources of Tripolitania (A Measurement of the Land and its Potential). U.S. Operations Mission to Libya 1960.

Other literature used included:

- Kingdom of Libya Ministry of Planning and Development: 5-Year Economic and Development Plan, 1963-1968, Tripoli.
- Villard, H.S.: Libya, the New Arab Kingdom of North Africa, Cornell University Press, N.Y., 1960.
- Kubbah, A.A.Q.: Libya, its oil industry and economic system, Rihani Press, Beirut, 1964.
- Mission Scientifique du Fezzan 1946/47, Tunis Institute, Printed in Tunis.
- Despois, J.: Géographie humaine (Mission Scientifique du Fezzan) 1944 - 1945, Institut de Recherches Sahariennes de l'Université d'Alger.
- Mueller-Fenga, R.: Contribution à l'Etude de la Géologie, de la Pétrographie, et des Ressources Hydrauliques et Minérales du Fezzan, 1954. Imprimerie Officielle de lá Tunisie, Tunis.
- El Meselati, Kh., Abdallah, S.Y.: Libya and malaria, Ministry of Health, Kingdom of Libya, Nov. 1964.

II MOST IMPORTANT FIELDS OF ENVIRONMENTAL SANITATION IN LIBYA

1. HOUSING AND TOWN PLANNING

1.1 Housing

As in most North African countries, housing in Libya shows two distinct types: urban and rural. Urban housing, especially in Benghazi and Tripoli, also is of two kinds: high standard housing (villas, flats) concentrated in the central part of the city, and low standard, or sub-standard housing ("hosh", shacks) in the suburbs. Rural housing is dominated by packed earth or stone houses of local design and construction; the nomadic part of the population live in tents. A special feature of Libyan rural housing is the house made of palm branches, which developed in the past from the insecurity of settlement and which now is rapidly disappearing, and the troglodyte's cave persisting as satisfactory housing in the Western Provinces' Jebel Gherbi. Number and percentage of households by the above cited types of housing and by the ten muqataas are shown in Table 1.

Evidently the relative merits of the types of housing vary, be it from the point of view of extremes of weather, especially heat and cold, or consideration of Libyan cultural patterns and customs, use of local materials, etc. A "hosh" is usually a single storey dwelling-house of thick walls, minimum of apertures, with a courtyard and layout providing for a separate guest room as well as space for regular family needs and for seclusion of womenfolk. The "hosh" provides complete isolation from neighbouring houses. Sanitary facilities are outside in the courtyard encircled by compact, high walls. The quality of a "hosh" varies greatly but an appreciable percentage are dwelling houses of very good quality. Shacks are of the same kind as in most squatter suburbs in other countries and provide the most difficult problems of environmental health for Tripoli and Benghazi. The worst conditions exist probably in Tripoli, although Benghazi is closely following

TABLE 1

Number and Percentage of Households by Type of Housing and by Muqataa[1,2]

Muqataa	Villas or Flats		"Hosh"		Shacks		Caves		Tents		TOTAL
	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Tripoli	7 361	9	45 730	57	24 077	30			2 260	3	80 439
Benghazi	1 943	4	29 366	53	7 402	12			15 731	30	55 175
Sebha	82	1	9 077	91	302	3			540	5	10 035
Gebel Gherbi			17 105	45	2 968	8	10 065	26	7 886	20	38 342
Zawia			16 690	39	24 346	57			1 100	3	42 511
Homs			14 609	47	2 358	7			14 133	45	31 617
Misurata			21 564	69	1 100	4			8 248	27	31 190
Derna	338	2	6 896	42	1 870	11	288	2	6 931	42	16 520
Gebel Akhdar	190	1	5 500	30	3 380	19	513	3	8 541	47	18 278
Ubari			5 260	67	2 439	31			148	2	7 883
TOTAL	9 914		171 797		70 242		10 866		65 518		331 990

[1]Table composed from unreleased tabulation prepared by the Ministry of Housing, Housing Technical Department.
[2]Source: Census 1964.

as it is said that of its 170 000 inhabitants about 70 000 are living in slums. Slum dwellers are mostly from that part of the rural population migrating to urban areas. In the recent past there were attempts to cope with such development by the construction of cheap or "popular" housing for resettlement of slum dwellers. In Tripoli single and two-room dwellings (the latter built in clusters of four) have been constructed on the outskirts of the city. All housing units were of the same size and little scope was given for accommodation of different size households, although as can be seen from Table 2, variations of household sizes in Libya exist in significant proportions ranging from 2 to 7 family[1] members in the general population registered by the Census, and possibly from 2 to 10 or more family members in the rural population (see Table 3). Layouts for these "popular" houses were made without consideration of traditional social habits. As can be expected, this kind of housing has not solved the problem; slums continue to exist and increase.

Special merit seems to attach to the troglodyte caves from the viewpoint of best accommodation to local environmental factors. They are considered more comfortable in both summer and winter than the newer houses built on the ground - which raises the question as to whether a scientific basis for new housing layouts and construction exists at all. The cave dwellings show an intelligent use of space and functional arrangement, and are being well adapted to the modern life in Libya in spite of the fact that their origin dates back to thousands of years. Also the tents, although usually considered as a kind of provisional housing, suit the nomads very well and, again, are said to be very comfortable for adverse climatic conditions, allowing for good ventilation in summer, even in the desert, by opening the windward and leeward sides of the tent for the prevailing winds to pass, and for good thermal conditions inside the tent in winter by closing all tent sides tightly.

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[1]Libyan family is composed mostly of 2-3 generations, the sons being obliged to bring their wives into the house of parents.

TABLE 2

Study of Household Size and Housing Structure[1,2]

No. of persons in household	1	2	3	4	5	6	7	8	9	10
No. of households	20 003	48 528	52 973	53 040	47 909	39 190	28 567	18 367	10 503	13 110
Percentage of households	6.0	14.6	15.9	16.0	14.5	11.8	8.6	5.5	3.1	4.0
Types of houses recommended	2 rooms		3 rooms		4 rooms		5 rooms		6 rooms	
Minimum type accepted	4 rooms									

[1]Table composed from unreleased tabulation prepared by the Ministry of Housing, Housing Technical Department.

[2]Source: Census 1964 - total number of households 331 990.

TABLE 3

Comparison of Percentages of Households by Family (household) Size in 1951 and 1964[1]

No. of persons in household	1	2	3	4	5	6	7	8	9	10
Percentage of households in 1964	6.0	14.6	15.9	16.0	14.5	11.8	8.6	5.5	3.1	4.0
Percentage of households in 1951[a]			12.0[b]		15.0	16.5				13.5[c]

[1] Sources: Sample survey of M.R. El Shanawany: "The Organization of the Vital Statistics Services of Libya", United Nations Technical Assistance Mission to Libya, A/AC.32/TA. 18 September 1951 and Census 1964.

[a] Survey was made for a settled rural population.

[b] All families from 1 to 3 persons in household.

[c] All families from 10 and more persons in household.

WHO EMRO

To cope with the problem of construction of low cost housing, the International Bank's Mission suggested: (1) that before construction, careful plans be drawn up for community settlements in accordance with social customs including a community centre, mosque, shops, roads and trees; (2) maximum use of local materials and in rural areas, application of self-help methods; (3) amortization of capital investments in twenty years, and rent levels stabilized around one tenth of family's income. The Mission not only placed such projects very high in the list of priorities but attached "the greatest importance to low-cost housing projects as a means of promoting the population benefit from the increased income accruing from foreign aid and oil revenues". Government pioneering of such projects was recommended with "private enterprise coming in to help at a later date, when the present building boom subsides".

While slums of shacks represent the worst housing in Libya, rural housing as represented by the "hosh" is of different quality and most of it needs to be improved or exchanged for new construction. Because of the wide dispersal of rural housing and greatest number of houses, it presents perhaps a more difficult task than the solution of slum housing. Meanwhile, the Government has accepted in October 1965 a vast programme of housing construction known as the "Idris Housing Project" which will in a way tackle both problems, slum housing and rural housing, simultaneously and, it is hoped, more efficiently. This project is for construction of 100 000 houses to eliminate the housing shortage and to raise the standard of life. About 60% of houses will be built in agricultural areas, there to create conditions more attractive for agriculturists and to control in this way also the existing trend of migration to cities. Though highest priority has been given there are two main delaying factors: lack of labour and building materials, and lack of master plans for towns and villages. At present the project calls for the immediate execution of 7 500 houses in some 180 places

throughout Libya shortly to be followed by another 10 000. Houses are of standard type, with 3, 4, 5 or more rooms and apartment buildings are planned in Tripoli and Benghazi. The housing designs were prepared by the architects of the recently formed Ministry of Housing (formerly included in the Ministry of Labour and Social Affairs). They are now standardized on a minimum four-roomed house (earlier, the minimum was three rooms), even though there are good hygienic and other reasons (as is seen from Table 2) for three-room, and even two-room houses, always accepting that a guest room is an indispensable addition to the space actually needed by the family. Houses are surrounded by walls to ensure privacy. Construction of these houses is financed by the above-mentioned Ministry and execution is the task of the Ministry of Public Works. The same is the case with the rehabilitation of old Italian farm houses and construction of farm houses in new settlements both developed by NASA (National Agricultural Settlement Authority).

The Ministry of Housing has been advised by the UN/TAA Centre for Housing, New York, and has now included in its organization a division for research. Local and new building materials will be investigated. As soil stabilization has a long tradition in the country it is hoped that it will receive due appreciation and eventually the necessary scientific treatment. The Research Division will also investigate standardization in housing and if possible prefabrication. Main obstacles for prefabrication now are the lack of qualified labour and the lack of building materials which cannot be imported speedily, i.e. cement, steel, glass, etc. The Division for programming, planning and design will have to prepare new building codes. One of the most needed codes to protect health would be the plumbing code; the one now enforced is obsolete.

The Ministry of Health has little contact with the Ministry of Housing and therefore has no influence on housing design, etc. Some influence

could be exerted on the regional and peripheral levels and in big cities where municipal medical officers of health are members of commissions for issuing permits for construction of private dwellings, but the procedure is taken more or less as a formality. Also most builders evade asking for permits because the fines for non-compliance with the law are usually maximum £L. 5 (or, in cities, £L. 50).

1.2 Town Planning

Town planning in Libya certainly existed from remote times, as this is revealed by the excavations of the old city of Germa in the Southern Provinces, of Greco-Roman cities in the Eastern and Western Provinces, and as it is preserved in some very old Arab towns and villages, such as the Southern Provinces towns of Mourzouk, Brak and others. These old Arab towns show signs of empirically acquired town planning principles of general value for this country (wind breakage, shading, greenery and use of water, zoning, and housing with its extraordinary intimacy preserved, etc.)[1] and as they still exist, the main features of these towns and villages should be preserved under all circumstances. Whenever possible they should be totally preserved as historical monuments, the more so because they are very picturesque and might play the same role in the attraction of tourism for Libya, as Greco-Roman ruins are doing now. Archeologists, architects and artists should take part in getting the support of public opinion for the need of this preservation, because it is obvious that architectural structures of such poor building materials as mud-brick, rammed earth, etc., do not appeal to most people wishing to conform with modern "civilization", as soon as possible.

Another stage of town planning, or rather city planning which remains visible is from colonial times and most recently from the Italian colonial government. Unfortunately, most of it is a copy of the Italian home pattern or of European Nineteenth Century practice and is characterized

[1]See also work of J. Despois in the cited literature.

by pompous civic centres, seaside promenades and similar developments, with a more or less consequent gridiron plan for housing quarters. Town planning in this country needs to provide, primarily, protection from sun radiation, heat and cold, or winds especially "ghiblis" (the sand-storms from the desert); there is little evidence that this was much the concern of the planners of this period in Libya. Greenery which is such an important factor in diminishing the effects of sun radiation is rarely applied even in the most frequented parts of the cities of Tripoli and Benghazi; green belts around cities and towns to protect them from prevailing winds and improve climate do not exist at all. Surely it is not the scarcity of water that has prevented this development in the urban areas of Libya. Such measures need expert intervention and experimentation with the vegetation most efficient to fulfil different purposes and especially for the purpose of possible control, jointly with other appropriate town planning means, of the impact of ghiblis.

Little is seen of new town planning in Libya. The new town of Barce is under construction and its master plan, made by a foreign firm, shows the western tendencies of town planning transplanted to this country. The country has just launched a town planning programme which might be considered as a unique example in the world of town planning practice. It is no doubt one of the most important projects the country has initiated since its independence. It came as the decision of the Government this year that prior to launching the "Idris Housing Project" the country should be surveyed, mapped and planned. For this purpose five planning regions are foreseen which will represent the division of the country covering some 30 master plan areas, including Tripoli, Benghazi, Beida and Barce. In addition, 154 general layout plans will be prepared. The Ministry of Planning and Development has already, in March 1966, contracted four consulting town planning firms for preliminary studies. These studies should be ready in a year's time. All modern facilities, such as aerial

photography of the settlements, etc. will be provided. One year more is foreseen for explanatory meetings, adjustments, etc. before implementation.

Unfortunately, in this whole process, important also from the point of view of the public health, the Ministry of Health has not been able to play the role it should and is answerable for.

2. DOMESTIC WATER SUPPLIES

2.1 Water reserves and water law

Sources of water in Libya can broadly speaking be restricted to underground water at least for use in public water supplies.

Western Provinces

In the coastal zone the water table of the first aquifer is found in depths 5-25 metres below the surface, of the second aquifer in depths 25-45 metres below the surface, and at least one artesian aquifer exists at a greater depth. In the coastal zone near Misurata the water table of the first aquifer is also 5-25 metres below the surface, and the second is artesian about 300 metres deeper, but both these waters are brackish.

Eastern Provinces

In the eastern escarpments ground water emerges from a number of springs, several of them of appreciable yields. The coastal zone of Benghazi has shallow ground water but "sweet" water is rare, usually a thin layer on top of brackish water. In Gebel Al Akhdar are found springs.

Southern Provinces

The water table of the first aquifer usually is (in Sebha and oases) 5-10 metres below surface. Water is sometimes brackish. Around Brak and Traghen artesian aquifers exist 65-100 metres below the surface with positive pressure of water and in great quantities.

While most urbanized areas do get or could get enough water of good quality from the above sources, it is true that there are a few urbanized or settled areas where there is practically no water, e.g. the town of Agedabia, where the supply of water will have to be secured most probably by desalinization of sea water. There are also cases where water is transported by a supply pipeline to considerable distances, such as drinking water for Tobruk from Derna pumping station - about 160 km.

Taking aside a few favourable circumstances as regards abundance of water for domestic water supplies, there is in Libya a scarcity of water which must be reckoned. This fact has been emphasized by many authorities and in different periods. It calls for a definite water economy. The International Bank's Mission, in the publication cited, also has recommended a series of measures to this end. In fact, current socio-economic development of the country is accompanied with ever greater demands on ground water reserves, with a steady threat of exceeding their recharge rate, to the greatest extent dependent on scarce and erratic rain. It is true that drillings undertaken during past years have led to discoveries of new underground water reserves, but these discoveries have not as yet changed the previously described picture, not to speak of the quality of water newly found.

For the future, the possibility is of new sources of water to be developed by a systematic policy of retention of flood waters, by more economic methods of salt water conversion and perhaps cloud seeding or monomolecular films over surface water of future impounding reservoirs. Geological and hydrological research may disclose new surface and underground water reserves. At present there is the known underground water and its limited amounts, as well as flood waters presently lost, which must be exploited economically.

Proposed measures for water economy in Libya may be enumerated as follows:

- economic soil and water conservancy techniques - a joint endeavour to be shared by the government, the agriculturalist and pastoralist;
- laws regulating use of water and land tenure;
- re-use of water;
- prevention of misuse of water.

Of these methods only a few will be discussed here. First of all the water law. The International Bank's Mission has underlined the need of such a law from several standpoints. They were: (a) the existing land property relations and of what is on or in the land, (b) over-exploitation of ground water resources "which in Tripolitania and Fezzan has already led to serious lowering of the water table level around Tripoli, and to salt water intrusion along the coast, and also in the Shatty Valley of the Fezzan", (c) indiscriminate artesian well-boring "which has caused wastage of water and deterioration of soil". Because of foreseen difficulties of reconciliation of many existing and conflicting claims of ownership and usage of water with the Government's control and planning the Mission recommended the water law to contain:

- assertion of state ownership of water;
- insistence on the use of water subject to control and licence;
- provision for the above activity to be done by the legally constituted Regional Control Boards under rules and regulations approved by the Federal Government;
- assurance for the decisions of the Regional Control Boards always to be subject to a right of appeal.

Actually such a law, or more exactly a Royal decree concerning Water Law was promulgated on 28 September 1965. This decree, which is to be found under Appendix I provides for the formation of the "Supreme Water Board", under the Minister of Agriculture as Chairman and members representing the Ministries of Health, Industry, Planning and Development, Public Works, Interior and Agriculture. The Board should meet every three months. Its competence is under Article (2):

ad. 2) To formulate a general policy of developing the country's water resources whereby the country's water requirements for all purposes are met;

ad. 3) To study and accept proposed projects for the exploitation of the country's water resources;

ad. 4) To review and accept any water legislation proposed by governmental bodies.

Under article (3) it is said that "All matters relating to research, investigation and exploitation of water resources shall be implemented by the Ministry of Agriculture. Further, (article 4) the same Ministry is made responsible for granting permits for utilization of water, exploration for water, and drilling of water wells. Revocation of permits is foreseen for permit holders who, for a definite period (two consecutive years) do not utilize water, who abuse it or expose to danger or violate permit conditions, who relinquish the permit to other persons without official approval. Of importance for the country is also the provision of article (7) by which "the Supreme Water Board may declare any area under a system of restricted distribution when the quantities of water in that area have diminished, or for any other reason dictated by public interest".

Re-use of water, e.g. sewage purification and its use in irrigation, is already considered in Libya as a necessary country-wide policy and adequate programmes in designing of new sewage purification plants are followed. No practical application exists as yet but may soon be present. Although this trend in water economy will play a decisive part in conservation of water in the case of purification of sewage from a few big Libyan cities, more could be achieved by simpler sewage purification practices applied to the sewage of numerous small towns and villages, which will have soon, or already have, piped water supplies. For this purpose it would seem reasonable to start in time with some experimentation on pond stabilization of sewage in Libya.

2.2 Competences for Provision, Economy and Laboratory Examination of Water

According to the Decree concerning Water Law, the Ministry of Agriculture is at present carrying most of the responsibilities for providing water and economizing with its use. All research, investigation and exploitation of water resources are concentrated in this Ministry. It employs a number of surveyors, geologists and hydrologists for these purposes. They are working in Tripoli and in regional offices of the Ministry. The regional offices perform drillings of deep wells and issue permits for utilization of them, as well as for exploration for water and drilling of water wells by private persons. The Ministry controls through regional offices the use of deep wells according to the permits granted. The main concern of the Ministry as regards water is, of course, its availability for irrigation.

Concerning domestic water supplies, the responsibility lies with the Ministry of Public Works and its regional offices. This Ministry depends for sources of water, preliminary investigation and research on the characteristics of such sources, etc., on the Ministry of Agriculture. In its own competence the Ministry of Public Works has the responsibility of preparation of projects of public water supplies for tender, execution and operation and maintenance. Projects are usually made by consulting engineers' firms. Execution is by contractors - minor works by Libyans, major by foreign firms. Operation is exclusively under regional Public Works offices for all water works, which now exist in towns and villages and for the city of Benghazi. (This has also been done following recommendations of the International Bank Mission). The only exception is the city of Tripoli water works, which is operated by the Municipality. For the upkeep of installations, regional offices maintain stocks of spare parts for pumps and motors, stocks of pipes, valves, accessories, etc., and have permanent technical personnel on their staff such as mechanics, plumbers, skilled workers. For example, the regional office of Public Works at Sebha has

permanently employed four mechanics for repair of pumps, motors, etc., and ten technicians, mostly plumbers.

A semi-governmental agency closely connected with the Ministry of Agriculture is the NASA (National Agricultural Settlement Authority), which has been functioning only a short time. This agency is also interested in the provision of water for irrigation and other rural needs, in connection with its land development and settlement activities and therefore in the economy of water. For this purpose it performs, at present, surveys of government farms and tribal lands (the Ministry of Agriculture is in charge of private lands). In the Western and Eastern Provinces it is engaged in repairing Greco-Roman cisterns, construction of new, large cisterns and house cisterns and, in general, in water supply for irrigation, for animals and for people in these rural areas.

The three Ministries are planning to have in Tripoli, and/or in their regional offices, water and sewage, or water and soil laboratories. The Ministry of Public Works, with regard to such laboratories, would be following the technological processes in treatment of water of small and middle capacity water works, and of the quality of raw sewage and of sewage effluents from small and medium-sized sewage purification plants. Big water works and sewage purification plants of Tripoli and Benghazi would have their own technological laboratories. The Municipality of Tripoli is already prepared to open its water laboratory within a year. Public Works laboratories would include physical, chemical and biological analyses. The regional office at Sebha expects to start its own laboratory in two years' time, equipment having already been ordered. The Ministry of Agriculture has a chemical laboratory in Tripoli and is planning, together with NASA, to open soon a new laboratory for irrigation water and soil studies at the NASA regional office at Benghazi.

The Ministry of Health has in its central clinical laboratory at Tripoli the possibility for making laboratory examinations of water, both chemical (in the separate laboratory unit for food control) and bacteriological, but it is called to do mainly bacteriological analyses of water. It serves the departments of Health, Public Works and others for this one purpose. A similar laboratory at the Benghazi hospital is doing a small amount of work in bacteriological examination of water (not chemical), for the departments of health of the region. Sebha hospital laboratory occasionally does the same.

2.3 Use of Water in piped Water Supplies

Around 1960, there were, as registered by the International Bank Mission, about 60 small towns and villages with piped water supplies (40 in the Western Provinces, 10 in the Eastern Provinces, 5 in the Southern Provinces), besides the cities of Benghazi and Tripoli water works. Since then the number of new piped water supplies in Libya, and of extensions of the old ones, has increased appreciably. In the Southern Provinces in 1964 about ten piped village water supplies were constructed, with more than twenty planned for construction in the next 2-3 years.[1] In the Eastern Provinces two regional water supplies are under construction: Debussia-El Marj and Derna-Tobruk, with the water supply pipeline from the Pumping Station above Derna to Tobruk already executed. Besides this, the Tripoli and the Benghazi water works are to be supplied with additional quantities of water as soon as possible.

Parallel with this trend goes the increase in per caput demand for water, which for the existing water supplies is already approaching urban per caput demands abroad. Table 4 gives some data on demands of water in Libya.

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[1] See also Appendix II.

TABLE 4

Approximate daily use of Water
from Water supplies in Libya in 1964

City or town, or region	gallons/per caput/day
Tripoli	53
Benghazi	33
Beida	47
Derna	28
Tobruk	25
Fezzan[1]	25

[1]For the Southern Provinces, as an agricultural region, public water supplies are based on demands as above.

Seasonal variations must be appreciable, because it is well known that water is lavishly spent during the warmest period of the year. Metering of water is not an established practice, but rather an exception. It exists in Tripoli and Benghazi but in other towns or villages only for government buildings. It is an established fact that hot climate, a rising standard of living and increasing use of sanitary facilities are factors responsible for increased demand for water by the population. On the other hand, metering and taxation are controlling factors responsible for more judicious use of water. In Libya, for example a new housing project is planned on the basis of a dwelling of minimum size, consisting of four rooms with double sanitary services, i.e. bathroom and toilet (one for the family and one for guests).

The need for proper taxation of water has been discussed extensively by the International Bank Mission. Recommendations were given for the raising of existing rates charged for water piped to private premises, in

some cases for prohibiting the use of water for gardens where supplies are short, for imposing charges where no charge is at present levied (excepting at public fountains and stand-pipes), and last but not least, better for collection of monies due.[1] Without the application of such measures, misuse of piped drinking water, which has already developed, will undoubtedly continue and will add to the steadily growing demands which are already hard to satisfy.

Taking into consideration the economic factor, or imperative needs, it might be considered for the future to use also mixed "sweet" and brackish waters, or brackish desalinized water (or desalinized sea water). The possibility of using double water supply systems in certain settlements, e.g. of "sweet" water for drinking and brackish water for other domestic (or only sanitary) purposes, needs also to be seriously judged. The same would apply for certain industrial needs of water (cooling, washing, etc.). Double water supply systems involve certain health hazards which must be taken into account by preventive methods and techniques and sanitary control.

2.4 Quality of Drinking Water

The chemical quality of drinking water in Libya is varied. Deep well water is often highly mineralized and shallow well water brackish. Benghazi city water, for example, has more than 1 600 ppm total dissolved solids and more than 600 ppm chlorides. Some water in the Southern Provinces contains iron or has odours. Excessive hardness of drinking water used from some wells in Agedabia has caused suspicion from the point of view of health. Rain water in many cisterns in rural settlements in the Eastern Provinces, on the contrary, being very soft, has raised complaints about its tastelessness.

More serious is the bacteriological quality of water. Deep well water is primarily sterile but many chances exist for secondary pollution taking place at pumping stations, water towers and in the distribution

[1] 1.0 m^3 of water in Tripoli costs 1 piastre = U.S. 0.028, but collection is slack and in the case of non-payment, even of such low rates, no closing of the water supply is enforced.

systems. This is due to the neglect of sanitary precautions, to breakage of pipes, to frequent discontinuations of supply because of scarcity of water or insufficient pressure, to poor plumbing, etc. Shallow wells in urban or rural settled areas are subject to primary pollution due to unsanitary excreta disposal which is, as a rule by cesspools. Often open bottom cesspools are quite near wells which are just a few metres deep. Spring water from shallow underground aquifers, or originating in karst formations is potentially polluted. Cisterns are not generally repaired or built according to sanitary principles.

There is a practice in most towns in Libya of providing a reserve of water from the public water supply, in case of its restricted use, by installing roof reservoirs. In some towns, and even in cities, most private houses and public buildings have such reservoirs. In Tripoli, although the working pressure of water from the municipal water works is high enough, mains are supposed to be outdated and in the higher parts of the city roof tanks are used. What is more, apartment houses often have as many separate tanks as there are apartments. Most tanks are open top and accessible, so that the water in them can be easily contaminated.

Intermittent supply of water from public supplies, due to insufficient quantity of water or inadequate storage, is common (Beida, Sebha). This practice, coupled with poor plumbing and maintenance of plumbing, provides a constant threat of secondary pollution of water supplies. Plumbing is an extremely neglected part of building construction.

Reconstruction of public water supplies is made at different times by different people, haphazardly, without much consideration of cross-connections with non-potable systems, pollution of mains and similar dangers. At the site of the Bengadir well at Cyrene four water supply systems are intermingled.

All these conditions indicate an imperative need for chlorination of public water supplies, and systematic sanitary control, including control of chlorination. These important precautions at present only exist at Benghazi, and partly at Tripoli (for the system at Abu Miliana). At Derna chlorination has been provided but is not functioning. (Even the improvised emergency chlorinator is not in operation). At Sebha, no chlorine apparatus has been provided. Sanitary water analysis is sometimes required by Health Departments or the Medical Officer of Health, but samples are very rarely taken (once in four months at Beida, occasionally at Sebha, and not at all in Benghazi because the Medical Officer of Health is mistaken in believing it is done by the Health Department). The exception is Tripoli Municipality where the Medical Officer of Health requires a number of samples to be analyzed daily.

Unfortunately, the laboratories of the Ministry of Health: the Central in Tripoli, and hospital laboratories at Benghazi and Sebha, are not properly equipped or staffed for a systematic sanitary control of water, besides having insufficient space for separate laboratory units for this purpose.

As regards responsibility for the control of chlorination, sanitary inspectors in Health Departments presume that control of chlorination is carried out by Public Works and that the responsibility rests with the water works operators.

3. DRAINAGE AND DISPOSAL OF EXCRETA

3.1 Drainage

In cities and towns with piped water supply and sewerage, rain water is introduced into the sewers. By these combined sewerage systems sewage is taken to the sea - in the near future it will be taken to sewage purification plants. Where there is no piped water supply there is no planned

drainage. In recent years the development of the country in the fields of agricultural irrigation and public utilities, especially piped water supplies, has been at a very fast pace. This has resulted in many towns receiving new piped water supplies, or having appreciable extensions to existing supplies, before construction of sewerage. From piped water supplies, water is indiscriminately introduced into the houses and connected to household plumbing. Drainpipes and house sewers discharge waste matter into cesspools in the house or in the street, or directly into the streets. Cesspools are quickly clogged and sludge is evacuated, as a rule, by tankers which are operated either by the municipalities or the health departments. These services are inadequate everywhere. (For one tank-load the Municipality of Beida charges 50 piastres). Discharge of waste water or of sewage on the street is creating very bad conditions in the old parts of towns (Derna, Beida), especially during the summer months. It promotes the spread of flies and mosquitoes, and in certain cases may play a role in the spread of parasites. For example, a large part of the upper town of Derna drains its house wastes into the irrigation channels which take water to the fields. Although, in most towns, sewerage systems are subsequently constructed, no plumbing connections should be allowed before both systems, water and sewage, are laid in the streets or, better still, no houses should be built in urban areas which are not fully prepared to receive all necessary public utilities. Temporary solutions could be conceded for provision f water from piped water supplies by public taps or stand-pipes.

3.2 Excreta disposal of humans (non-water-carried)

Excreta disposal, without water or with small quantities of water used for ablution, as practised in towns and villages having no piped water supply, usually is in pit latrines. In sandy soil, which is the soil of most urbanized areas, pit latrines are functioning satisfactorily for long periods. They may cause pollution of ground water, as indicated earlier

in this paper. The exact percentage of rural houses provided with such latrines, and the existing habits, was not discerned. In the new housing developments of the NASA, latrines in farm houses are designed for use from outside the houses and are located near the animal stables. It seems that the use of human excreta for agriculture or gardening is not much practised in Libya - the only exception heard of is on the outskirts of Derna.

Public toilets do not exist in villages and small towns, although they seem to be needed at least near markets. On the other hand, latrines in mosques are usually well kept. There have been attempts recently to introduce latrines behind new primary school buildings, in quite a few villages, but these are already neglected and out of regular use.

3.3 Excreta disposal of animals

Even animal dung is not collected and used for compost. NASA is taking what might be the first steps to introduce such practices into the farm economies.[1]

4. DISPOSAL OF SEWAGE

The rapid construction of piped water supplies for towns and villages in Libya in recent years is now followed by the construction of combined sewage and rain water sewerage systems and sewage purification plants. In connection with this trend it appears that the general policy is to utilize sewage for agriculture in purifying it to the extent that dried sewage sludge would be used as compost, and purified and chlorinated effluent for unlimited irrigation. Such projects are at present in different stages of planning and execution.

The Benghazi sewage project is in a preparatory stage of execution by the consulting engineers. The system of sewage purification is typical for all plants under construction or consideration in Libya. It is composed of successive mechanical and biological methods, starting with disintegration of

[1] Hakim Singh (Farm Manager Expert, FAO Technical Officer): Scheme for Rural Compost, NASA - Benghazi, 1966.

crude parts (comminutors), grit settlement, and continuing with primary sedimentation, biological filtration, secondary sedimentation, sludge removal and treatment, and including treatment of the final effluent (sand filtration and chlorination). Construction of the Benghazi sewage purification plant is expected to be finished in 3-5 years.

A similar scheme of final disposal of sewage for the city of Tripoli was initiated through the joint efforts of the Ministry of Planning, Ministry of Public Works and the Municipality, and is now under construction. Effluent will be used for irrigation of agricultural lands in Madaba El Khadra. The plant should be ready for exploitation in 1967. It will replace the present system of final disposal of sewage from the older part of the city into the sea and provide the new part of the city (not yet with paved streets) with sewerage.

As regards other towns, in Sebha the sewerage system is under construction, while the sewage purification plant is being prepared for execution. Both systems are expected to be ready for use in 1968. The town of Derna is partly provided with sewerage. Completion of sewerage and a new sewage purification plant are in the initial stages of construction. The new town of El Marj (Barce) will have sewerage and a sewage purification plant, both of which will soon be under construction. The town of Tobruk will have its sewerage system completed and the sewage purification plant opened soon.

The only plant in actual use is the sewage purification plant at the town of Beida. It has been in operation for five years. Its daily load must be around 90 000 gallons of sewage, as it now receives almost the whole waste water of some 2 000 inhabitants, whose houses are connected to the public water supply and sewerage, as well as of the government offices. The plant is designed with a somewhat simplified purification processes. All parts of the system function properly, but are evidently not used properly. The effluent is very turbid and has a bad odour, it runs freely into the wadi.

Sewage sludge is not dried in time. The plant seems to be overloaded, and is in any case poorly operated and maintained. The general impression for the plant and for the grounds is one of total professional neglect. The operator is a former employee of a company constructing sewerage, and he is helped by a number of labourers.

Poor operation of the purification plant at Beida raises the very serious problem of operation of sewage purification plants in general. Unless a proper solution of this problem is sought in time, all the hopes for good results from such plants are futile. It is well known that the operation and maintenance of sewage treatment plants, either large or small, requires constant professional supervision and that if this is not secured, plants soon become useless, deteriorate, and are eventually abandoned. It is therefore highly recommendable either to include in the tenders for construction of sewage purification plants in Libya (which are received by foreign contractors) provision for the operation and maintenance of the plants for an initial period of 3-5 years, or to organize separate service units, properly staffed and equipped, in the regional offices of Public Works. Simplified methods of purification such as pond stabilization of sewage should be tried for smaller towns and villages.

5. DISPOSAL OF REFUSE

The general appearance of towns and villages, as regards cleanliness, is not the same as some authors[1] describing environmental sanitation must have seen in 1952, and even in 1959[2], for the towns of Libya certainly do not now "present a neat and litter-free appearance". Although much of this must be attributed to the swift overall development of the country and its construction boom, the fact is that refuse and garbage collection and disposal are too much neglected.

Except in Tripoli, collection in houses and in the streets is not in standardized containers. Collection in most towns is supposed to be done

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[1]C.A. Morse

[2]International Bank Mission

daily; instead it is done at irregular intervals. There is a lack of street cleaning equipment and collecting transport facilities. Where the municipalities take care of refuse there is a lack of personnel (even sweepers) and where contractors are called upon to do it, there is a lack of sanitary control. Sebha and Derna are examples of the first (municipal responsibility) and Benghazi of the second (contractor), although in the case of Benghazi it is a "mixed" responsibility, because street cleaning is by labourers hired directly by the Municipality. Tender for collection and final disposal of garbage and refuse by a contractor is specified in Tripoli by the municipal Medical Officer of Health, and includes provisions for house collection in standard containers, street collection once daily from dwellings and twice daily for shops, restaurants, etc. Winter and summer, street cleaning is carried out twide daily, washing and, if necessary, disinfection of streets once weekly, dust control of mud streets by spraying in summer. The contractor has modern equipment and transport facilities.

Final disposal as practised far and wide is by uncontrolled dumping, and worst of all dumping places are often near to settled areas. The town of Beida dumps refuse 3 km away at Garida, Susa (Apollonia) 3 km from the town in fields, Shahat (Cyrene) 1 km away in pine woods, Messa 1 km on a hill, Faida 1/2 km away on a hill, Derna dumps refuse in the sea near the port, etc. Only Benghazi city practises more or less controlled dumping. For this purpose excavated holes are filled and daily fillings are said to be covered with crude oil. In Tripoli the contractor produces compost in trenches covered by sand and sells it to farmers. Both in Benghazi and in Tripoli contractors have been asked by the Municipalities to introduce mechanized compost-producing plants and to experiment with them, with the prospect of such plants eventually being taken over by the Municipalities.

If this last described tendency is continued by other Municipalities and if it is duly supported by interested Ministries (Health, Agriculture and Industry)

garbage and refuse can be safely disposed of, utilized as compost in agriculture and the salvaged usable parts in certain industries. With the intensive search for more usable land for agriculture, it is possible to utilize this potential natural fertilizer, sources of which are very low in this country, and at the same time work towards the solution of this important aspect of environmental health in Libya. This problem relates certainly to fly breeding, the importance of which to health of the Libyan population has been demonstrated in an experiment cited by the International Bank Mission:

> " Fly control measures and clean-up campaigns are necessary and should be scientifically organized and continuous to be effective. An example of accomplishment in this respect is provided by the LAJS fly control campaign conducted in the Suk-el-Giuma area for three successive summers in support of the Wheelus Base sanitation, resulting in a drop of 75 per cent in the dysentery admission rate in the Base hospital. There was also a considerable reduction in the incidence of gastro-intestinal disease treated at the Suk-el-Giuma government dispensary, although accurate records are not available. We strongly urge that such fly control campaigns be extended to other parts of the country."

6. CONTROL OF SEA POLLUTION

The ports of Tripoli and Benghazi, which are both most attractive for their inhabitants and for tourists, are in certain parts considerably polluted. The port of Tripoli is polluted in the western and central sections by sewage discharged into the sea, and by rubbish. Sea currents and northern winds bring the pollution to the shore along the sea-front promenade. In still, warm atmospheric conditions, pollution from detergents in sewage spreads to wide areas of the sea. The sea near smaller towns is said to be polluted also by sewage and disposal of refuse, e.g. at Derna.

The extent of pollution by the discharges of oil industries has not been investigated, but with the further development of oil transport by sea and eventual location of refineries along the shore this kind of pollution must be expected. Already at certain places in the Eastern Provinces accumulations

of crude oil on the shore have been observed. The problem should be considered in time, because of the exceptional attractions of the Libyan coast and its sandy beaches for tourists.

7. CONTROL OF SOME DISEASE VECTORS

In spite of the fact that general environmental sanitation is poor, and especially collection and disposal of garbage and refuse, no complaints about rodents were mentioned, nor evidence of their spread. Flies are a problem and will remain so as long as the described conditions exist. Other insect vectors such as fleas and lice are known to exist in poor sections of the population. The immediate danger is represented by vectors of bilharziasis and malaria.

7.1 Vectors of Bilharziasis

According to the recent reports of Dr. El Halawani and Dr. Yasuraoka, bilharziasis exists at present in the three regions as follows:

Western Provinces: At Tarhuna sporadic cases were reported as having Bilharziasis haematobium. No bilharziasis snails were found. At Taourga stool specimens collected were found 30% positive of intestinal bilharziasis due to S. mansoni. The intradermal antigen test proved that Taourga is an endemic area. The vector is Biomphalaria alexandrina.

Eastern Provinces: A certain number of people of Derna (quarter of Maghar, which drains waste water and sewage into irrigation channels where Bulinus truncatus snails were found in fair numbers) were found positive for S. haematobium. Bulinus snails were found also in Wadi Derna, in Debussia and Wadi Latroun.

Southern Provinces: "The statistics obtained from Sebha Central Hospital demonstrated that, in 1965, 371 patients were admitted suffering from laboratory-proved urinary bilharziasis out of 2 788 total admissions, i.e. approximately 13%. According to hospital returns, it is the most prevalent disease,

second only to amoebiasis; tuberculosis is a far less serious problem" is stated by Dr El Halawani.

According to Dr Durosoir of the Sebha Central Hospital there seem to exist five areas where bilharziasis is widespread: Wadi Ajal - Ubari area, Wadi Shati - Brak, Wadi Edba - Mourzouk, Ain Sokhna and Ghat. Dr El Halawani has found specimens of schoolboys' urine positive for S. haematobium in Brak - 24%, Temzawa - 12%, Temenhint - 25%, El Abiad - low endemicity, Ben Hareth - high endemicity, Mourzouk 19%, Tragen 62.5%, Khelet 8.2%, El Gerefa 2%. Dr Durosoir has found urine specimens among school children positive from Gra-Gra (Ajal) - 54.2%, Barkhat (Ghat) - 86.4%, Sebha-Gedid - 18%, Traren (Mourzouk) - 11.8%, Marouga (Shati) - 55.2%. The vector, a presumably non-identified species of *Bulinus*, was found in shallow wells used for drinking and irrigation water, in certain cement-walled reservoirs and irrigation channels in Sebha, Semnon and Mourzouk. They are found only in "sweet" water and not in brackish, the controlling factor being the concentration of chlorides above 300-400 mg/l.

Dr Yasuraoka thinks that "present results in the country indicate the endemic foci of *S. haematobium* and *S. mansoni* are more restricted in extent that the distribution and the size of population of the potential snail hosts". In general recommendations for snail control he asserts that this control in Libya would not be difficult. It would, of course, have to include environmental control. A further survey and a pilot control project are planned.

7.2 Malaria

Malaria is controlled in Libya by the WHO-assisted Malaria Control Centre at Sebha. The disease is spread in certain areas in the Southern Provinces mostly at Brak, Ubari, Mourzouk and Ghat. Eastern and Western regions of the country, presumably, are free from malaria.

The total population which is deemed to be jeopardized by malaria in the Southern Provinces is estimated as 30 000. Number of people infected with malaria is increasing according to official figures given by Dr. van der Kaay (see Table 5). There were 272 cases in 1964 as against 413 in 1965.

TABLE 5

Number of Slides collected and Number of Cases of Malaria in the Period 1958-1965 (Southern Region)

Year	1958	1959	1960	1961	1962	1963	1964	1965
No. of Slides	331	492	2 492	1 842	4 135	9 710	15 573	18 489
Infection								
P. falciparum	17	5	7	8	11	26	252	379
P. vivax	4	4	2	6	4	3	19	31
P. malaria								1
Mixed infection							1	2
TOTAL	21	9	9	14	15	29	272	413

Breeding places of malaria mosquitoes are abandoned wells, swamps and "sweet" water lakes. Transmission season is May-October with an interruption throughout July-August, the warmest period in the Southern Provinces.

The project has had a pre-eradication period ended by a survey in 1958-1959, and from 1959 implementation of eradication measures by use of "Tossit" pellets in old abandoned wells and swampy areas. In 1961 the

eradication attack was ended. Small engineering malaria control work such as filling of abandoned wells and swamps is planned, but it is difficult to materialize mainly because once abandoned wells are again utilized by farmers when water eventually returns. On the other hand, the ratio of abandoned wells grows with the excavation of new ones. In some swamps and lakes gambusia fish were introduced years ago.

8. CONTROL OF ATMOSPHERIC POLLUTION

The topographical features of coastal Libya, in which most urbanized areas are located, are wide open plains, with the exception of low hills in the Eastern Provinces. Meteorological conditions of the inhabited coastal strip are characterized by a low annual rainfall (50-200 mm) except in the hilly parts of the Western and Eastern Provinces where annual rainfall sometimes exceeds 400 mm. Annual distribution of rain is limited to the winter period. Prevailing winds have an open passage in both directions (north and south), due to the topographical features of the country, so that the south winds and sand-storms ("ghiblis") bring much fine sand and dust into the settlements. Most urbanized areas, not being shielded by hills are exposed to winds by straight street planning; wind speeds are high and wind courses free. In this way, unsanitary soil conditions of the outer-urbanized areas are moved by winds into the town and city centres. Soil pollution, including unsanitary practices in collection and disposal of refuse, street cleaning, etc. becomes therefore an important factor of air pollution in Libya, especially from the point of view of hygiene and epidemiology. A few experienced physician practitioners state that the number of out-patients in dispensaries, and hospital admissions, increases right after a ghibli.

With the further development of oil industries, i.e. refineries, gas converting factories and others, some air pollution from these sources can be expected to create a nuisance. The same will be true for photo-chemical smog of the type associated with automobile exhausts, as growth of motor traffic is very rapid in the country.

A minor factor of air pollution at present, the use of fuel oil for heating in winter, both for homes, establishments or industries in general, can become more important. Industrial sources of air pollution, as yet of a more local influence, are electricity-generating plants, charcoal productions, gypsum and cement manufacture, stone crushing and cutting.

The above described problems require that adequate basic information be collected and evaluated before suitable regulations are promulgated and proper action for control is initiated.

9. CONTROL OF NOISE

The two cities, Tripoli and Benghazi, are already faced with all the problems of rapid increase of motor traffic, and noise is the one first noticed and complained about. Tripoli has at present 65 000 private cars registered, but including government, diplomatic and military vehicles the number of motor vehicles moving in the city and neighbourhood is probably around 70 000. This would mean one car to about 4.5 inhabitants, as the city is said to have approximately 330 000 inhabitants (registered and not registered, Libyan population and foreign). Sound signalling is allowed but is not practised much. Other sources of noise are the ports and small industries (Benghazi). In regard to noise from industries, the Municipality of Tripoli has already introduced certain measures for its control. The industrial zone is to be isolated; only establishments using machinery of maximum 2.5 h.p. can remain in the city and timing of production is required, e.g., by day, only between 08.00-12.00 and 14.30-18.00. Airports for both cities are some distance away, with no housing developments nearby, but air traffic over Tripoli is annoying.

Traffic regulations for improved control of noise and city and town planning with noise control included should be rigorously applied throughout the country.

III CONCLUSIONS

1. The large scale of housing development and the programme of town planning for about 200 towns and villages, both activities deemed to bring enormous changes in the physical structure of the country in a few years to come, demand immediate active participation of the Libyan Public Health Service in housing and town planning schemes. Adequately trained public health experts must be appointed to ensure that public health aspects are included at least in the implementation of these schemes.

2. Exploitation of water resources of the country at present proceeds at a rapid pace, without the Public Health Service being properly organized to control it for prevention of disease and promotion of health of the Libyan population. The quality of drinking water is, of course, the first concern of Public Health, especially in a developing country where general and, especially, infant mortality are related to proper provision of drinking water. It is therefore extremely important for the Public Health Service to assume full responsibility for control of drinking water in the country. For this purpose it is necessary for the Ministry of Health to establish as soon as possible routine water and sewage laboratories, to accept international standards for water and sewage analyses, and to introduce systematic control of piped water supplies and of sewage purification plants' effluents to be used in irrigation. It is also necessary to ensure professional sanitary engineering services for the control of designs and projects for public water supplies, sewerage systems and sewage purification plants, and for the operation of water works and sewage works.

3. The activities of the Ministry of Agriculture and of NASA (National Agricultural Settlement Authority) which are spread over vast rural areas, will introduce new changes in the physical structure of villages, individual farms and rural life in general. It is by co-operation of the Public Health Service with the Ministry of Agriculture and NASA that rural sanitation can be best promoted.

4. There is a general tendency of the Ministry of Agriculture to use all sewage, after proper purification, from cities, towns and villages for agricultural irrigation. The Public Health Service must introduce control of related projects, designs, execution and operation of sewage purification plants and irrigation practices.

5. The collection and disposal of garbage and refuse is highly neglected in the country. The Public Health Service should insist on efficient, and sanitary collection and disposal. In co-operation with the Ministry of Agriculture the Public Health Service should support the already existing plans for composting of garbage and refuse by modern industrial methods.

6. The Public Health Service should initiate surveys on sea pollution and on air pollution, and prepare adequate regulations for efficient control.

7. Spread of bilharziasis and malaria should be checked by other appropriate control measures besides treatment. WHO-sponsored control centres, being highly specialized, might best cope with these problems.

8. The Public Health Service should initiate surveys on the quality and intensity of existing noise in the interior of living quarters, and on the streets of Tripoli and Benghazi, in order to prepare regulations for efficient control.

IV RECOMMENDATIONS

1. FORMATION OF ENVIRONMENTAL SANITATION UNIT IN THE MINISTRY OF HEALTH

1.1 Motivation

Environmental health has many engineering besides medical aspects. For dealing with the engineering aspects the Ministry of Health has no professional personnel to provide necessary consultation. As other ministries are dealing with work affecting environmental health (Agriculture, NASA, Public Works) there is nobody to co-operate in engineering questions of common interest (water supply and sewerage, housing and town planning, programming, planning, designing). The Ministry of Health has, for example, the responsibility for the sanitary quality of water for domestic use. It needs the help of sanitary engineers to advise on space, equipment and personnel for the Ministry's own water and sewage laboratories (because purified sewage is to be used soon for irrigation), for adoption of international standards for water and sewage laboratories' control, for organizing systematic control of water from piped water supplies and of purified sewage throughout the country, for preparing rules and regulations in the sphere of environmental sanitation, for guiding regional public health departments in their work of improving environmental health.

The state of hospitals throughout the country as regards space, enlargements necessary, reorganization, additions, and most of all of functional arrangements is bad and results in unconsidered ad hoc solutions. Also there is no central point from which to take care of the needs of architectural problems of hospitals in the country as well as those of public health institutions (standardization of hospital elements, types of institutions, equipment, etc.). No long range planning of hospital and public health institutions building is done.

The Ministry of Public Works is at present responsible for designing, preparing for tender, and control of construction of hospitals, public buildings, schools, etc., but the Ministry of Health needs an adviser architect, specialist for hospitals, who would evaluate the needs of hospitals and health institutions, plan the network of them, prepare for standardization of elements and at the same time act as a good liaison officer between the Ministry of Health and the Ministry of Public Works. Alternatively, such an architect or a "health unit" could be located in the Ministry of Public Works, but there are many objections to such practice and the first alternative is the one accepted in many countries.

1.2 Organization of the environmental sanitation unit

In the Department of Public Health of the Ministry of Health, a division should be formed and called "Environmental Sanitation Division". The chief of the Division should be a qualified sanitary engineer polyvalent type, (i.e. one covering the main fields of environmental sanitation), with a relatively long experience. His position should be Assistant Director of the Public Health Department in charge of Environmental Sanitation. In its first period of existence the Division should consist of two sections:

i. Section of water and sewage control
ii. Section of hospital and public health institutions building

At first the water and sewage section should be guided by the sanitary engineer Director mentioned above, but as the organization of the Public Health Department becomes stronger and control of the environment more efficient, this section will have as its head another sanitary engineer, more specialized for water and sewage control.[1]

The section of hospital and public health building should have already in the initial period, as head, an architect specialized in the particular

[1] See also Recommendation 2.

field of hospital and public health institutions, programming, planning, designing and construction.

The Environmental Sanitation Division would be a professional guiding body for related work in the government public health administration of the three regions, and in this regard would serve the regional departments of health of the Western, Eastern and Southern Provinces, as well as their subordinate institutions.

At the level of the regional public health departments, the implementation of environmental sanitation improvements - aside from the sanitary control of water and sewage - would have to progress slowly as the departments develop, and are able to use the integrated health services' approach to this problem. For the time being the question is how to use the existing organization best. As this rests on the regional Medical Officer of Health, who has, in fact, no public health training and sometimes even no time for this kind of work, it is suggested that he also receives help in environmental sanitation from a technician, in the person of a public health sanitary inspector superintendent (type as in England). This technician would also guide and supervise the work of the health inspectors now existing in regional public health departments and related lower level institutions, who are left now to work on their own in spite of being little qualified to do so.

Each regional public health department would have under its administration a laboratory for water and sewage and these laboratories would be located in the existing main medical laboratories, but as separate units. Each unit when fully developed would need:

- 1 physician bacteriologist
- 2 chemists
- 2 laboratory technicians
- 3 cleaners

At the beginning, the physicians bacteriologists could be the same as those working for the medical laboratories, but later on (at least for Tripoli and Benghazi) because of the increase of public water supplies and sewage purification plants requiring systematic sanitary control, separate staff would be needed.

Separate units of food and drug laboratories should be developed alike.

The Organigrams I and II (pages 211 and 212) illustrate the organization as described.

1.3 Duties of the environmental sanitation unit (job descriptions of leading professional personnel)

i. Environmental Sanitation Division and Section of Water and Sewage Control

Chief of the Division and of the Section at the same time[1] would have the following duties:

- advising the Medical Officer of Health of the Ministry (in the following text "chief MOH") on the sanitary engineering aspects of most important problems of environmental health;
- guiding the environmental sanitation control in the regional departments of public health;
- organizing the Department of Public Health Water and Sewage Laboratories:

  one in Tripoli as a separate unit of the Central Laboratory,

  one in Benghazi as a separate unit of the Regional Laboratory for the Eastern Provinces,

  one in Sebha.

  (All three laboratories would be administratively linked directly to the related regional departments of public health).

- preparing for the adoption of international standards for drinking water and effluents of sewage purification plants' analyses, and for promulgation of related regulations;

[1]See also Recommendation 2.

- organizing and ensuring the functioning of a systematic sanitary control of the water of all piped water supplies, and of the effluents from sewage purification plants which are exploited for irrigation in the country;
- co-operating in the name of the chief MOH with other ministries already engaged in engineering work related to environmental health, such as the Ministry of Agriculture, NASA, the Ministry of Public Works, the Supreme Water Board, etc.;
- preparing public health rules, regulations, etc., related to environmental health, such as regulations concerning sanitary control of housing and town planning, etc. and co-ordinating similar work in other ministries (e.g. the Ministry of Housing with preparation of the building code in general, or the plumbing code more specifically).

ii. Section of hospital and public health institutions building

Chief of the Section would have the following duties:

- surveying, mapping and cataloguing existing hospitals, dispensaries, etc., from the point of view of design, function, equipment and the like;
- evaluating needs for rehabilitation of hospital complexes, particular premises, functional deficiencies, etc., the same for public health institutions;
- planning the network of hospitals and public health institutions, advising the chief MOH on control of all projects of hospital and public health institutions building;
- work on standardization of elements in hospital building.

iii. Environmental sanitation activities in the regions

Duties of sanitary inspectors superintendents delegated to them by regional Medical Officer of Health would be:

- implementing systematic control of water and sewage in the region, keeping records of analyses, taking action in the name of the MOH;
- co-operating with field work personnel of the NASA in rural sanitation;
- co-operating with the Environmental Sanitation Division of the Ministry;

- guiding and supervising the work of health inspectors: a) regional, b) lower level.

1.4 Planning for environmental sanitation service in 1967, 1968 and 1969

Year 1967

- 1 sanitary engineer (polyvalent type),
  foreign, contract 2-4 years, to be replaced by Libyan sanitary engineer.
- 1 architect (specialist for hospital and public health institutions building),
  foreign, contract 2-4 years, to be replaced by Libyan architect.
- 2 draughtsmen,
  foreign, contract 2-4 years.
- 3 chemists,
  foreign, contract 2-4 years.
- 3 laboratory technicians,
  Libyan, trained at Health Training Institute, Benghazi.
- 3 cleaners.

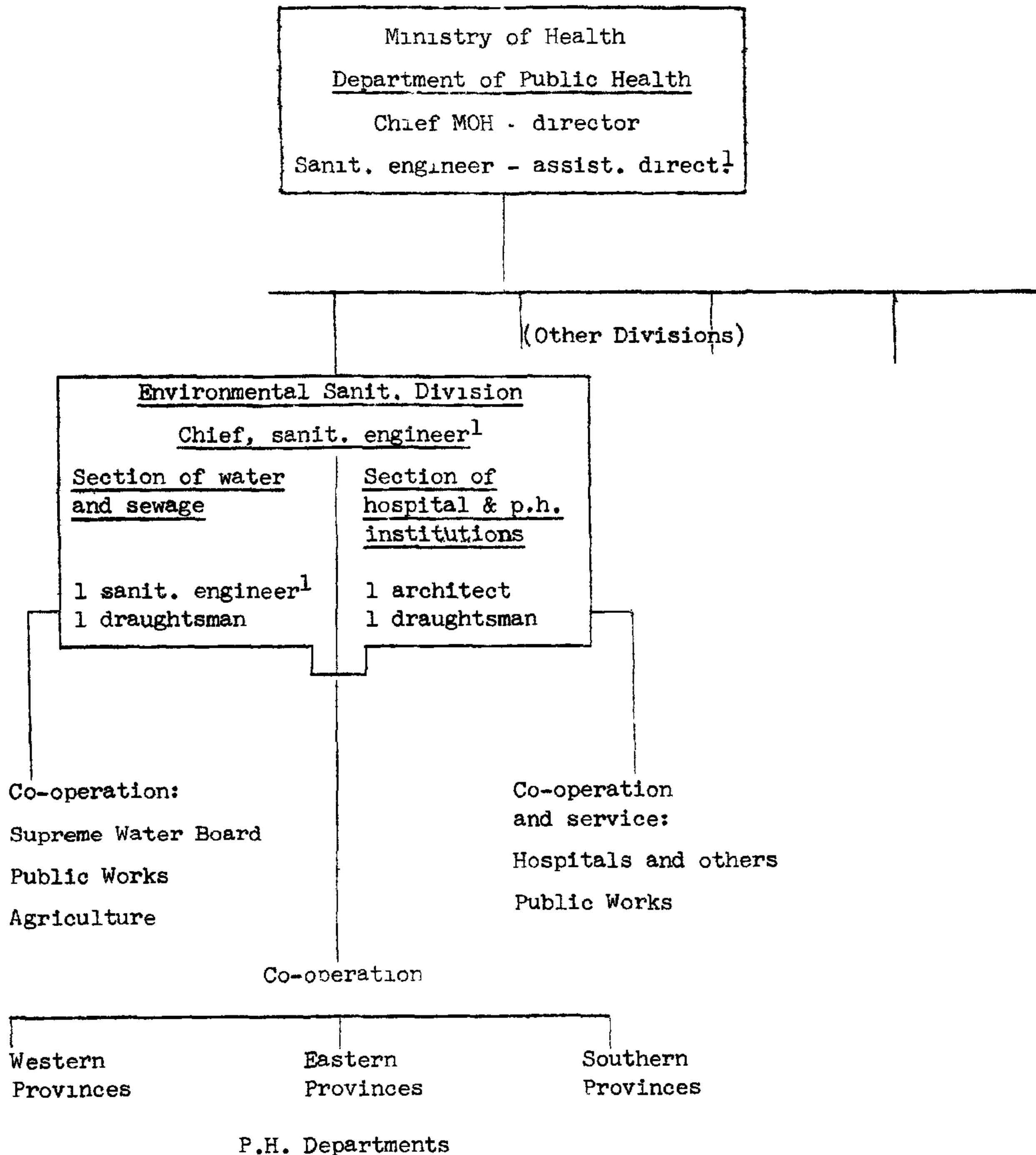
Year 1968

- 3 sanitary inspectors superintendents,
  foreign, contract 2-4 years to be replaced by Libyan counterparts.
- 3 chemists,
  foreign, contract 2-4 years.
- 3 laboratory technicians,
  Libyan, trained at Health Training Institute, Benghazi.
- 6 cleaners.

Year 1969

- 2 physicians bacteriologists for Tripoli and Benghazi water and sewage laboratories,
  foreign, contract 2-4 years.

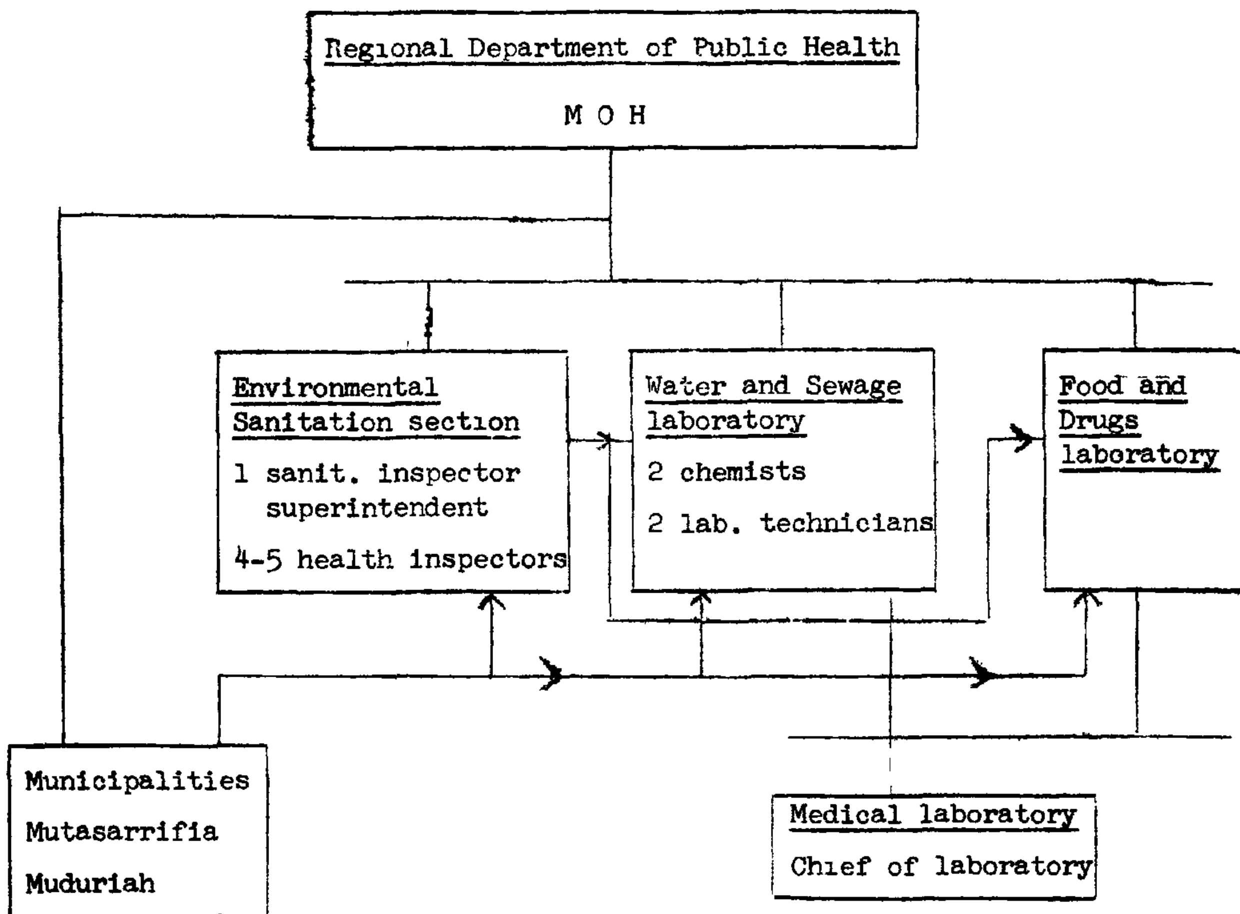
ORGANIGRAM I



[1] at the beginning the same person

ORGANIGRAM II

Environmental sanitation section of a regional department of public health



2. SANITARY ENGINEERING ASSISTANCE TO THE MINISTRY OF PUBLIC WORKS

2.1 Motivation and Argumentation

Under the Five-year Economic and Development Plan 1963-1968, the Ministry of Public Works has been charged with the task of realizing an immense plan - in relation to the country's population - of water supplies, sewerage systems and sewage purification plants. It is very likely that because of the speed of technical routine work demanded by this task many important points of function and operation of these systems will be overlooked and omitted. Another important factor is the scarcity of water in Libya which will lead engineers to search for new, unusual possibilities for conserving water such as mixed "sweet" and brackish water supply systems, double (potable and unpotable) water supply systems, desalinization of highly mineralized drilled and artesian well water, and purification and re-use of waste waters. This situation is further complicated by the state of the many already existing systems in Libya, especially a piped water supplies, which either do not provide sufficient quantities of good and safe quality water, or are subject to continuous readjustments, rehabilitations, extensions, etc., and are in some cases already obsolete. Finally, under conditions of insufficient regional planning of water supplies, many projects spring up haphazardly and then create complications for the future.

Evidently, there is at present little guarantee that in all this work sufficient consideration will be given to any other aspect but the utilitarian. The public health aspect, so important in these fields, might easily be fully neglected, and this in spite of the fact that so many circumstances speak for its inclusion. It should also be added that the Ministry of Health has not yet ensured the right of reviewing design and operational criteria for domestic water supplies, or developed its public health departments to the extent of their assuming such responsibilities. On the other hand the responsibility of the Ministry of Health in preventing disease, and

promoting health of the population calls for definite action at this particular time towards ensuring the preventive and current sanitary control of all work of the Ministry of Public Works above mentioned.

Taking into consideration the facts as they are (and not as they would be desirable) there is the possibility of the Ministry of Health accomplishing its task in the above-mentioned control not directly but indirectly. This indirect way is for the Ministry of Health to insist that the Ministry of Public Works employs two sanitary engineers, that is professional engineers who have by special training and experience acquired competence in the public health aspects of their work, one for problems connected with water supply and treatment, and the other with sewerage and sewage purification. These engineers placed in the Ministry in which execution of plans is proceeding, would act as advisers in the Ministry of Public Works in the interests of the Ministry of Health, and in this way guarantee all designing and operation in accordance with public health requirements. They would co-operate closely with the chief MOH and when the Department of Public Health of the Ministry is well organized they can be taken over by the Ministry of Health. Unfortunately, their present placement in the Ministry of Health would leave them with their hands tied as regards effective control of the projects of the Ministry of Public Works.

2.2 Sanitary engineering assistance to the Ministry of Public Works

Because the Ministry of Public Works is already engaged in the fields of water supply and sewerage all over the country, and the right of reviewing design and operational criteria for this work has not yet been vested in the Ministry of Health, it is opportune to employ at the Ministry of Public Works one sanitary engineer specialized for water supply and treatment, and one sanitary engineer specialized for sewerage and sewage purification, as they will introduce into the related work of the Ministry the necessary public health aspects.

2.3 Duties of the sanitary engineers

The duty of the sanitary engineer specialized in water supply and treatment would be:

- to assist in regional planning for water supply;
- to advise on public health aspects of design and operation of water supplies and water treatment;
- to control designs made by consulting engineers;
- to suggest improvements of existing water supplies and water treatment from the point of view of health;
- to co-operate with the chief MOH.

The duty of the sanitary engineer specialized in sewerage and sewage purification would be:

- to assist in planning for sewerage systems and sewage treatment plants in the country;
- to advise on sewage purification and technology;
- to advise on public health aspects of design and operation of sewerage systems and sewage purification plants;
- to control designs made by consulting engineers;
- to suggest improvements of existing sewerage systems and sewage purification plants from the point of view of health;
- to co-operate with the chief MOH.

2.4 Planning for employment of sanitary engineers

The proposed sanitary engineers for the Ministry of Public Works should be employed as soon as possible in order to help in time.

Year 1966

- 1 sanitary engineer specialized for water supply and treatment, foreign, contract 2-3 years, or 4 years and more in case of transfer to the Ministry of Health,
- 1 sanitary engineer specialized for sewerage and sewage purification, foreign, contract 2-3 years, or 4 years and more in case of transfer to the Ministry of Health.

3. SANITARY ENGINEERING ASSISTANCE TO THE NATIONAL AGRICULTURAL SETTLEMENT AUTHORITY

3.1 Motivation

NASA's land development and settlement activities demand, besides the solution of agricultural problems, also the solution of problems connected with the creation of a healthy environment for the farmer. For this purpose NASA's Tripoli engineering department deals also with housing, water supply, excreta disposal, composting, etc., in rural areas. In all such work it is necessary that the public health aspect be considered. Already elaborate standard designs for rehabilitation of Greco-Roman cisterns, of new, large and small house cisterns, of wells, of house-latrines and bathing or washing facilities in homes have been made in which the public health aspects were not cared for. As plans for the creation of new rural environments are hurriedly materialized there is much reason to fear that cardinal environmental health faults will accompany most of the above-mentioned constructions of NASA. Once done, and in widespread areas of the country, they would be difficult to correct.

Officials of NASA, Tripoli have been aware of this and for some time have been considering employing a sanitary engineer to handle these problems. He would join the staff of the engineering department. This matter is now under serious consideration.

3.2 Sanitary engineering assistance

Because NASA is already fully engaged in environmental improvements in rural areas all over the country it is necessary, in order to secure a comprehensive approach to these improvements, to include on its staff in the Tripoli engineering department a sanitary engineer with good experience in rural sanitation.

3.3 Duties of the sanitary engineer

Duties of the sanitary engineer experienced in rural sanitation would be:

- inclusion of environmental health aspects in standard designs of farm housing, water supply, excreta disposal, composting, animal shelters, etc.,
- standardization of sanitary engineering elements in rural sanitation in Libya, such as standard latrines, standard well coverings, pumps or elevators, etc.,
- introducing in the above work methods of prefabrication and methods of self-help[1],
- co-operation in the implementation of related projects of NASA with the regional public health departments.

3.4 Planning for employment of the sanitary engineer

The proposed sanitary engineer should be employed as soon as possible in order to join the working group at NASA.

Year 1966

- 1 sanitary engineer (experienced in rural sanitation), foreign, contract for 2-4 years, to be replaced by a Libyan sanitary engineer.

Year 1967

- 1 sanitarian (experienced) Libyan, qualified abroad or at the Health Training Institute, Benghazi.

4. SANITARY ENGINEERING ASSISTANCE TO THE MINISTRY OF HOUSING

4.1 Motivation

The Ministry of Housing is faced with two singular tasks: (i) implementing the vast "Idris Housing Project", and (ii) appraising and accepting some 200 master plans of cities, towns and villages (including the cities of Tripoli and Benghazi). The second is at the moment of primary importance

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[1]For these activities the sanitary engineer should be helped by a sanitarian who would be detached.

because its solution predisposes the implementation of the first. General layout plans for towns and villages of Libya will be ready in March 1967 and one year more is left for explanatory meetings, suggestions of experts, etc., prior to completion. Neither the Ministry of Health nor the Ministry of Housing has an expert on health aspects of town planning. If such an expert is not provided in time, most of these general layout plans when ready for implementation are likely to have many environmental health requirements omitted or wrongly interpreted. There might be very little chance for subsequent corrections, and defects of plans can long be concealed. It is evident that such development of the country's unique project could result in undesirable consequences, which in the end might discredit this praiseworthy endeavour. In the meantime, the Ministry of Housing has decided to engage a team of 5-6 experts of different specializations, one of whom would be a specialist on health aspects of metropolitan and town planning, for the appraisal and acceptance of the above-mentioned master plans. In this way the following suggestions support what has already taken place.

4.2 Sanitary engineering assistance

Because the Ministry of Housing has the urgent task of appraising, suggesting modifications, etc., and finally accepting about 200 master plans of towns and villages in Libya, a sanitary engineer specialized in public health aspects of metropolitan and town planning should be employed as a member of the team of experts necessary for the performance of the above-mentioned task.

4.3 Duties of the sanitary engineer

Terms of reference for the proposed sanitary engineer (specialized in the public health aspects of metropolitan and town planning) member of the team are to:

- ensure that, besides the promotion of economic development, the planning of about 200 general layout plans of towns and villages includes creation of a healthy physical environment for the individual, the family and the community;
- appraise, suggest alterations, accept solutions of specific problems of environmental health, from the point of view of the state of present knowledge, in the above-mentioned plans and especially of water supply, sanitary waste disposal, drainage, solid wastes disposal, vector control, housing and open spaces, greenery, protection from sun radiation, air pollution, interior and exterior noise and vibration, traffic accidents;
- co-operate with the Ministry of Health on problems of planning for public health establishments;
- suggest to the Ministry of Housing other professional advice if necessary.

4.4 Planning for employment of the sanitary engineer

The proposed sanitary engineer, specialized in the public health aspects of metropolitan and town planning, should be employed as soon as possible in order to join the team of experts suggested by the Ministry of Housing.

Year 1966

1 sanitary engineer (expert on public health aspects of metropolitan and town planning)
foreign, contract minimum 2 years, preferably 2-4 years.

5. CO-ORDINATION OF WORK IN ENVIRONMENTAL HEALTH

The chief MOH should have informal meetings from time to time with the proposed experts, sanitary engineers, assigned to other ministries in order to synchronize all the aims and activities of the Ministry of Health for the purposes of promotion of environmental health in the country.

6. TRAINING

The university-qualified Libyan personnel for environmental sanitation such as sanitary engineers, chemists, bacteriologists, should be trained abroad. Two

Libyan sanitary engineers have been trained but have stayed outside the Public Health Service and other services concerned with environmental health.

The training of sub-professional personnel for environmental sanitation such as sanitarians, laboratory technicians and the like, was organized several years ago at the Health Training Institute, Benghazi (with the assistance of the WHO Regional Office for the Eastern Mediterranean, Alexandria), but was discontinued in 1962-1963. Approximately 75 sanitarians were graduated from this Institute, but only about 50 per cent of these are now employed in the Public Health Service. It would therefore be necessary to introduce training of sanitarians again, only on a more comprehensive and uniform basis.

The training of laboratory technicians exists in the Health Training Institute, Benghazi, but the necessary laboratory technicians for water and sewage laboratories should be trained in specialized training institutions abroad.

Sanitarians, who at present work in the Public Health Service but have no professional qualifications, should be given an opportunity of regular training at the Health Training Institute.

Consequently, the following recommendations as regards training of sub-professional personnel for environmental sanitation are given:

i. To train laboratory technicians (minimum 3-6) for work in the water and sewage laboratories by granting fellowships for studies at the A.U.B. School of Public Health, Beirut (or other suitable place);

ii. To organize at the Health Training Institute, Benghazi, two refresher courses of short periods for sanitarians formerly graduated from the Institute; expected enrolment: 15-20 sanitarians in each course;

iii. To organize at the Health Training Institute, Benghazi, two separate courses for sanitarians at present working in the field of environmental sanitation but having no professional qualifications for their jobs. Suggested period of courses would be two school years, including

field work in their home towns during vacations. Curriculum to be prepared with the help of WHO/EMRO, Alexandria. Adviser should be a sanitary engineer in the country, who should be helped by a qualified national or expatriate sanitarian. Expected enrolment 15-20 sanitarians in each course;

iv. To continue at the Health Training Institute, Benghazi, regular courses for sanitarians which were discontinued in 1962-1963. Suggested period is three years, as for other sub-professional health personnel. Other details as under iii;

v. To send previously graduated sanitarians on fellowships to the WHO Regional Project EMRO-79 (UNDP/TA) for the advanced course in Damascus, in order to establish the nucleus of the national teaching staff and improve teaching at the Health Training Institute, Benghazi.

7. A FEW GENERAL SUGGESTIONS FOR CONSIDERATION BY THE MINISTRY OF HEALTH

The Ministry of Health should aim at:

i. Some solution of the problem of providing quick repairs of minor structural defects and the like in hospitals and health institutions.

ii. Contacting the Supreme Water Board for the purpose of further development of the provisions of the Royal Decree concerning Water Law. As is well known, from 1961 certain steps have been taken by US-AID, the Development Council, the Ministry of Agriculture, FAO and others for the approval of a law regulating water use and creating a national water authority. Finally in 1965 the Decree mentioned came out. Although it is very abbreviated in its contents as compared with the proposed Draft Water Law, it provides that a Supreme Water Board be created, and through this Board now permits, in principle, the approval of a more comprehensive national water law.

The Ministry of Health should as soon as possible ensure its right for determining public health criteria pertaining to domestic water supplies, municipal

and rural water supplies, use of sewage effluents for irrigation, etc. This might be accomplished either by the inclusion in this new law or by special agreement of the Supreme Water Board to issue separate "Public Health Executive Regulations Concerning Water".

It is of interest of the Ministry of Health to promote the work of the Supreme Water Board as a water policy-making body, especially from the point of view of establishing a more efficient organizational link with the regions through regional water boards. This would help in two ways: by implementing the general policy, and by providing the means for regional ministerial offices to signal important regional water problems which are arising.

iii. Contacting the Ministry of Public Works for discussion of the following problems in the interest of public health:

a. the general requirement for continuous water service from piped supply systems all over the country,

b. the general requirement for adequate quantities and guaranteed sanitary quality of water from piped water supplies,

c. the general policy of preparing all public utilities (water supply, sewerage, electricity) for new housing developments before the beginning of any housing construction, and in particular joint preparation of water supply and sewerage lines in the streets without exception,

d. the special attention and care to be given to the correct operation and maintenance of all sewage purification plants, the effluents of which are to be exploited for agricultural irrigation and land fertilization in the country; if possible the creation in the Ministry of Public Works of a separate operational unit for this purpose.

iv. Contacting the Ministry of Industry for discussions on promotion of the plumber's trade in Libya and ensuring enough new apprentices for training in this specialty at the trade-school.

APPENDIX I

KINGDOM OF LIBYA

MINISTRY OF AGRICULTURE AND ANIMAL WEALTH

ROYAL DECREE

CONCERNING WATER LAW[1]

We Idris I, King of the Kingdom of Libya,

Having seen Article No. (64) of the Constitution,

And the Civil Code,

Acting upon what has been submitted to us by the Minister of Agriculture and Animal Wealth, and with the approval of the Council of Ministers,

Decree as follows:

Article (1)

A supreme committee to be known as the "Supreme Water Board" shall be established, with the Minister of Agriculture or his designate, as Chairman and members, whose grades should be Director-General at least, representing the Ministries of Health, Industry, Planning and Development, Public Works, Interior, and Agriculture.

The Board shall meet at least once every three months and whenever called by the Chairman.

Article (2)

The competence of the Supreme Water Board shall be:

1) To establish rules, provisions and procedures concerning its own functions;

[1] Issued on the 28 September 1965 and published in the Official Gazette on the 19 October 1965 (No. 13).

2) To formulate a general policy for developing the Country's water resources whereby the Country's water requirements for all purposes are met;

3) To study and accept proposed projects for the exploitation of the Country's water resources;

4) To review and accept any water legislation proposed by governmental bodies.

Article (3)

All matters relating to research, investigation and exploitation of water resources shall be implemented by the Ministry of Agriculture and Animal Wealth.

Article (4)

The Ministry of Agriculture shall be responsible for granting permits for utilization of water, exploration for water, and drilling of water wells.

Regulations issued by the Minister of Agriculture shall establish the manner of submitting applications, conditions of granting permits, and fees to be paid by applicants provided that it should not exceed fifty Libyan Pounds.

Article (5)

The Ministry of Agriculture may, if it deems necessary, issue a new permit for the utilization of surplus water from a water source in respect of which a previous permit has been issued, provided that the new permit shall secure the water requirements for the old user of water and that the new user shall pay him a suitable compensation for whatever structures have been erected by the old user.

Districts where these provisions shall be applied will be defined by the committee and issued by a decision from the Cabinet upon the proposal of the Minister of Agriculture and Animal Wealth.

Article (6)

Permits may be revoked in the following cases:

1) If the permit holder does not utilize the water, as specified in the permit, for a period of two consecutive years;
2) If the permit holder abused or exposed the water to danger or violated any of the permit conditions;
3) If he relinquished the permit to someone else without the approval of the issuing authority.

Article (7)

The Supreme Water Board may declare any area under a system of restricted distribution when the quantities of water in that area have diminished, or for any other reason dictated by public interest. Thereby all water users in the area shall have to comply with the rules and regulations which the Board prescribes for water extraction, exploitation and distribution irrespective of the rules and provisions stipulated in the permit. Such declaration, together with the restrictions imposed on water utilization, shall be published in the Official Gazette.

Article (8)

Without prejudice to any severer penalty provided for in the Penal Code or in any other Law, whoever violates any of the provisions of this Law or the regulations made hereunder shall be liable to imprisonment for a period not exceeding three months and to payment of a fine not exceeding fifty Pounds, or to any of these two penalties.

When passing sentence the Court may order confiscation of the machinery and equipment seized. The Court may also order the removal of the causes of contravention at the expense of the defendant.

Article (9)

Persons who are actually utilizing waters at the time that this Law comes into force, in order to maintain their right to use the water, must apply to continue their water utilization in accordance with regulations to be issued by the Minister of Agriculture.

Article (10)

The Minister of Agriculture shall enforce this Law and issue the necessary regulations. It shall come into force from the date of its publication in the Official Gazette.

APPENDIX II

EXPENDITURES IN FIELDS OF ENVIRONMENTAL SANITATION IN LIBYA PLANNED FOR THE PERIOD 1963-1968[1]

	£L.
Public Works	
Water supplies	10 750 000
Sewerage	10 800 000
Water conservation at Wadi Megenin and other wadis, approximately	2 000 000
Slaughter houses	300 000
Health	
Malaria control	100 000
Bilharziasis control	75 000
Sanitation	40 000
Agriculture	
Development of water resources and soil conservation	3 500 000
Labour and Social Welfare	
Low cost housing	5 000 000

[1]According to data from "Kingdom of Libya, Ministry of Planning and Development: Five-Year Economic and Development Plan 1963-1968", Tripoli.

PART III

NURSING SERVICES

by

Verna M. Huffman
WHO Nursing Consultant

February - May 1966

I OBJECTIVES

The purpose of the project was to assist in the development of a plan for national health services. The specific objective of the writer, as nursing adviser on the WHO team, was to provide assistance to the Government in:

i. studying the present health situation in the country from a nursing point of view;

ii. preparing a plan defining the desirable and practicable pattern for development of nursing services including proposals for the progressive planned development of health services and of training programmes;

iii. suggesting lines of action for continued planning and evaluation of health services (nursing services) in order to ensure continuity in their development.

II DEFINITION OF TERMS

In this report the terms professional nurse, midwife and auxiliary worker are defined as follows:

- a professional nurse is one who has secondary education (i.e. secondary school leaving certificate) and has completed a three-year basic programme in a nationally recognized school of nursing;
- a midwife is a professional nurse who has had, in addition, at least one year of nationally recognized preparation in obstetrics;
- "an auxiliary worker designates a paid worker in a particular professional field with less than full professional qualifications in that field who assists and is supervised by a professional worker".[1]

III METHODS USED IN CARRYING OUT ASSIGNMENT

1. The studies undertaken included:

i. a review of reports of previous nursing surveys conducted by international consultants;

[1]United Nations, Administrative Committee on Co-ordination (1954).

ii. visits to hospitals, health centres, dispensaries, MCH centres and sub-centres in each region of the country;

iii. observation visits and a review of programmes in all schools and institutions where nursing personnel are presently being prepared;

iv. interviews with principals of girls' primary schools, of secondary schools and of a teachers' training college;

v. individual interviews with nurses, both Libyan and foreign; with doctors, both Libyan and foreign, engaged in practice in Libya; with international medical and nursing personnel serving in an advisory capacity in Libya; and with Libyans of other professions and vocations;

vi. interviews with officials of the Ministry of Public Health;

vii. meetings with a national committee appointed to work with the WHO Health Planning Team;

viii. discussions with the other members of the WHO Health Planning Team regarding the role of nursing in the total plan.

2. Each of these factors has contributed to the evaluation of the nursing situation in Libya. In the final analysis, however, the recommendations represent the considered opinion of the team. It is their belief that these recommendations could set a foundation on which to build a sound Libyan nursing profession qualified to meet the nursing needs of this Kingdom.

IV DEVELOPMENT OF NURSING IN LYBIA

1. THE ITALIAN INFLUENCE (1911-1945)

There is no official documentation of the development of nursing in Lybia. It would seem that nursing care of the sick on an organized basis began during the Italian regime (1911-1945) with the introduction of Italian religious sisters to staff the newly-built hospitals. Some of the sisters were said to have had experience, or training as nurses, but it is unlikely that formal nursing education was part of their preparation in the early years of this century.

To assist in staffing the hospitals Italian and Libyan men were selected for six months' on-the-job training. They were trained as assistant male nurses and on successful completion of a practical examination by doctors they received a certificate and became known as "infermieri certificate". To the present day some of them are serving in hospitals and dispensaries throughout Libya. Since basic education under the Italians was limited for Libyans to five or six years these men had little formal education. Many of them, however, display a high sense of responsibility and discipline in the conduct of their nursing activities.

Similarly, Libyan girls or women were trained on the job in a two-year course of midwifery and were given a certificate as "assistant midwives".

The number of graduates from these course was:[1]

		Total
- Italian assistant male nurses	220	546
- Libyan assistant male nurses	326	
- Libyan assistant midwives		5

Servants and cleaners have also been taught to carry out some activities classified as nursing. Thus, over the years, hospitals operated by the Italian religious sisters have developed a cadre of workers called nurses, who continue to provide service in hospitals and dispensaries. These hospitals are in the Western Provinces, formerly Tripolitania, and in the Eastern Provinces, formerly Cyrenaica.

2. THE BRITISH INFLUENCE

British nurses worked in Cyrenaica with the occupation force following the Second World War. With the end of the British Military Administration and the withdrawal of most British personnel there seems to have been left no permanent influence on the pattern of nursing in Libya.

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[1]Figures obtained from Nursing Section, Ministry of Public Health.

3. THE FRENCH INFLUENCE

French forces occupied Fezzan (Southern Provinces) during the same period and French medical personnel have been there until now. French nurses, however, have not remained and today there is only one French midwife in the whole of the Southern Provinces.

Indirectly all three forces have left an influence on nursing through their training of auxiliary personnel.[1] These auxiliaries form today the largest part of those who provide care for the sick in Libya.

Italian courses:

- Italian assistant male nurses — 6-month course
- Libyan assistant male nurses — 6-month course
- Libyan assistant midwives — 2-year course

British courses:

- Nursing orderlies and dressers — 2-year course

French courses:

- Male nursing assistants — 18-month course

4. THE INFLUENCE OF INTERNATIONAL AND BILATERAL AGENCIES ON NURSING IN LIBYA

4.1 AID

Under the US-AID Programme a nursing adviser to the Ministry served in Libya from 1960-1964 and contributed to the planning for MCH programmes and the drafting of legislation.[2]

4.2 WHO

The WHO nursing advisory services have been available to Libya since 1952. Four schools have been established with WHO assistance for the preparation of nursing personnel:

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[1] Data obtained from Nursing Section, Ministry of Public Health.

[2] Aldrige, F.F., Chief Public Health Adviser, US-AID Libya, End of Tour Report. Washington, 1964.

- two schools for preparing MCH assistants, one in Tripoli and one in Benghazi;
- one school of nursing for female nurses, in Tripoli;
- one health training institute for male nurses, in Benghazi. This institute has courses for other health personnel as well.

WHO nurse educators have continued t assist these schools since their establishment. Since 1963 a WHO public health nurse has been assigned to the TB Demonstration Centre in Benghazi. In 1964 a WHO public health nurse midwife was assigned as MCH nursing adviser at the Ministry of Public Health.

5. THE INFLUENCE OF FOREIGN NURSES ON NURSING IN LIBYA

In 1960 the report of the Mission of the International Bank for Reconstruction and Development recommended the employment of professional nurses from other countries to improve midwifery and strengthen hospital nursing services.[1]

In implementing this recommendation foreign nurses have been recruited from such countries as China, Great Britain, Italy, Pakistan, Spain and Yugoslavia, on bilateral agreement or indiviual contract.

Most of these have been recruited as part of a medical team and they function chiefly in a direct service role in hospitals.

Their influence is modified in many instances by their inability to speak Arabic, but those who are qualified professional nurses can still influence nursing by demonstrating good nursing care.

6. SUMMARY

In summary it would appear that nursing in Libya has been affected up to this point more by external than by internal influences. In 1965 the Ministry of Public Health established a Section on Nursing within the Ministry and appointed a nurse to that Section. That nursing post and the position of

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[1] The Economic Development of Libya; Washington D.C., 1960, Johns Hopkins Press for the International Bank for Reconstruction and Development.

the Section within the Ministry require clear definition of responsibility and authority before they can become effective. It should, however, become the logical place for co-ordination and planning of national nursing services, as well as providing the professional point of contact for nurses both national and foreign.

Developments in Libya in nursing have been confined largely to the hospital field, the dispensaries and MCH centres. Public health nursing has yet to be developed.

V NURSING ORGANIZATION IN LIBYA

1. CENTRAL ADMINISTRATION

Medical services in Libya are provided by the national Government through a system of hospitals, health centres, dispensaries and MCH centres.

Nursing personnel within this system are employed by the Ministry of Public Health, except for a small number employed by the National Social Insurance Institution (INAS).

Under the Ministry of Public Health nursing personnel may be classified civil servants or unclassified workers seemingly without regard to preparation, qualifications or years of service. The office of the Controller of the region is responsible for implementing personnel policies, as well as for allocation and transfer of nursing staff.

2. NURSING POSITIONS IN THE MINISTRY OF PUBLIC HEALTH

In January 1965 a nursing section was established within the Ministry of Public Health under the Department of Curative Services. A nurse has been appointed head of this section and has prepared her own terms of reference. These have not been ratified to date by the Ministry and the section is therefore limited in both responsibility and authority. There is no accepted definition of title or function for this nursing position at present.

There is an MCH section within the Ministry of Public Health under the Department of Preventive Services. It is staffed by a WHO Nursing Adviser and an Assistant to the Adviser, the latter is a Libyan qualified nurse. This section is responsible for the nursing supervision of the MCH centres throughout the country but the terms of reference for this section also are not firm.

3. NURSING ADMINISTRATION IN HOSPITALS

Nursing organization under the administration of a matron responsible for the planning and supervision of nursing services is not generally established in Libya. Most hospitals still operate under medical direction, nursing service being the responsibility of the medical director, of each department. In the Tripoli Government Hospital, for example, there is a chief medical director of the hospital and a staff of thirteen medical directors, one for each department. Administration of nursing service is under the individual departmental directors.

There is evidence of change. There are at least four hospitals in the country with nursing administration provided by teams of foreign qualified nurses under a matron. Shahat Sanatorium, Tripoli Emergency Hospital, and Jefren Hospital are under competent Yugoslav nursing administration, while Beida Hospital is developing nursing administration under the direction of a Pakistani matron. A fifth hospital, INAS, has already established a nursing administration system, with a staff of British nurses under a matron.

It is difficult to assess nursing administration in hospitals in which Italian religious sisters operate. It has not been possible to determine how many of them are professionally qualified nurses, but in general there seems to be no central nursing administration. Religious sisters in some hospitals are responsible for ward management, for operating theatres and for delivery rooms. In addition they manage essential services such as kitchen, supplies and laundry.

Where teams of foreign nurses are being assigned to hospitals in which there are Italian religious sisters, there is an apparent lack of clear definition of responsibility for essential service management and nursing administration.

In the small rural hospitals the basic problem of lack of nursing personnel precludes any form of nursing administration. These hospitals are under the direction of a doctor and in some cases the doctors must give nursing care themselves.

4. NURSING ADMINISTRATION IN PUBLIC HEALTH

There is no public health nursing programme in Libya at present.

Dispensaries and health centres provide curative services in the rural areas. They are staffed by assistant male nurses who are under the supervision of a doctor in the area. The doctor may visit once a week or once a month or even less frequently.

MCH centres are designed to provide preventive services to mothers and children in the form of ante-natal and well-child clinics, immunization and home visits. They are staffed by auxiliary workers trained in MCH two-year courses. They are under medical supervision of the medical health officer of the area, who usually conducts clinics on a weekly basis. Nursing supervision at present is provided from Tripoli, through the MCH Section of the Ministry of Public Health. The Ministry has requested WHO for five supervisors to provide more adequate support to these workers.

VI NURSING PERSONNEL IN LIBYA

Table 1

Number of Nurses and Midwives in Libya, 1964

Sex	Libyan	Foreign	Total
Male	1 494	66	1 560
Female	408	298	706
Total	1 902	364	2 266

Source: Census, 1964. Total population 1 564 369

Figures in Table 1 are subject to reservation regarding their completeness.

In Libya there is no nursing law which defines nurse or midwife. Accordingly, there is no differentiation in the figures between the professional nurse and midwife, and the auxiliary.

Data have not been available as to the number of foreign nursing personnel employed by the Ministry of Public Health. Individual files exist for foreign personnel but there is no scrutiny of their credentials by an officially appointed body.

If it is assumed that all foreign nurses and midwives are professionally qualified, the nurse midwife to population ratio was roughly 1:4 000 or .25 per 1 000 population in 1964.

Similarly the auxiliary nurse to population ratio was roughly 1:800 or 1.25 per 1 000 population, since only nineteen Libyans of the total 1 902 were graduates of the School of Nursing, Tripoli.

There is no uniform international standard for preparation of nursing personnel to population. Figures from a study undertaken by WHO in 1961[1] show wide variation among countries. For the nurse midwife the range is from less than 1 to 10.7 per 1 000 population. Figures in 1961 for Australia were 6.02 per 1 000, and for Canada 6.8 per 1 000; for the United States the figure was 4.1 per 1 000 in 1962.

Among the nursing personnel included in the figures of Table 1 are:

i. foreign nurses and midwives, professional and auxiliary;

ii. Libyan nursing personnel, graduates of the School of Nursing, Tripoli;

iii. Libyan health workers in Maternal and Child Care graduates from Suk-el-Giuma School;

iv. Libyan health workers in Maternal and Child Care graduates from Berka School;

v. assistant male nurses trained on the job in hospitals before and after independence;

[1]Unpublished Report on The Cost and Sources of Finance of Health Services. Geneva, 1966.

vi. nursing orderlies and dressers trained on the job in hospitals during the British Military Administration;

vii. assistant nurses, cleaners or servants who have been taught to carry out one or more activities such as injecting;

viii. professional nurses with international agencies who serve as teaching staff in schools for nursing personnel, and in an advisory capacity to the Ministry of Public Health.

The male nurse graduates of the Health Training Institute, Benghazi, are not included in these figures as the first class graduated in April 1966.

In 1965-1966 the Nursing Section in the Ministry of Public Health undertook a census of nurses in all hospitals in an attempt to determine the number of nurses, Libyan and foreign, and their qualifications. To date the return of questionnaires is incomplete. The data will not be uniform since the individual nurse was asked to complete the questionnaire and will make a personal evaluation of her own qualifications.

The completed questionnaires are being checked by the nurse in the Nursing Section against the individual files in the personnel office. One of the problems experienced in checking is the incompleteness of the individual file in which proof of credentials is sometimes lacking.

VII NURSING EDUCATION IN LIBYA

The formal training in Libya of all nursing personnel is operated and controlled by the Ministry of Public Health.

Selection of candidates is made by the teaching staff of each school but is subject to the approval and additions of the Ministry.

1. THREE-YEAR BASIC PROGRAMMES

There are two schools for the preparation of nursing personnel: a school for girls in Tripoli, and a school for boys in Benghazi.

Table 2

The Number of Students in the School of Nursing, Tripoli 1957-1968
Their Basic Education by Number of Years, and their Status on Graduation

Year of Class	Number of Students Enrolled	Number of years Basic education					Number completing course by 1966	Drop-outs		Post-basic preparation		Present status
		5	6	7	8	9		Number	Reason	Kind	Place	
1957-1960	1					1	1	-	-	1- Studied with 2nd & 3rd year students of basic nursing education programme	Khartoum Nursing College, Sudan	1- On teaching staff of School of Nursing, Tripoli
1960-1963	2		2				1	1	not known	1- Surgical nursing, 1965-6 after 2 yrs experience in Emergency Hospital, Tripoli	Khartoum Nursing College, Sudan	1- Studying in Khartoum
1961-1964	9		8	1			8[a]	1	during 1st year reason not obtained	1- Mid ifery 1965-6	Alexandria	1- On teaching staff of School of Nursing, Tripoli 6- On staff, Gov't Hospital, Tripoli 1- Studying in Khartoum
1962-1965	8[b]	3	5				8	0	-	-	-	5- On staff, Gov't. Hospital, Tripoli 3- On staff, Gov't. Hospital, Benghazi
1963-1966	22		16	3	3		16 (in July 1966)	2[c] 3 1	failed & are repeating failed 1st year exams withdrew	-	-	16- Students in this group were older (15-18 yrs) & 5 of them are thought to have potential for more training
To 1966 Total	42	3	31	4	3	1	34	8		3		34

Continued -

Table 2 (cont.)

The Number of Students in the School of Nursing, Tripoli 1957-1968
Their Basic Education by Number of Years, and their Status on Graduation

Year of Class	Number of Students Enrolled	Number of years Basic education					Number completing course by 1966	Drop-outs		Post-basic preparation		Present status
		5	6	7	8	9		Number	Reason	Kind	Place	
1964-1967	14		9	3	2			1 1	failed & is repeating with 1965-8 class withdrew			Students
1965-1968	27 (+ 1 failure from 1964)	2	22	2	1	-						Students
Student Enrolment To date TOTAL	83	5	62	9	6	1	-	-	-	-	-	-

Source: Acting Director, School of Nursing, Tripoli, April 1966.

a 3 of these graduates are completing secondary education

b 5 of these were graduates of the nursing assistant course, School of Nursing, 1959-1961.
3 of these were graduates of the Berka assistant midwifery course

c 2 failures had Grade 6 basic education.

The School of Nursing, Tripoli, opened in 1956 and has graduated nineteen students. Table 2 shows the number of students and their basic education.

The Health Training Institute, Benghazi, began a course for male nurses in 1963 and has graduated eighteen students in April 1966.

Entrance requirements for both schools are flexible. It was initially nine years' basic education, which is "preparatory level" in Libya. It was lowered to six years' basic education, which is "primary level".

Table 2 shows the educational level of the girls since 1956.

For the Benghazi Health Training Institute course the students recruited in 1964 and 1965 had nine years' basic education.

Age requirement for girls: 14 years. This has been lowered in special cases referred by the Ministry.

Age requirement for boys: 17 years.

Recruitment: it is more difficult to recruit girls than boys partly because of the parental reluctance to permit daughters to live and work outside the home.

Curriculum: there is no minimum standard curriculum controlling hours of theory and practice. Each school uses a separate one. Clinical practice includes medical, surgical, operating room and out-patient department for both schools, plus obstetrics and paediatrics for the girls.

2. EIGHTEEN-MONTH COURSE FOR WORKERS IN MATERNAL AND CHILD CARE

There are two schools to prepare auxiliary workers for the MCH centres:

Suk-el-Giuma, Tripoli, opened in 1956

Berka, Benghazi, opened in 1959.

The two schools operate independently of each other though preparing the same worker. Each school is under a medical director.

Entrance requirements: (a) six years' basic education. This has been lowered by the Ministry for special students; (b) thirteen years of age. This has been lowered to twelve years in some cases by the Ministry.

Curriculum: there is no minimum standard curriculum controlling hours of theory and practice. Each school uses a separate one. This lack of uniformity applies as well to the number of deliveries each student must have in home and in hospital.

Table 3

Number of Students and their Disposition since Graduation, 1956-1965[1]

School	Number of Students	Completed Course	Employed in MCH	In Hospital	No longer employed
Suk-el-Giuma	60	60	39	18	3
Berka	49	49	30	11	8
TOTAL:	109	109	69	29	11

3. ON-THE-JOB TRAINING

Most large hospitals and some small ones have had training courses to try to provide personnel to meet the hospital needs. There is no pattern for these courses, and no provision for professional nurses to teach them.

4. SUMMARY

Nursing education has developed in Libya as in many other countries in a haphazard way to meet immediate and specialized needs. It has been affected by cultural attitudes towards education and the seclusion of women. There are, however, certain other basic factors which have affected the present training patterns.

i. The entrance requirements for all students whether being prepared as nurses or auxiliaries are at the same level - six years' basic education.

[1]Figures from MCH Adviser, WHO.

ii. Entrance requirements, as well as other school policies, are subject to the control of the Ministry of Public Health.

iii. There is no uniform curriculum or examination for schools training the same kind of student.

iv. Clinical practice areas for each school are weak because of the standard of nursing care and supervision, as well as lack of working equipment on the wards.

v. Students encounter communication problems on some wards where foreign medical and nursing teams are unable to speak Arabic.

vi. Residence facilities, particularly for the girls are inadequate and no provision is made for the employment of a suitable house-mother; without this assurance of supervision parents will not continue to permit their daughters to enter nursing schools.

VIII NURSING CARE IN LIBYA

Nursing care should include the provision of a clean environment for the patient, the observation and reporting of symptoms and the giving of medication and treatments as ordered by the physician. It includes much more of course, but even the simple activities for making the patient comfortable and for helping him to regain his health are basic to good nursing.

By these simple standards nursing care in Libya is at an elementary level.

1. NURSING CARE IN HOSPITALS

In some hospitals patients seem to be receiving the essentials but in many others there is indication that little nursing care at all is given. There are many reasons for this, including:

- Shortage of personnel. One example of this is in the Mental Hospital, Gargaresh, where one female psychiatric nurse is responsible for two hundred and sixty female patients in five buildings. A second example is in the Tripoli Government Hospital where two nursing personnel are responsible for one hundred and twenty-six children in the Paediatric ward at night.
- Poor utilization of personnel. This will happen where there is no nursing administration. An example is in the Tripoli Government

Hospital where a young graduate nurse is working in the pathology laboratory cutting sections and preparing slides.

- Lack of equipment such as thermometers and wash-basins.
- Unheated wards which make bathing impossible.

Added to this is a casual attitude towards the comfort and care of sick people and a seeming lack of responsibility for them.

Nurses hours: these conform to the general civil service hours 8 a.m. - 2 p.m., 2 p.m. - 8 p.m. and 8 p.m. - 8 a.m. They work thirty-six hours a week in winter and thirty-nine in the summer. With this distribution of hours the weight of time is on the night shift, and the weight of personnel is on the day shift. The fatigue factor in the twelve hours of night duty, plus shortage of staff, does not ensure the minimum of patient care.

In summary: with the present quality and quantity of staff available in Libya, and with the limited organization of nursing service, the standard of nursing care received by the patients in hospital cannot be considered adequate.

One hospital has achieved a change to an eight-hour shift with qualified nurses on duty on each shift. This hospital is in Jefren and is staffed by a Yugoslav team provided with nursing administration.

2. NURSING CARE IN PUBLIC HEALTH

Public health nursing includes working with individuals and their families in the homes, in schools, in clinics, and in the community in general. It is basically a health promotion service directed towards the family as a unit. A public health nursing programme with this objective has not yet been developed in Libya.

A nursing service is being provided to specific or specialized programmes in public health as:

2.1 Maternal and Child Health

The infant death rate, not exactly known but which has been estimated as high as 50 per cent, has focussed attention since 1952 on the need for care of mothers and children. A system of MCH centres and sub-centres has been established in parts of Libya, staffed by auxiliary personnel. These auxiliaries are trained in two schools, Berka and Suk-el-Giuma, as described on page 237. The objective of the training programme was to prepare a worker who could function in an MCH centre or sub-centre in the following ways:

i. conduct ante-natal clinics,
ii. conduct well-child clinics,
iii. provide home delivery service,
iv. give immunizations,
v. provide a home visiting service.

In each of these activities teaching the mother is an integral part.

In observing the work in MCH centres and sub-centres it is clear that the auxiliaries function below the level of expectation. The doctors who work in the MCH centres indicate that few of the auxiliaries carry an effective programme either within the centres, or in home visiting, and that attendance of mothers at centres is chiefly to see the doctors.

From a nursing point of view it was apparent that standards of technique were not being observed and that the general volume and quality of work was low. The auxiliaries find it difficult to do home visiting for many reasons - "their families disapprove", "families do not like to be visited", "no transport".

It must be acknowledged that these girls are at a disadvantage in many ways. They require constant strong nursing supervision which is not yet available. They are young, have limited education and experience, they

work outside their own homes which is relatively new for women in Libya, and they are sometimes resisted in their work by older dispensers and nurses and midwives. They are frequently not given civil service status which is promised on recruitment.

From a public health point of view the nursing care and teaching provided through this programme is extremely limited and would not seem to be achieving its objective. In some centres the present programme could constitute a hazard to public health.

2.2 School Health

No programme has yet been established which includes nursing service. At present plans are underway to provide a school health programme staffed by Chinese doctors and nurses. Though some of the nurses have arrived in Libya they have not yet begun a programme of activities which could be assessed. Administratively, however, they will be under the Ministry of Education which may present some problem in co-ordinating their programme with basic public health, which is under the Ministry of Public Health.

Public Health nurses have a role to play in communicable disease control programmes. So far there is no organized immunization programme in the MCH centres and under the present system the ability of the health workers in Maternal and Child Care to give it is questionable.

In summary, public health nursing needs to be developed in Libya. There is a tremendous need for health protection and health education in this country and every effort should be made to involve health workers and teachers in attacking this basic problem. In most countries the public health nurse provides an effective channel for health teaching into the family. In this country new methods may have to be devised to reach the family while observing traditional attitudes related to the seclusion of women.

IX FACTORS AFFECTING THE STATUS OF NURSING IN LIBYA

There are more men than women employed in nursing in Libya in contrast to most countries in which nursing has been largely a female occupation. Recruitment of male students presents fewer problems than recruitment of female students. There are cogent reasons for this situation.

Until recently Libyan girls and women have been secluded, devoting their time to home activities. In public they appear cloaked by the traditional baracan. Degrees of seclusion vary from one region to another but there is still a strong tradition in favour of concealment and seclusion of womenfolk.

With the increase in educational facilities available to girls there has been an increase in school enrolment of girls at all levels. The 1964-1965 enrolment in secondary schools was 368 for girls, compared with 3 513 for boys.[1] There is keen competition to recruit any female graduates. Teaching attracts most of them some go into secretarial work, others go on to university, and many marry. So far nursing has not attracted any recruits from the secondary educational level. The director of a Teachers' Training College pointed out that if a girl reaches university entrance level she elects to go into medicine, which is a respected and lucrative profession, rather than nursing, which is held in low esteem. One cannot dispute the logic of this argument under present circumstances.

Nursing by its nature of providing care to the sick includes activities which bring the nurse into close contact with the patient. Some of the activities are considered menial and in this culture families do not wish to expose their daughters to a profession which requires participation of this kind.

Table 2 shows that in ten years, 1956-1966, the School of Nursing in Tripoli has attracted only 83 students. The highest proportion of these

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[1]Statistical Paper No. 8, Statistics and National Accounts Section, Division of Economic and Social Affairs, Ministry of Planning and Development, 1965.

have six years' basic education. With entrance requirements at this level it is doubtful if nursing could attract enough recruits to provide nursing services in a life time.

Professional nursing education is based on general education with a strong science foundation. Basic sciences are given in Libya in the first year of secondary school and to prepare professional nurses it is necessary to attract students from this secondary school level. So far this has been impossible.

Other factors which seriously affect nursing are poor working conditions in hospitals and health centres. A low salary scale which includes glaring anomalies between categories of nursing personnel, without regard to preparation or responsibility, contribute to the poor situation. Perhaps the most basic problem has been lack of nursing administration which is essential for planning and executing service. Nursing advice is seldom sought on such important matters as nurse recruitment, and nursing personnel policies.

Similar problems have existed in other countries and have been overcome by the combined efforts of professional nursing organizations, the Government and the public. In Libya there are not enough qualified national nurses to form a professional nursing organization. The responsibility for leadership in this field must be taken by the Government, assisted by Libyan qualified nurses and Libyan doctors, and by the public. Much can be learned from the experience in other countries through international and foreign nurses working in Libya. The establishment of a national authority on nursing could bring together representatives from Libyan nurses and doctors, international and foreign nurses, government departments and the public to stimulate interest in the improvement of nursing in this country.

There are many difficulties in planning a national nursing service for a country in which female nurses must care only for females and children, male nurses for males. In the field of preventive medicine where the family

is the unit, the problems of providing service and making the best utilization of personnel are very great.

Co-education of students is already in operation in Libya and should be kept as an objective for nurse training.

Young Libyan doctors are increasing in numbers. They have expressed interest in having well prepared Libyan nurses who, as nursing colleagues, can provide skilled nursing service to complement the medical services of the doctors. Support from the medical profession will go a long way to changing attitudes towards the profession of nursing.

X PRIORITIES

Having assessed the present nursing services in Libya, planning for the development and extension of services has led to priority being given:

i. to provide for the immediate nursing needs of Libya through recruitment of foreign qualified personnel;

ii. to establish a nursing education programme which will prepare Libyan nurses to provide the nursing services in Libya;

iii. to establish a nursing organization structure within the Ministry of Public Health on which a national nursing service can be built.

XI SPECIFIC OBJECTIVES

In accordance with these priorities specific objectives have been set:

1. <u>Recruitment of Foreign Nursing Personnel</u>

i. to establish minimum employment standards to be used in the recruitment of foreign qualified nurses;

ii. to establish a recruitment policy which will include the active participation of the Chief Nursing Officer;

iii. to provide for an orientation course for all foreign nurses that will include Arabic language and customs.

2. Nursing Education

i. the consolidation of all schools and institutions which prepare nursing personnel in Libya at the present time (four schools);

ii. the adoption of a three level system of nursing education as the basis of nursing service:

- consolidation of the present schools to be the first step,
- on-the-job training programmes for auxiliary personnel in hospitals, dispensaries and health centres to be the second step,
- the establishment of a basic four-year programme within the University of Libya leading to a baccalaureate degree in nursing.

3. Nursing Organization Structure within the Ministry of Public Health

i. the establishment of a nursing structure at all levels beginning with the establishment of a Chief Nursing Officer in the Ministry responsible for all nursing service, curative and preventive;

ii. the establishment of clear cut policies and written descriptions of functions and responsibility lines of communications.

4. Steps to meet the urgent need in the Government Mental Hospital Gargaresh, Tripoli, for nursing personnel.

5. Initiation of steps leading to nursing legislation.

6. Provision of continuing education for nursing personnel through fellowships for training abroad, and financial assistance for those studying extramurally in Libya.

XII RECOMMENDATIONS

In summary the objectives of the recommendations which follow are both immediate and long-term. They are designed to provide nursing services now, with the assistance of foreign qualified nurses, and in the future, by Libyan qualified nurses, both professional and auxiliary.

An attempt has been made to present the recommendations under three headings:

- Recruitment, the development of a policy and the establishment of measures to control the practice of nursing.
- Nursing education, its development and extension.
- Nursing organization, the establishment of a structure within the Ministry of Public Health, on which to build nursing services at all levels.

The recommendations are inter-related and inter-dependent. The implementation of one will affect the implementation of another. Accordingly, it is hoped that they will be considered as a whole.

Target dates for some will depend on the ability to recruit personnel for the key positions recommended, and candidates for training abroad. Others, however, could be initiated immediately such as those relating to recruitment.

Throughout this assignment it has been apparent that the Libyan people need a high standard of nursing services as much as it is needed by people in other countries. It is the writer's conviction that there are young Libyan men and women who can be motivated to become professional nurses, provided they have the support and leadership of a wise government and an informed and interested public.

1. 1967 - A NATIONAL BOARD OF NURSING

The establishment in 1967 by the Minister of Public Health of a National Board on Nursing to assist with the planning and development of nursing in Libya.

The Board should be authorized to form the following sub-committees from its own membership, and to co-opt experts as needed for them:

1.1 A sub-committee to set up minimum employment standards for the practice of nursing in Libya to protect the public and those qualified, both professional and auxiliary, to practise nursing.

Libya will be obliged to recruit foreign nurses for some time to meet its nursing needs. It is therefore necessary to establish criteria by which to examine the credentials of those wishing to practise nursing in this country.

The International Council of Nurses has had extensive experience in this field and it is recommended that the assistance of this Council be requested in preparing criteria.

1.2 A sub-committee to set up national minimum standards for nursing education:

1.2.1 Uniform entrance requirements and uniform curricula for all schools and institutions preparing nursing personnel in Libya.

1.2.2 Uniform examination of students.

1.2.3 Teaching staff qualifications.

1.2.4 Facilities, including classroom, clinical field and student residences.

It will be necessary to establish a system for enforcing these standards. This is usually done through the Ministry by a staff of professional nurses.

National standards will result in nursing schools of comparable standards approved by the Ministry. These measures will provide a built-in system of national accreditation of all nursing schools in Libya, as well as registration of nurses, professional and auxiliary, who pass the national examination.

National accreditation and registration are the first steps towards nursing legislation which will control the practice of nursing. At the present time legislation is premature until Libyan professional nurses are prepared to participate in planning the legislation which will ultimately define and control the practice of nursing in their country.

1.3 A sub-committee to set up a recruitment policy for foreign nursing personnel. Such a policy should provide for:

1.3.1 The inclusion of the Chief Nursing Officer, or a professional nurse delegated by her, on the recruitment team.

1.3.2 The referral of all newly recruited foreign nursing personnel to the Chief Nursing Officer in the Ministry of Public Health for orientation.

From a professional and technical point of view an experienced nursing administrator is best qualified to assess nursing qualifications. As soon as Libyan professional nurses have had some experience in nursing they should assist the Chief Nursing Office in recruitment.

The need for orientation of new, foreign and national nursing personnel cannot be over-emphasized. It is not intended to replace documentation provided by the personnel office but to complement it by providing the professional point of contact within the Ministry.

1.4 A sub-committee to work with the Senior Nurse Educator in planning for the three level system of nursing. (See Recommendation 4, page 254).

The composition of the Board preferably should be of professional nurses since members of a profession should control their own organization. At this time, however, there are few Libyan professional nurses, and there is a need for the interest and support of other groups and professions to assist in developing nursing. The following composition is therefore suggested:

- the Chief Nursing Officer, Ministry of Public Health

- a senior Libyan qualified nurse,
- a nurse representative from the teaching staff of the School of Nursing, Tripoli,
- a nurse representative from the teaching staff of the Health Training Institute, Benghazi,
- a senior nurse representative from INAS,
- a senior WHO Nursing Adviser (i.e. the Senior Nurse Educator as referred to in Recommendation 10, page 263),
- a medical representative from the Ministry of Public Health,
- a representative of the Ministry of Education,
- a representative of the medical directors of hospitals,
- a representative of the preventive field of medicine.

There is a need to change the image of nursing in Libya. The Ministry of Public Health has a responsibility to demonstrate its belief in nursing as a profession. By delegating responsibility to professional nurses for those matters which pertain to nursing the status of nursing in the eyes of the community will be raised.

2. 1967-1968 - ORIENTATION COURSE FOR FOREIGN NURSES

The establishment of an orientation course preferably in association with the University of Libya for foreign nursing personnel recruited to work in Libya. The course should include the teaching of the Arabic language and culture, and should be given to nurses before they are sent into the field. It is recommended that this be included as a term of employment and that contracts should be for at least three years.

There are many foreign nurses and doctors working in Libya who have no knowledge of Arabic. The extent of the problem is great, creating poor communication between professional personnel and, particularly, between professional staff and the patient. It is essential that all who work in the health field have a working knowledge of the official language and an understanding of

the traditions and customs of the people to ensure good patient care and job satisfaction for personnel.

Recruits should be apprised of the requirement and of the difficulties involved. It has been shown in international and bilateral aid programmes that where facts are placed before nursing personnel a difficult assignment attracts people of good quality and motive.

If the orientation course is in the University the teaching faculty will come to appreciate the potential of qualified nurses. It is hoped that by involving them with educated nurses their attitude towards nursing will change. It is also hoped that it may help lay the foundation for nursing courses within the University.

The involvement of Libyan women in such an orientation course to instruct the nurses about customs in Libya will involve and interest more women in nursing. These are all factors important in changing the attitude of the people.

3. 1968-1973 - ORGANIZATION FOR ADMINISTRATION OF NURSING SERVICES

The creation of a nursing organization structure within the Ministry of Public Health for all nursing services in Libya and the establishment of the following posts:

3.1 A chief nursing officer in the Ministry of Public Health, directly responsible to the Under-Secretary.

Functions: responsibility for planning, policy making, co-ordinating of all nursing services in the country, and with full executive authority to carry out these functions. She should serve as an adviser in the Ministry on all matters related to nursing and serve on all national committees which deal with matters affecting nursing.

Qualifications: a public health nurse-midwife, graduate of a recognized professional school of nursing, and having advanced preparation

in administration, preferably a degree in nursing and with five years experience of a progressive nature in an administrative nursing position.

3.2 A regional nursing officer in each of the eastern, western and southern regions, responsible administratively to the Controller of Health Services, and technically responsible to the Chief Nursing Officer.

Functions: responsible for the administration and supervision of all nursing, curative and preventive, in that region and with full executive authority to carry out these functions.

Qualifications: a public health nurse-midwife, graduate of a recognized professional school of nursing, with advanced preparation in administration and preferably with five years' experience in an administrative nursing position.

3.3 A public health nurse-midwife in the long-run one in each muqataa (10) and responsible administratively to the Medical Officer of Health and technically responsible to the Regional Nursing Officer. This is a long-term objective. The immediate objective might be to provide two for the Western Provinces, two for the Eastern Provinces and one for the Southern Provinces.

Functions: responsible for the administration and supervision of all nursing.

Qualifications: a public health nurse-midwife, graduate of a recognized professional school of nursing, with preparation in midwifery, and preparation or experience in administration and with three years' experience in public health nursing.

These positions in public health nursing will form the basic structure on which a strong public health nurse-midwife programme can be built.

3.4 A senior matron in each hospital having over 100 beds, beginning with Tripoli Government Hospital and Benghazi Government Hospital, responsible administratively to the Medical Director of the hospital and technically to the Regional Nursing Officer.

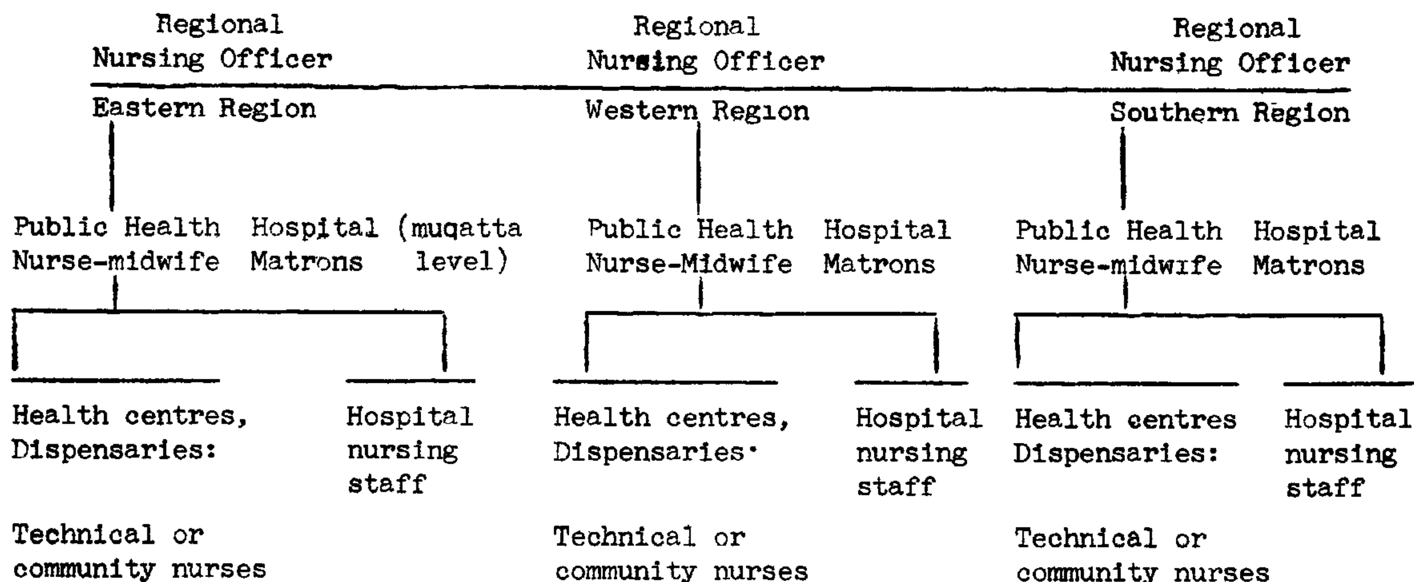
Functions: responsible for the administration and organization of nursing service within the hospital and with full executive authority to carry out these functions.

Qualifications: a nurse-midwife, graduate of a recognized professional school of nursing, with advanced preparation in administration and at least five years' experience in nursing administration at a senior level, preferably as a matron.

Provision should be made to recruit matrons for all hospitals having over 100 beds as soon as it is feasible. In future each nursing team recruited through bilateral agreements should include a matron.

NURSING ADMINISTRATION ORGANIZATION CHART

CHIEF NURSING OFFICER (Ministry Level)



4. 1967-1968 - THREE LEVELS OF NURSING PERSONNEL

The adoption of a three level system of nursing to provide basic nursing services in Libya:

i. Professional nurses to serve in teaching, administration, and clinical specialty capacities, whose general and nursing education are at a level consistent with other professions in Libya, i.e. a university graduate.

ii. Technical or community nurses to serve as multipurpose workers in either the curative or preventive field and whose preparation is of a technical nature. (See Recommendation 5).

iii. "Aides" to serve in either the preventive or curative field under supervision of a doctor or a nurse and whose preparation is a short-term in-service training for a limited area of service.

In planning a nursing service in a new country two objectives must be considered:

- Providing care to the patients and community at the present.
- Providing a sound basis for the development of a nursing service which will ultimately meet professional standards.

The above recommendation follows a pattern suggested by Dr. Ruth Freeman following her study of Nursing on behalf of the World Health Organization, March 1965. It provides for the preparation of aides and technical or community nurses, in sufficient numbers to meet present needs as quickly as possible. The minimum entrance requirement for the technical nurse training is six years' basic education; for the aide, the ability to read, write and count.

4.1 <u>This plan will require for the preparation of the professional nurse:</u>

4.1.1 The establishment of a nursing department or faculty in the University of Libya and with a basic collegiate programme of four years.

There has been a growing conviction in many countries that nursing education is a national responsibility and that it should be provided

within the general framework of the educational system of the country. Doctors, social workers, teachers, lawyers and engineers are all prepared within such a framework. All of them provide essential services to the country. Nursing is not only an essential service to the country but represents the largest single group of workers within the health services. Older countries are now attempting to transfer nursing education from the hospital to the educational institution. Libya has an unusual opportunity to begin "at the beginning" and place nursing where it belongs.

4.1.2 The preparation of Libyan teaching staff for the basic collegiate nursing programme.

A careful recruitment campaign for students, male and female, should be conducted in the secondary schools. It is suggested that ten secondary school graduates, five male and five female, be selected for preparation abroad in a University School of Nursing. The selection of the receiving university should be made in consultation with nursing education advisers in the World Health Organization, and should be based on:

i. curriculum content and philosophy related to the development of a basic collegiate programme;

ii. a faculty interested in assisting with the development of a Libyan collegiate programme;

iii. the possibility of establishing a continued working relationship between the foreign University and the Libyan project. This might include the secondment of foreign university faculty members to assist with planning and development of the Libyan collegiate programme.

4.1.3 The establishment of a planning sub-committee by the National Board on Nursing.

It is suggested that the sub-committee should be small and top level to act as an advisory body to the Senior Nurse Educator developing the programme. The sub-committee might consist of four members only, as:

- the Chancellor of the University of Libya or his representative,
- the Under-Secretary to the Ministry of Public Health,
- the Under-Secretary to the Ministry of Education,
- the Chief Nursing Officer to the Ministry of Public Health.

4.1.4 Early consideration should be given to the clinical practice facilities for the University of Libya's faculty or department of nursing.

4.2 <u>This plan will require for the preparation of the technical nurse:</u> (See Recommendation 5).

4.2.1 The amalgamation of all existing schools in Libya where nursing personnel are being prepared (the School of Nursing, Tripoli, the Health Training Institute for Male Nurses, Benghazi, the Souk-el-Giumma and Berka Schools for health workers in Maternal and Child Care).

4.2.2 A clear statement of the objectives of the schools for the preparation of a technical or community nurse.

4.2.3 A senior nurse educator, through WHO, to co-ordinate the amalgamation of the existing schools in co-operation with the medical and nursing director of the present programmes and to assist with the development of the new schools. Her appointment should provide for at least six months' planning before changes are effected. This appointment has priority.

4.2.4 The establishment of four new schools and the extension of an existing school for the preparation of the community nurse:

- one for male nurses in Tripoli,
- one for female nurses in Benghazi, using the existing Berka school as a nucleus,
- one for male nurses in Sebha,
- one for female nurses in Sebha.

The establishment of these schools will depend on recruitment of teaching staff. Immediate steps should be initiated through the World Health Organization to begin recruiting.

4.2.5 A Libyan counterpart should be appointed to work with the Senior Nurse Educator. In preparation for this it is recommended that advanced preparation overseas be given as soon as possible to Libyan nurses who have had both post-basic preparation abroad and experience in Libya, and who have a good knowledge of English. Consultation with the Regional Nursing Adviser of the World Health Organization is recommended in determining the country of study and the courses to be taken.

4.2.6 The establishment of a sub-committee of the National Board on Nursing to act in an advisory capacity to the co-ordinator of the project (Senior Nurse Educator).

4.2.7 Selection of Libyan nurses, graduates of the School of Nursing and the Health Training Institute, who have nine years' basic education, for post-basic preparation abroad to prepare as teachers for the new schools. Consultation with the Regional Nursing Officer of WHO should be requested inpplanning for these fellowships.

4.3 <u>This plan will require for the preparation of the aide nurse:</u>

4.3.1 The establishment of a sub-committee of the National Board on Nursing to assist in the planning. (See Recommendation 1, page 247).

This committee should include the Chief Nursing Officer, representatives of medical directors of hospitals, of matrons, where these exist, and International nursing advisers from specialized fields such as MCH, TB and nursing education. The Italian religious sisters could contribute to this sub-committee from their experience.

4.3.2 The establishment of a uniform curriculum by the sub-committee with the approval of the National Board.

4.3.3 The recruitment of sister tutors, or of qualified nurses with experience in training auxiliary personnel. The numbers required would be determined by the sub-committee according to the overall plan, but recruitment should be started. These nurses should be under one central command, preferably under the Chief Nursing Officer.

Another aspect of the programme to be dealt with is the re-training of those presently serving as nurses.

The educational level of girls in Libya will continue to rise and provision should be made within the detailed plan for mobility from one level to another as individuals meet educational requirements.

In all of this planning it is emphasized that the Chief Nursing Officer in the Ministry of Public Health has responsibility for planning for national nursing service. Therefore, it is implicit in her terms of reference that she should play an active part in each and every phase of this project.

5. 1967-1968 - TRAINING PROGRAMME FOR AUXILIARY NURSING PERSONNEL

The establishment of a single training programme for the preparation of nursing personnel at the auxiliary level, i.e. the technical or community nurse. (See Recommendation 4, page 254).

This should be a three-year programme designed to prepare personnel, male and female, to form a broad technical group equipped to serve in either the curative or preventive fields. It would be based on the consolidation of the present three-year programmes of the School of Nursing and the Health Training Institute, unified by standard curricula and examination. The present schools for the preparation of MCH workers should cease to exist for the preparation of a specialized worker. They would be absorbed into the broader three-year programme.

While all students would have the same general curriculum, the female students would have additional practical work in midwifery and the male students would have additional work in public health.

The graduate female students would be equipped to serve in hospitals, in health centres, and in MCH programmes within the health centres.

This recommendation is based on several factors:

i. All schools for nursing personnel at present in Libya have the same entrance requirement of six years' basic education. Professional nurse education must be based on a secondary education.

ii. The MCH workers as presently functioning seem inadequate in age and in preparation to fulfil the objective for which they were trained.

iii. As the health services develop in Libya the need for a multipurpose nursing auxiliary will become increasingly important. The worker with a broad basic training can be moved from one programme to another with much less difficulty than the specialized worker.

iv. The family unit is the basis of public health work and the multipurpose worker would be prepared to deal with any member of the family. In a country where personnel is scarce every effort must be made to utilize personnel economically.

v. The MCH programme would continue to be an important part of the total public health programme. It would still provide the separate physical facilities within the health centre.

vi. The existing MCH schools could continue to be used as training centres available to all students in the combined course, not only to a separate MCH group.

The graduates of this course would be called either community nurse or technical nurse.

6. 1967-1973 - NEW SCHOOLS OF NURSING

The establishment of:

i. a school for the preparation of female nurses; one in Benghazi (1967-1968), one in Sebha;

ii. a school for the preparation of male nurses, one in Tripoli (1968-1969) and one in Sebha.

Cultural attitudes towards young women living away from their families are changing in some regions in Libya. It seems advisable, however, for the present to establish schools of nursing in the main centres from which female students can be recruited. Resident accommodation under good supervision will reassure parents that their daughters will be safely looked after.

Schools for male nurses should be established in each of the main centres, with resident accommodation or financial provision made to permit them to live in the community.

7. 1967-1968/1973 - FELLOWSHIPS

Fellowships for study abroad should be made available to students for basic and post-basic preparation in nursing (in addition to Recommendation 6 for teaching personnel).

7.1 <u>Basic nursing education</u>

Young men and women who have completed secondary school should be recruited to study nursing abroad, preferably within a university school. Facilities in the Middle East as well as in western countries should be used to expose Libyan students to different philosophies of nursing education. Melding their different experiences Libyan nurses could develop a philosophy of nursing suited to the needs of their own country.

7.2 Post-basic education

Nurses who have graduated from the School of Nursing, Tripoli, and from the Health Training Institute, Benghazi, and who have attained secondary education level should be encouraged to study abroad in special areas such as teaching, administration and the clinical specialities. Already some of the graduates without secondary education have studied in the Sudan.

For those who have not completed secondary education, but who are holding teaching or administrative positions in Libya now, provision for special training in those particular fields is imperative. While the long-term objective is to develop leadership in nurses with adequate educational background, the realities of the present demand that technical competence and skills of those available must be strengthened. Some countries will provide special courses for international students who do not meet the university entrance requirements. The Regional Office for the Eastern Mediterranean of the World Health Organization can provide assistance through its Nursing Adviser in selecting universities which make such provisions.

8. 1968-1973 - ASSISTANCE FOR FURTHER EDUCATION

Assistance should be made available to all nurses in Libya who have the potential and desire to improve their general education with a view to obtaining more preparation in nursing abroad. While working towards secondary education, financial assistance should be provided similar to that available to students studying at the University of Libya. The possibility of developing special courses for nurses at the University or the School of Advanced Technology, and the possibility of admitting nurses to the School of Public Administration in Libya should be pursued.

At present young men and women with limited educational background are being and will continue to be recruited as nursing students at a technical

level. Some of these Libyan graduates are already trying to raise the level of their general education through attendance at day and evening courses. Some of them carry a full-time job while doing this. Nurses in many countries have filled in gaps in their basic education in this way and have gone on to provide leadership in nursing in their own countries. The same pattern seems to be developing here but every effort should be made to facilitate educational opportunities and reduce the time to a minimum without sacrificing the quality of education. To work and attend school is not easy for anyone, but for young women whose culture has just begun to permit women to move from the seclusion of the home it presents special difficulties. The disapproval or resistance from family and community is a weighty pressure which requires strong counter-resistance from a government interested in increasing its supply of young educated people for positions of leadership. Financial assistance and open endorsement by the Government of education for nurses should support their cause.

9. 1967-1968 - PSYCHIATRIC HOSPITAL, GARGARESH

It is urgently recommended that immediate consideration be given to the nursing staff requirements of the Psychiatric Hospital, Gargaresh.

On the day of observation the patient census was 850. The full nursing complement was seven nurses, of whom only one was a professional nurse with additional psychiatric preparation.

The one professional nurse was responsible for the nursing care of 260 female patients in five different buildings during the daytime shift from 8 a.m. to 2 p.m. She was assisted by one auxiliary nurse and two servants, or attendants. The situation on the male side was similar.

At night one female auxiliary is responsible for all of the female wards, and one male auxiliary for the entire male section.

Nursing care for the mentally ill requires a high degree of skill, as well as special preparation. In this hospital, nursing care is limited to medication as prescribed and custodial supervision.

Aside from the lack of nursing care and supervision of patients in this hospital, is the element of danger to the nursing personnel working singly, particularly on night duty.

It is urgently recommended that a consultant be requested to study and determine staffing requirements.

10. 1966-1967 - WHO ADVISORY PERSONNEL

It is recommended that a request be made forthwith to the World Health Organization for the assistance of:

i. a Senior Nurse Educator at national level to co-ordinate nursing education programmes in Libya, and to plan for the establishment of a basic collegiate programme of nursing in the University of Libya;

ii. a Nurse Educator to assist with the co-ordination of auxiliary nurse education programmes and to guide in the preparation of courses for nursing aides in hospitals under direction of the Senior Nurse Educator;

iii. consultant services of a Senior Public Health Nursing Administration assist with the establishment of the national nursing service. Her services could be on a continuing basis, or on a short-term basis of three months over a five-year period.

In order to make the best use of all teaching personnel presently engaged in schools of nursing, to facilitate the changes recommended in this report, the services of well prepared experienced Nurse Educators are essential. Early recruitment is advisable to permit planning before implementation of change.

11. 1968-1973 - NURSING MANPOWER STUDY

It is recommended that a survey of nursing manpower needs be undertaken. This is a long-term objective for planning based on the suggested plan for organization of nursing services.

The need for nursing services varies greatly from one region of the country to another and it would require a detailed study to estimate staff requirements.

PART IV

HEALTH STATISTICS

by

K. Margreitner, M.D.
WHO Consultant

March - June 1966

I OBJECTIVES

The purpose of the visit was to participate in the work of the Advisory Team for National Health Planning in Libya, and to make recommendations for further development of vital and health statistics and Health Statistical Services respectively.

II INFORMATION ON POPULATION AND VITAL STATISTICS

1. POPULATION STATISTICS

With the assistance provided by the Technical Assistance Administration of the United Nations, the first population census of the United Kingdom of Libya was undertaken on 31 July 1954. The tables included in the annexes cover items such as biological distribution of the population (sex and age distribution) as well as socio-economic structure of the population (occupational distribution and professional status, industrial classification, type of housing, literacy etc.).

Considering the great difficulties under which the census was carried out, due to lack of any tradition of census taking, in the first place, and deficiency of technically qualified personnel for the planning and field operations, immense scatter of the population, nomadic tribes etc., the Census results cannot be expected to be absolute. But, in spite of this, it is believed that the results are reliable.

The second census in Libya was undertaken on 31 July 1964. Because of a considerable population movement, due to the internal inflation caused by rapid changes of the social structure of the population, the central statistical office planned this census. The office made efforts in the direction of making available a complete set of all census tabulations, for the country as a whole, in Arabic and English.

The questionnaires, as in 1954 Census had provision to collect details of biological characteristics, nationality, marital, economic and educational status of the population, as well as details of industry and occupation of the "labour contingent" of the population. The questionnaires also had provision to collect data in connection with the nature and cause of infirmities. It should be noted, that this information is very useful for the Public Health Administration and Social Affairs. Details on population data (distribution throughout the country, density ranges, urban and rural, age and sex distribution, population projections, vital statistics data) are included in the annexes to the present report.

2. VITAL STATISTICS

As stated in the "Report on a Visit to Libya" by the Regional Adviser on Statistics in 1961, the recommendation in connection with the organization of the Vital Statistics of Libya made by Dr. El Shanawani in 1951, and by the Regional Adviser on Statistics in 1956, have still not been implemented.

In the meantime, a "Draft Law on Civil Status" has been prepared and it is hoped it will be submitted to the Legislative Authority in a very short time.

According to this "Draft Law", an administration called "The Civil Status Administration" should be established in the Ministry of Interior, the jurisdiction of which should be the execution of the provisions of this Law. In the spirit of this law, the Civil Register Offices should be established and be competent to register the events of Civil Status of the Nationals such as birth, marriage, divorce, death, etc., and to issue the identity and family cards in accordance with the provisions of this law.

2.1 Birth notification

For birth notification the time limit is fifteen days. The notification should be made on the form prepared for this purpose. The notification form should be kept with any person designed by the Ministry of

Interior (sheikh of the tribe, mukhtar, consul). The form must be made in triplicate and be signed to indicate the correctness of the given date.

The notification of birth should be submitted to the Civil Register Office, or to the mukhtar / sheikh respectively, if in the place where the birth took place such an office does not exist.

The responsible person for notification of births should be, in the first place, the father of the child, or if he is not present, an adult relation. Other persons responsible for notification should be the adult individuals who live with the family, whether respectively in the same domicile, or health personnel attending the delivery in the hospital or other health institutions, or outside, and finally the mukhtar or sheikh of the tribe. In Annex I are reproduced data for notification form for births and certificate for death this should contain.

After registering the event, the secretary of the Civil Register must deliver, free of any charge - a "Birth Certificate" to the notifier.

In the circumstances that a child dies before the registration of its birth, the secretary of the Civil Register must register first of all, its birth and then its death. The still-born (still-born after the sixth month of pregnancy) should enter into the still-born register.

Other articles in connection with birth registration refer to the regulations which incorporate the birth registration of children born outside the country, as well as the registration of foundlings and non-registered births.

2.2 Death certification

In accordance with the same "Draft Law" on Civil Status, the notification for death must be made within 24 hours after the occurrence of the event, to the health authorities where the death happened, or to the

Director of Quarter, the Mukhtar, the Sheikh of the tribe, if there is no Health Institution.

Natural death or death caused by violence or by accidents (traffic accidents, accidents during work) which happened in the public thoroughfares, should also be notified within 24 hours. The notification should be made to the nearest Police Station. Confirming the death the Police Station should report the occurrence of this event to the appropriate Civil Register Office.

Immediately the occurrence of death is ascertained, a Death Certificate must be issued by an appropriate Health Office/ authorized physician respectively. The death certificate should be filled in, in triplicate. The Health Institution, or the Director of Quarter, the Mukhtar or the Sheikh of the tribe must issue also a "Permit for Burial", which document shall be handed to the person who will undertake the burial.

In the case that the death is not natural, the examiner must immediately report the event to the nearest Police Station. He should issue the "Permit" not earlier than the police authorities complete the investigation and prove the cause of death.

For notification of death, the ancestors, descendants and spouses are responsible in the first place, thereupon the adult kin, the adult inhabitants who live with the deceased, the physician or any authorized person (Director of the area), house-owner, hotel manager, or any other persons only when the persons listed before in priority are not available.

All notified death events should be punctually registered, and the secretary of Civil Registers must fill in the "Death Certificate" and deliver it to the applicant free of charge.

In connection with the "Death Certificate" form, the Minister of Health, in agreement with the Minister of Interior, should issue the decision

necessary for the designation of this form. He should also issue the limitation of the persons who shall be entitled to issue such certificates in the areas where Health Institutions, services etc. are available or not.

III INFORMATION ON HEALTH STATISTICS

In an effort to give a most concise and valuable description of the existing situation which bears an influence on Health Statistics / Health Statistical Services respectively, the following statement must be pointed out:

- Though, at present, the Health Statistical Services in Libya allow in a satisfactory manner the collection of more or less usable data of main health activities and services (statistics of notifiable diseases, hospital administrative statistics, hospital morbidity statistics, statistics of health institutions, statistics of health personnel etc.), it must be emphasized that the registration service of the sick, of the diseases and of all other events and factors affecting the community, family and individual health, does not serve as a confident source of data for health statistics / morbidity statistics respectively.
- On account of some reason there are impediments in the way of the further development of health statistics which, therefore, cannot offer sufficiently extensive and reliable data needed for the regular evaluation of the work done by the existing health services and as a basis for further action.
- There is inadequate co-operation as regards the collecting of data from the field of Health Statistics between the institutions interested.

1. STATISTICS OF NOTIFIABLE DISEASES

The "Notifiable Diseases Report" is the only monthly report of cases of notifiable diseases available on the national level. This "Report" contains information or a selected list of infectious and other diseases (32 categories). In Annex II are reproduced categories of notifiable diseases of the selected list of infectious diseases according to the International Statistical Classification of Diseases, Injuries and Causes of Death, which is now used in the country. The number of reported cases in 1965 in Libya is given in Annex VI, Table 9 of the present report.

2. HOSPITAL ADMINISTRATIVE STATISTICS

The collection of data of hospital services and their activities is performed by the Central Statistical Office, which is authorized to collect these statistical data on a federal basis.

In several hospitals, detailed and complete recording is maintained and it is believed that the way in which these informations are given makes some of them reliable for use in statistical procedures.

Data collected by means of the monthly report of govenmental hospitals gives information on patients disorders from the hospital during the period of reporting. The monthly report gives also data on each patient who dies in the hospital. The particulars recorded for each patient are given in Annex III.

This report is prepared on the basis of a certain hospital documentation which includes:

- Admission and Discharge Certificate
- Case History Sheet.

The A and D Certificate is completed at the discharge of the patient and results are entered in a separate so-called "Admission and Discharge Register", (Particulars recorded in this "Register" are presented in Annex III, Section 2). The form "Case History Sheet" is reproduced in Annex IV.

3. HOSPITAL MORBIDITY STATISTICS

As far as the hospital morbidity statistics are concerned, the only source for these statistics are data published in the yearly report: "Morbidity Statistics in Government Hospitals" in 1954, 1955 and 1956, on the basis of the "Admissions and Discharge Register" in the hospitals. More details in connection with these statistics are given in Part I of the present report.

4. STATISTICS OF HEALTH INSTITUTIONS AND HEALTH PERSONNEL

Up to now, special attention has been paid to the information on existing health establishments and health personnel in the country. Therefore, a

great deal of reliable information about the number of hospitals and other health institutions, number of beds, doctors, auxiliary personnel and other professionals are available. All these data are given in the annexes.

5. MORTALITY AND CAUSE OF DEATH STATISTICS

Mortality statistics and statistics of cause of death respectively, as special services in the country practically do not exist and the work done cannot be regarded as mortality and cause of death statistics. The quality of the data collected differs very much, because certain conditions - from the one side - limit the effectiveness of death registration in the first place, and - from the other side - the existing health services, in regard to their feasibility, are not able to deal with this special service, like statistics of cause of death. Therefore, it is clear that this situation makes difficult the completeness and accuracy of mortality statistics in general.

As a very moderate example of statistics of cause of death, could serve information according to the data of the "Morbidity Statistics in Government Hospitals" of 1954. It could be seen that the number of the most important causes of death were:

- Infective and parasitic diseases	157	persons
- Diseases of the digestive system	116	"
- Diseases of the respiratory system	71	"
- Diseases of the circulatory system	70	"
- Accidents, poisonings and violence	45	"
- Certain diseases of early infancy	40	"

In so far as the deaths classified by age-group are concerned, the five groups are especially:

- 60 and over	19.6 per cent of the total number of deceased
- Under 1 year	18.2 %

- 1 - 9 years 14.6%
- 20 - 29 years 11.8%
- 40 - 49 years 10.1%

In Annex V are reproduced tables with details on statistics of cause of death published in the yearly report 1954 of the Central Statistical Office.

IV RECOMMENDATIONS FOR DEVELOPMENT

For organization of a Health Statistical service on the national and provincial levels, the following measures should be taken in the country at an early stage:

As recommended by the World Health Assembly, a National Committee or a Statistical Agency on Vital and Health Statistics should be established in the Ministry of Public Health as soon as possible.

This Committee should be an advisory body to the Government. It would have as a first objective to make recommendations on:

i. Health Legislation

ii. Immediate needs for Health Statistical information, particularly in connection with a certain Public Health Planning Scheme.

The composition of the Committee or of the Agency should be such that its members would be the representatives from various ministries and government agencies in the national and provincial levels as well as representatives of Health and Demographic Services, scientific institutions and of any other agencies concerned with the production (notification/registration respectively) and the uses of population, vital and health statistics, in order to facilitate and co-ordinate the work on statistics.

Such Committee or Statistical Agency in the Ministry of Public Health should be responsible for:

- presentation of plans and methods related to the health conditions of the population and the health services on a scientific basis, rather than on largely empirical lines as it usually happens;
- standardization of definitions, nomenclatures and classifications adopted by all regions throughout the country;
- drawing up recommendations and instructions for collecting, statistical (epidemiological) analysis, presentation and publication of demographic and health statistical data in Libya.

On the basis of UNITED NATIONS' recommendations[1] regarding the organization of the Vital Statistical Services of Libya, the Government should take immediately the necessary measures through the Ministry of Interior for the improvement of the registration service. The indispensability of having permanent registrars and the advancement of their vocational requirements, is thereby emphasized.

Conformably to Regulation No. 1 of WHO, physicians certificate on the cause of death as provided by WHO should be introduced and inserted for the entire area where physicians perform post-mortem examinations. Foetal deaths until the termination of 28 weeks through the health service/Registration Service respectively, should be performed.

Because there are no basic conditions for statistics on the cause of death for the Country as a whole, data on the causes of death cannot be published for the entire national territory. Therefore, the elaboration and publication of the statistics of the causes of death in the form provided by WHO, should be carried out only for chosen cities where doctors make post-mortem examinations. The choice of such cities should be made by the Health and Demographic authorities.

In an effort to improve the vital and health statistical service, the International Statistical Classification of Diseases, Injuries and Causes of Death should be introduced in health institutions/ vital and health statistical service respectively, and data on diseases (Admissions and Deaths by Diseases, out-patient new cases by Diseases and so on) should be presented in accordance with the Detailed or Abbreviated List of the Classification.

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[1] A/AC.32/Council/R.167, October 1951.

The existing organization of the Health Service, makes a uniform Health Statistics System for the country very difficult. At present, the Ministry of Health could only establish an adequate system by means of a special Federal Law, adapted to the specific conditions and needs.

Until the Law and Regulations are obtained, a System of Organization of Public Health Service, with a corresponding System of an Adequate Organization of Health Statistical Service should be immediately outlined, stating the objectives and the frame of each Service.

In this attempt some general principles based on the available knowledge and experience in organization of Public Health Service in many parts of the world, should serve as guiding lines.

Bearing in mind the difficulties in both the Public Health Service and Health Statistical Service in consideration of time needed to organize and carry out such Systems or organization, the development of the Services previously mentioned could be performed, naturally, only gradually. Therefore, among possibilities in order to establish the most adequate Organization of Public Health Statistics in the country, a certain Regional Public Health Demonstration Area could be taken into consideration as "starting point" for the improvement of the Public Health Service, as well as Health Statistical Service.

Such "Area" could serve also as a "Public Health Laboratory" in which experiments will expose to view all kinds of practices which may be recommended as the most adequate ones for the country as a whole.

Taking into consideration the existing situation in Libya in relation to the level of development of the Hospital Service, further improvement of Hospital Statistics /Hospital Morbidity Statistics respectively, could be performed successfully. It means, that the existing forms and tables for presentation of data on hospital activities and services rendered, should be modified and an adequate system of recording of the diseases introduced.

Hospital Morbidity Statistics should be introduced and performed also gradually. Only one or two hospitals in the country could be taken into consideration as "Demonstration Units" for the improvement of Hospital Morbidity Statistics. These "Units" could also serve as "Laboratory" for the practical in-service training of health staff.

The activity in the field of Vital and Health Statistics should be directed also towards the education in statistics of health personnel. The education in this field of work is a very important matter having reference to a system of Health Statistical Service. Therefore, it appears necessary that in the first place adequate education should be undertaken, especially as regards students in Medical Schools or Health Training Institutions. The education in Health Statistics and Service should be also directed towards physicians, because they are very often not enough interested and educated in this matter and do not realize the importance of this discipline related to the Public Health Service. It must be emphasized, that without their assistance the work in the registration and collection of data, especially as regards diagnosis and causes of deaths, cannot be successfully done.

In order to present all kinds of events affecting Health of the people, development of particular Health Services, activities and conditions related to the effort and time spent in improvement of Public Health, a periodical "Report on Public Health" could be published very easily within the competence of the Ministry of Health. With regard to the present extent of monthly and annual reports, the presentation of such "Report" would be only a question of certain technical procedure and of modification of the current presentation of vital and health statistical data in the Publications of the Central Statistical Office.

ANNEX I

INFORMATION REQUIRED ON BIRTH AND DEATH*

1. Notification for Birth

- Day, date, time, (hour), and place of birth;
- Sex of child;
- Live or still-born child,
- Name and surname of child;
- Father's name, surname, nationality, religion, profession, age and address;
- Mother's name, surname, nationality, religion, profession and age;
- Duration of natrimonial association in the present marriage;
- Number of former children and number of living children;
- Type of birth (single, twin, triplets, quadruplets);
- Supervision over delivery (by midwife or doctor, or both or neither);
- Full name, address, age, profession of notifier and his relationship to the child.

2. Certificate for Death

- Date, day, hour and place of death,
- Name, surname, sex, nationality, religion and profession of the deceased;
- Age, place and date of birth and address of the deceased;
- Name and surname of the father and mother of the deceased, if known to the notifier;
- The place where the deceased was registered, if known to the notifier;
- Nature of illness after which the death was consequent, or any other cause which resulted in the incidence of death;
- Name, surname, address and profession of the notifier.

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*Under Draft Law on the Civil States.

ANNEX II

NOTIFIABLE DISEASES

List of 32 Categories

001-008	Tuberculosis of respiratory system
010-019	Tuberculosis, other forms
020-029	Syphilis and its sequelae
030-039	Gonococcal infection and other venereal diseases
040-041	Typhoid and Praratyphoid form
044	Brucellosis (undulant form)
045	Bacillary dysentery
046	Amoebiasis
047-048	Other protozoal dysentery and unspecified forms of dysentery
049	Food poisoning (infection and intoxication)
050	Scarlet fever
052	
055	Diphtheria
056	Whooping cough
057	Meningococcal infections
060	Leprosy
061	Tetanus
062	Anthrax
063	Gas Gangrene
080	Acute Polyomyelitis
082	Acute infections
085	Measles
087	Chickenpox
089	Mumps
092	Infectious Hepatitis
094	Rabies

110-117	Malaria
123	Schistosomiasis (Bilharziasis)
307	Alcoholic psychosis (delirium tremens)
480-493	Pneumonia
500-507	Bronchitis

ANNEX III

MONTHLY REPORT OF GOVERNMENTAL HOSPITALS

1. Patients discharge from or dying in Hospital during the

month of Year 196

- Serial number
- Name and surname of patient
- Sex
- Age last birthday
- Religion
- Conjugal status
- Usual place of residence
- Code number of the diagnosis
- Code number of operation (if any)
- Length of stay in days
- Result of treatment

2. Admission and Discharge Register

- Serial number
- Name
- Sex
- Age
- Religion
- Address or Tribe
- Occupation
- Marital Status
- Diagnosis
- Treatment
- Date of:
  Admission
  Discharge
- Number of days in hospital
- Codes of Diagnosis and operation (if any)

ANNEX IV

CASE HISTORY SHEET

Government of the Libyan Kingdom

Hospital .... No.....................

CASE HISTORY SHEET

Department..

Name Age

Address

Next of Kin

Accompanied by (in case of children)

Admitted on to ward

Discharge/died transferred to ward

Injury report rendered Hospital

Infection disease Sanatorium

Asylum

Provisional Diagnosis

1st

2nd

New disease supervisoring

Treatment:

Anti-tetanus Serum

Operation

Condition on discharge

Duration in Hospital

P.M. Finding

ANNEX V

Table 1

CLASSIFICATION OF CAUSES OF DEATH, 1954

	CAUSES OF DEATH	Both Sexes		Males		Females	
		No.	Fatality rate per thousand	No.	Fatality rate per thousand	No.	Fatality rate per thousand
	ALL CAUSES	653	36	402	43	251	29
I	INFECTIVE AND PARASITIC DISEASES	157	61	92	60	65	63
II	NEOPLASMS	25	118	19	141	6	78
III & IV	ALLERGIC, ENDOCRINE SYSTEM, METABOLIC, AND NUTRITIONAL DISEASES AND DISEASES OF THE BLOOD AND BLOOD FORMING ORGANS	11	27	9	38	2	12
V	MENTAL, PSYCHONEUROTIC, AND PERSONALITY DISORDERS	14	49	10	56	4	37
VI	DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS	20	20	12	21	8	19
VII	DISEASES OF THE CIRCULATORY SYSTEM	70	118	45	133	25	97
VIII	DISEASES OF THE RESPIRATORY SYSTEM	71	30	47	32	24	25
IX	DISEASES OF THE DIGESTIVE SYSTEM	116	45	77	48	39	40
X	DISEASES OF THE GENITO-URINARY SYSTEM	22	26	10	21	12	33
XI	DELIVERIES AND COMPLICATIONS OF PREGNANCY, CHILDBIRTH, AND THE PUERPERIUM	8	3	-	-	8	3
XII & XIII	DISEASES OF THE SKIN AND CELLULAR TISSUE AND DISEASES OF THE BONES AND ORGANS OF MOVEMENT	14	12	8	11	5	14
XIV	CONGENITAL MALFORMATIONS	1	34	-	-	1	71
XV	CERTAIN DISEASES OF EARLY INFANCY	40	231	16	178	24	289
XVI	SYMPTOMS, SENILITY AND ILL-DEFINED CONDITIONS	39	24	23	34	16	17
XVII	ACCIDENTS, POISONINGS, AND VIOLENCE	45	28	34	27	11	36

ANNEX V

Table 2

DEATHS CLASSIFIED BY SEX AND AGE-GROUP

AGE-GROUP	Both Sexes		Males		Females	
	Number	%	Number	%	Number	%
ALL AGES	653	100.0	402	100.0	251	100.0
Under 1 year	119	18.2	63	15.7	56	22.3
1 - 9	95	14.6	58	14.4	37	14.7
10 - 19	56	8.6	29	7.2	27	10.8
20 - 29	77	11.8	41	10.2	36	14.3
30 - 39	61	9.3	33	8.2	28	11.2
40 - 49	66	10.1	46	11.5	20	8.0
50 - 59	51	7.8	39	9.7	12	4.8
60 and over	128	19.6	93	23.1	35	13.9

ANNEX VI

Table 1

TOTAL POPULATION (CITIZENS AND ALIENS) BY SEX AND MUQATAA

Muqataa	Total Population (Census 1954)			Total Population (Census 1964)			Difference 1954 - 1964		
	Total	Females	Males	Total	Females	Males	Total	Females	Males
Tripoli	240 150	114 479	125 671	379 925	182 131	197 794	+ 139 775	+ 67 652	+ 72 123
Benghazi	168 062	79 076	88 986	278 826	131 751	147 075	+ 110 764	+ 52 675	+ 59 089
Sebha	43 415	21 072	22 343	47 436	22 946	24 490	+ 4 021	+ 1 874	+ 2 147
Gebel Gharbi	114 211	54 938	51 273	180 883	86 962	93 921	+ 66 672	+ 32 024	+ 42 648
Zawia	143 357	70 118	73 239	190 708	91 667	99 041	+ 47 351	+ 21 549	+ 25 802
Homs	124 388	60 116	64 272	136 679	65 498	71 181	+ 12 291	+ 5 382	+ 6 909
Misurata	116 232	56 478	59 754	145 894	70 116	75 778	+ 29 662	+ 13 638	+ 16 024
Derna	55 777	27 115	28 662	84 112	40 650	43 462	+ 28 335	+ 13 535	+ 14 800
Gebel Akhdar	67 397	32 591	34 806	88 016	43 040	44 976	+ 20 619	+ 10 449	+ 10 170
Ubari	15 900	8 456	7 444	31 890	16 222	15 668	+ 15 990	+ 7 766	+ 8 224
Total Kingdom of Libya	1 088 889	524 439	564 450	1 564 369	750 983	813 386	+ 475 480	+ 226 544	+ 248 936

ANNEX VI

Table 2

TOTAL POPULATION (CITIZENS AND ALIENS) BY SEX AND MUQATAA
1954 = 100

Muqataa	Total Population (Census 1954)			Index 1964		
	Total	Females	Males	Total	Females	Males
Tripoli	240 150	114 479	125 671	158.2	159.1	157.4
Benghazi	168 062	79 076	88 986	165.9	166.6	165.3
Sebha	43 415	21 072	22 343	109.3	108.9	109.6
Gebel Gharbi	114 211	54 938	51 273	158.4	158.3	158.5
Zawia	143 357	70 118	73 239	133.0	130.7	135.2
Homs	124 388	60 116	64 272	109.9	109.0	110.7
Misurata	116 232	56 478	59 754	125.5	124.1	126.8
Derna	55 777	27 115	28 662	150.8	149.9	151.1
Gebel Akhdar	67 397	32 591	34 806	130.6	132.1	129.2
Ubari	15 900	8 456	7 444	200.5	191.8	210.5
Total of Kingdom	1 088 889	524 439	564 450	143.7	143.2	144.1

$$I = \frac{P_{64}}{P_{54}} \cdot 100$$

WHO EMRO

ANNEX VI

Table 3

AREA, POPULATION AND DENSITY IN LIBYA ACCORDING TO 1964 CENSUS

Province	Density Average Population per 100 km^2	Population		Area	
		Percentage	Thousands of Persons	Percentage	Thousands sq. klms.
Western Division	412	66	1 029	14	250
Eastern Division	53	29	451	49	855
Southern Division	12	5	79	37	655
All Libya	89	100	1 559	100	1 760

ANNEX VI

Table 4

TOTAL POPULATION (CITIZENS AND ALIENS) BY SEX AND AGE GROUP

Age Group	Total population (Census 1954)			Total population (Census 1964)		
	Total	Female	Male	Total	Female	Male
Under 1 Year (0)	32 160	15 891	16 269	55 143	26 738	28 405
1 - 4	126 626	63 732	71 745	229 112	113 249	115 863
5 - 9	141 580	69 835	62 894	237 024	115 918	121 106
10 - 14	113 376	51 616	61 760	162 152	75 039	87 113
15 - 19	93 372	44 058	49 314	121 826	59 805	62 021
20 - 24	90 718	42 288	48 430	123 159	59 239	63 920
25 - 29	92 655	44 622	48 033	128 295	63 974	64 321
30 - 34	72 386	35 364	37 022	99 847	48 453	51 394
35 - 39	54 747	26 064	28 683	87 616	40 574	47 042
40 - 44	54 071	28 152	25 919	69 636	33 699	35 937
45 - 54	88 490	41 959	46 531	99 906	46 839	53 067
55 - 64	61 609	27 890	33 719	69 751	30 909	38 842
65 and over	66 272	31 791	34 481	79 503	35 833	43 670
Not stated	811	336	475	1 399	714	685
Total	1 088 873	523 598	565 275	1 564 369	750 983	813 386

ANNEX VI

Table 5

POPULATION STRUCTURE BY SEX AND AGE (CENSUS 1954, 1964)

Age Group	Population Structure (Census 1954)			Population Structure (Census 1964)		
	Total %	Female %	Male %	Total %	Female %	Male %
Under 1 Year (0)	2.95	3.03	2.88	3.52	3.56	3.49
1 - 4	11.63	12.17	12.69	14.65	15.08	14.24
5 - 9	13.00	13.34	11.13	15.15	15.44	14.89
10 - 14	10.41	9.86	10.93	10.37	9.99	10.71
15 - 19	8.57	8.41	8.72	7.79	7.96	7.62
20 - 24	8.33	8.08	8.57	7.87	7.89	7.86
25 - 29	8.48	8.52	8.50	8.20	8.52	7.91
30 - 34	6.65	6.75	6.55	6.38	6.45	6.32
35 - 39	5.03	4.98	5.07	5.60	5.40	5.78
40 - 44	4.97	5.38	4.58	4.45	4.49	4.42
45 - 54	8.13	8.01	8.23	6.39	6.24	6.52
55 - 64	5.66	5.33	5.96	4.46	4.12	4.78
65 and over	6.09	6.07	6.10	5.08	4.77	5.37
Not stated	0.07	0.06	0.08	0.09	0.10	0.08
Total	99.97	99.99	99.99	100.00	100.01	99.99

ANNEX VI

Table 6

REPORTED BIRTHS AND DEATHS BY SEX AND MUQATAA (1963-1964)

Muqataa	BIRTHS						DEATHS					
	1963			1964			1963			1964		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Tripoli	10 293	5 410	4 883	10 867	5 827	5 040	1 260	685	575	1 650	855	795
Benghazi	6 035	3 194	2 841	7 323	3 807	3 516	1 500	810	690	1 739	930	809
Gebel Gharbi	5 180	2 813	2 367	4 058	2 247	1 811	747	353	394	412	221	191
Zawia	5 964	3 170	2 794	5 498	2 898	2 600	739	409	330	603	316	287
Homs	3 038	1 687	1 351	1 851	1 023	828	586	298	288	284	164	120
Misurata	4 505	2 440	2 065	2 868	1 633	1 235	457	251	206	323	182	141
Derna	2 133	1 198	935	2 574	1 334	1 240	481	280	201	638	345	293
Gebel Akhdar	1 650	930	720	2 066	1 155	911	379	203	176	487	283	204
Total	38 798	20 842	17 956	37 105	19 924	17 181	6 149	3 289	2 860	6 136	3 296	2 840

ANNEX VI

Table 7

BIRTH-RATE AND DEATH-RATE BY MUQATAA (1964)

Muqataa	Birth-rate 1964			Death-rate 1964		
	No. of Population	No. of Births	1:1000	No. of Population	No. of Deaths	1:1000
Tripoli	379 925	10 867	28.6	379 925	1 650	4.3
Benghazi	278 826	7 327	26.3	278 826	1 739	4.6
Gebel Gharbi	180 883	4 058	22.4	180 883	412	2.3
Zawia	190 708	5 498	28.8	190 708	603	3.2
Homs	136 679	1 851	13.5	136 679	284	2.1
Misurata	145 894	2 868	19.7	145 894	323	2.2
Derna	84 112	2 574	30.6	84 112	638	7.6
Gebel Akhdar	88 016	2 066	23.4	88 016	487	5.5
Total	1 485 043	37 105	24.8	1 485 043	6 136	4.1

ANNEX VI

Table 8

POPULATION MID-YEAR ESTIMATES IN LIBYA
(1954-1964)

Year	Population Mid-Year Estimates 1954-1964*
1954	1 088 889
1955	1 128 706
1956	1 169 976
1957	1 212 759
1958	1 257 106
1959	1 303 075
1960	1 350 725
1961	1 400 117
1962	1 451 315
1963	1 504 385
1964	1 559 399
1967	1 700 562
1972	1 935 827

*Mid-year estimates, 1954 to 1964, are based on the geometric ratio found between these two census years, that is, about 3.6% per year. The 1967 and 1972 estimates are linear projections from 1964 at 47 050 per year.

ANNEX VI

Table 9

NOTIFIABLE DISEASES REPORT FOR THE YEAR 1965

D I S E A S E S		Cases	Deaths
001-008	Tuberculosis of Respiratory System	2 648	55
010-019	Tuberculosis of other forms	303	10
020-029	Syphilis and its sequelae	23	-
030-039	Gonococcal infection and other VD	67	-
040-041	Typhoid and Paratyphoid Fever	76	-
044	Brucellosis (Undulant Fever)	-	-
045	Bacillary Dysentery	1 271	4
046	Amoebiasis Dysentery	1 656	1
047-048	Unspecified and other forms of Dysentery	557	-
049	Food poisoning (Infection and Intoxication)	153	10
050	Scarlet Fever	61	-
052	Erysipellas	2	-
055	Diphtheria	296	10
056	Whooping Cough	1 682	3
057	Meningococcal Infections	67	7
060	Leprosy	27	2
061	Tetanus	142	7
062	Anthrax (Charbon)	56	2
063	Gas Gangrene	-	-
080	Acute Poliomyelitis	449	1
082	Acute Infectious Encephalitis	1	1
085	Measles	8 884	41
087	Chickenpox	860	-
089	Mumps	1 384	2
092	Infectious Hepatitis	253	1
094	Rabies	135	-
110-118	Malaria	107	-
123	Schistosomiasis	711	1
307	Delirium Tremens	-	-
483	Influenza	2 546	1
490-493	Pneumonia	144	-
500-502	Bronchitis	-	-
571-764	Diarrhoea and Enteritis (Gastroenteritis)	3 272	-

ANNEX VI

Table 10

CLASSIFICATION OF CASES TREATED BY DISEASE AND INJURY GROUPS

	DISEASE AND INJURY GROUPS	Both Sexes		Males		Females	
		Number	%	Number	%	Number	%
	ALL GROUPS	17 986	100.0	9 359	100.0	8 627	100.0
I	INFECTIVE AND PARASITIC DISEASE	2 569	14.3	1 537	16.4	1 032	11.9
II	NEOPLASMS	212	1.2	135	1.4	77	0.9
III & IV	ALLERGIC, ENDOCRINE SYSTEM, METABOLIC, AND NUTRITIONAL DISEASES AND DISEASES OF THE BLOOD AND BLOOD FORMING ORGANS	404	2.2	235	2.5	169	1.9
V	MENTAL, PSYCHONEUROTIC AND PERSONALITY DISORDERS	286	1.6	178	1.9	108	1.2
VI	DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS	1 007	5.6	578	6.2	429	5.0
VII	DISEASES OF THE CIRCULATORY SYSTEM	595	3.3	338	3.6	257	3.0
VIII	DISEASES OF THE RESPIRATORY SYSTEM	2 354	13.1	1 448	15.5	906	10.5
IX	DISEASES OF THE DIGESTIVE SYSTEM	2 593	14.4	1 609	17.2	984	11.4
X	DISEASES OF THE GENITO-URINARY SYSTEM	854	4.7	486	5.2	368	4.3
XI	DELIVERIES AND COMPLICATIONS OF PREGNANCY, CHILDBIRTH AND THE PUERPERIUM	2 510	13.9	-	-	2 510	29.1
XII & XIII	DISEASES OF THE SKIN AND CELLULAR TISSUE AND DISEASES OF THE BONES AND ORGANS OF MOVEMENT	1 180	6.6	760	8.1	420	4.9
XIV	CONGENITAL MALFORMATIONS	29	0.2	15	0.2	14	0.2
XV	CERTAIN DISEASES OF EARLY INFANCY	173	1.0	90	1.0	83	1.0
XVI	SYMPTOMS, SENILITY AND ILL-DEFINED CONDITIONS	1 640	9.1	678	7.2	962	11.1
XVII	ACCIDENTS, POISONINGS AND VIOLENCE	1 580	8.8	1 272	13.6	308	3.6

ANNEX VI

Table 11

ESTIMATES 1965-1966 - COMPARATIVE REVENUE SUMMARY

Head	Title	Estimates 1964-1965	Estimates 1965-1966	Distribution 1965-1966	
				General Budget	Development Account
	SECTION A				
I	Customs & Excise	15 500 000	15 000 000	15 000 000	-
II	Monopoliss	2 250 000	3 200 000	3 200 000	-
III	Taxes	6 500 000	7 150 000	7 150 000	-
IV	Licences & Fees	1 810 000	3 250 000	3 250 000	-
	SECTION B - SERVICES				
V	Posts & Telecommunications	1 350 000	2 000 000	2 000 000	-
VI	Ports & Lights	1 350 000	3 600 000	3 600 000	-
VII	Civil Aviation	280 000	1 000 000	1 000 000	-
VIII	Agriculture, Forestry and Veterinary	100 000	100 000	100 000	-
IX	Public Utilities	1 200 000	1 300 000	1 300 000	-
X	Other services	650 000	800 000	800 000	-
	SECTION C				
XI	Miscellaneous	1 490 000	2 000 000	2 000 000	-
TOTAL ORDINARY REVENUE		32 480 000	39 400 000	39 400 000	-
	SECTION D				
XII	Natural Resources	46 500 000	116 000 000	34 800 000	81 200 000
	SECTION E - RESERVES				
	a) Excess Petroleum Receipts 1964-1965	-	8 000 000	2 400 000	5 600 000
	b) Balance of Customs Levy	-	1 600 000	1 600 000	-
	c) Work-in-Progress Revoted	-	835 000	835 000	-
	SECTION F				
	Foreign Aid	6 821 430	-	-	-
TOTAL CREDITS TO REVENUE		85 801 430	165 835 000	79 035 000	86 800 000

ANNEX VI

Table 12

COMPARATIVE SUMMARY OF ORDINARY AND SPECIAL EXPENDITURE 1965-1966

Head	Title	Approved estimates 1964-1965	Estimates 1965-1966	Increase	Decrease
I	Supreme Authorities	690 000	1 367 000	677 000	-
II	The Cabinet	280 000	235 000	-	45 000
III	Ministry of Interior	7 845 000	14 000 000	6 155 000	-
IV	" " Communication	7 344 000	8 170 000	826 000	-
V	" " Works	2 600 000	3 255 000	655 000	-
VI	" " Defence	5 600 000	7 865 000	2 265 000	-
VII	" "Education	11 130 000	17 890 000	6 760 000	-
VIII	" " News and Guidance	1 865 000	2 000 000	135 000	-
IX	" " Foreign Affairs	790 000	1 620 000	830 000	-
X	" " Health	4 090 000	5 860 000	1 770 000	-
XI	" "Labour and Social Affairs	1 613 000	2 600 000	987 000	-
XII	" of National Economy	605 000	840 000	235 000	-
XIII	" " Industry	500 000	855 000	355 000	-
XIV	" of Agriculture	2 495 000	3 200 000	705 000	-
XV	" of Petroleum Affairs	130 000	205 000	75 000	-
XVI	" of Finance	4 266 130	2 988 000	-	1 278 130
XVII	" of Justice	1 059 000	1 605 000	546 000	-
XVIII	Ministry of State for Parliamentary & Conference Affairs	14 000	30 000	16 000	-
XIX	Ministry of State for Civil Service Affairs	20 000	310 000	290 000	-
XX	Ministry of Planning and Development	200 000	305 000	105 000	-
XXI	Audit	115 300	230 000	114 700	-
XXII	Common Services	-	2 770 000	2 770 000	-
XXIII	Works-in-Progress	-	835 000	835 000	-
TOTAL ORDINARY AND SPECIAL EXPENDITURE		53 251 430	79 035 000	27 106 700	1 323 130

ANNEX VI

Table 13

FIVE YEAR DEVELOPMENT BUDGET ESTIMATES SUMMARY

1963 - 1968

Head	NAME OF SECTOR	Budget estimates 1963/1968 (£L)	Budget estimates 1963/1964-1964/1965 (£L)	Ordinary estimates 1965/1966 (£L)	Balance	Estimates in excess of Plan provision (£L)
1	Agriculture & Forestry	29 275 000	6 081 000	6 740 000	16 454 000	2 635 000
2	Industry	6 900 000	1 875 000	1 395 000	3 630 000	2 882 000
3	National Economy	2 870 000	1 030 000	992 000	848 000	-
4	Communications	27 460 000	13 029 000	7 370 000	7 061 000	14 678 000
5	Public Works	44 912 000	18 817 000	13 293 000	12 802 000	3 850 000
6	Education	22 365 000	5 155 000	5 800 000	11 410 000	1 345 000
7	Health	12 500 000	2 775 000	3 265 000	6 460 000	130 000
8	Labour and Social Welfare	9 690 000	3 215 000	5 790 000	685 000	3 245 000
9	News and Guidance	2 550 000	1 080 000	425 000	1 045 000	310 000
10	Public Administration Inst.	175 000	45 000	130 000	-	100 000
11	Planning and Development	10 400 000	1 182 000	5 145 000	4 073 000	280 000
12	Interior	-	-	-	-	7 000 000
	TOTAL	169 097 000	54 284 000	50 345 000	64 468 000	36 455 000

ANNEX VI

Table 14

EXPENDITURE HEAD X HEALTH

(a) THE MINISTRY

Item	Details	Approved Estimates 1964/1965	Estimates 1965/1966	Increase	Decrease	NOTES
1	Personal Emoluments	40 000	121 000	81 000	-	
	OTHER CHARGES					Includes amounts formerly under Sub Hd.. (b)
2	Travelling and Detention Allowances	6 000	70 000	64 000	-	
3	Postage, Telephones and Telegraphs	2 000	2 000	-	-	
4	Printing, Stationery & Office Equipment	2 000	2 000	-	-	
5	Labour	5 000	8 000	3 000	-	
6	Publications and Scientific Books	1 000	1 000	-	-	
7	Medicines	850 000	700 000	150 000	-	
8	Medical Equipment		300 000			
9	Upkeep of Hospitals	183 000	350 000	167 000	-	
10	Local Specialist Treatment	-	15 000	15 000	-	
11	Sundries	1 000	1 000	-	-	
	TOTAL OTHER CHARGES	1 050 000	1 449 000	399 000	-	
	SPECIAL EXPENDITURE					
12	Purchase and Rehabilitation of Hospital Laundries	-	100 000	100 000	-	

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Table 14 (cont'd)

13 Purchase and Rehabilitation of Hospital Kitchens	-	30 000	30 000	-	
14 Purchase & Maintenance of Hospital Lifts	-	20 000	20 000	-	
15 Lighting of Roads and Courtyards in Hospital Compounds	-	30 000	30 000	-	
16 Surfacing Roads in Hospital Compounds	-	5 000	5 000	-	
17 Construction of Hospital Stores	-	30 000	30 000	-	
18 Construction and Equipment of Plumbing Workshops	-	10 000	10 000	-	
19 Central Stores - extension and Partitioning	-	15 000	15 000	-	
20 Sewage improvements	-	10 000	10 000	-	
- Administrative Block and Central Stores	50 000	-	-	50 000	
TOTAL SPECIAL EXPENDITURE	50 000	250 000	250 000	50 000	
TOTAL EXPENDITURE MINISTRY	1 140 000	1 820 000	730 000	50 000	

ANNEX VI

Table 15

EXPENDITURE HEAD X HEALTH SUB-HEAD - (b) PUBLIC HEALTH

Item	Details	Approved Estimates 1964/1965	Estimates 1965/1966	Increase	Decrease	Notes
1	Personal Emoluments	1 700 000	2 911 000	1 211 000	-	
	OTHER CHARGES					
2	Postage, Telephones and Telegraphs	12 000	12 000	-	-	
3	Printing, Stationery & Office Equipment	18 000	18 000	-	-	
4	Labour	125 000	290 000	165 000	-	Includes Social Insurance Contributions
5	Patients Food	420 000	510 000	90 000	-	
6	Artificial Limbs	10 000	15 000	5 000	-	
7	Control of Epidemic	50 000	50 000	-	-	
8	Dentures and Spectacles	10 000	15 000	5 000	-	
9	Autopsies and Burial Expenses	12 000	12 000	-	-	
10	Scientific Publications	7 000	5 000	-	2 000	
11	Maintenance of Instruments & Equipment	30 000	100 000	70 000	-	
12	Maintenance of Medical Institutions & Minor New Works	179 000	100 000	-	79 000	
13	Sundries	2 000	2 000	-	-	
-	Travelling & Detention Allowances	25 000	-	-	25 000	See Sub Head (a)
	TOTAL OTHER CHARGES	900 000	1 129 000	335 000	106 000	
	SPECIAL EXPENDITURE					
-	Purchase of Instruments and Equipment	60 000	-	-	60 000	
-	Maternity Ward - Tripoli Hospital	90 000	-	-	90 000	
	TOTAL SPECIAL EXPENDITURE	150 000	-	-	150 000	
	TOTAL EXPENDITURES - PUBLIC HEALTH	2 750 000	4 040 000	1 546 000	256 000	
				1 290 000	Net Increase	

ANNEX VII

Table 1

HEALTH INSTITUTIONS AND BEDS (1959-1965)

YEARS	Total		General Hospitals		T B		Mental		Leprosy		Obstetrical		Surgical		Others	
	Beds	Institutions	Beds	Institutions	Beds	Institutions	Beds	Institutions	Beds	Institutions	Beds	Institutions	Beds	Institutions	Beds	Institutions
1959	3 715	31	2 875	14	287	2	385	2	-		-	-		-	168	13
1960	3 717	31	2 875	14	287	22	385	2		-	-	-	-	-	170	13
1961	4 023	33	3 157	14	286	2	385	2	-	-	-	-	-		195	15
1962	4 155	32	3 280	16	300	2	385	2	-	-	-	-	-	-	190	12
1963	4 464	34	3 343	19	318	2	681	2		-	-	-	-	-	122	11
1964	4 717	38	3 410	23	311	2	744	2	73	1	-	-	85	1	94	9
1965	5 135	42	3 853	27	312	2	644	1	87	1	36	1	99	1	104	9

ANNEX VII

Table 2

NUMBER OF BEDS ACCORDING TO SPECIALITIES, 1965 Mid-Year

HOSPITALS	Total	Communicable Diseases	T B	Obstetrical	Paediatrical	Mental	Dermatological	Ophthalmological	Gen. Surgical & Orthopaedical	Medical	Genito-Urinary	ENT	Others
Total	5 135	223	617	470	455	666	108	248	726	822	76	97	627
Gen Hospitals	3 853	121	305	420	455	22	108	234	627	822	76	97	566
TB Hospitals	312	-	312		-	-	-	-	-	-		-	-
Mental Hospital	644	-	-	-	-	644	-	-	-	-	-	-	-
Gynaecol. & Obstet.	36	-	-	36	-	-	-	-	-	-	-	-	-
Leprosy	87	87	-	-	-	-	-	-	-	-	-	-	-
Surgery	99	-	-	-	-	-	-	-	99		-	-	-
Ophthalmol.	14	-	-	-	-	-	-	14	-	-	-	-	-
Venereal	15	15	-	-	-	-	-	-	-	-	-	-	-
Medical	75	-	-	14	-	-	-	-	-	-	-	-	61

ANNEX VII

Table 3

HEALTH INSTITUTIONS AND BEDS ACCORDING TO SPECIALITIES AND EMPLOYER, 1965 Mid-Year

EMPLOYER	Total		General Hospital		T B		Gynaecol & Obstet		Mental		Leprosy		Surgical		Others	
	Beds	In-stitu-tions	Beds	In-stitu-tions	Beds	In-stitu-tions	Beds	In-stitu-tions	Beds	In-stitu-tions	Beds	In-stitu tions	Beds	In-stitu-tions	Beds	In-stitu-tions
Total	5 135	42	3 853	27	312	2	36	1	644	1	87	1	99	1	104	9
Ministry of Health	4 821	35	3 603	23	312	2	-	-	644	1	87	1	99	1	76	7
INAS	50	2	-	-	-	-	36	1	-	-	-	-	-	-	14	1
Private	264	5	250	4	-	-	-	-	-	-	-	-	-	-	14	1

ANNEX VII

Table 4A

HEALTH INSTITUTIONS (MEDICAL CENTRES) WITHOUT BEDS ACCORDING TO EMPLOYERS, 1965 Mid-Year

EMPLOYERS	Total	Curative	Preventive	M C H	T B	Trachoma	Mobile	Priv. Pharmacies	Priv. Clinics	Others
Total	519	300	27	21	3	7	5	53	99	4
Ministry of Health	352	286	27	20	3	7	5	-	-	4
INAS	15	14	-	1	-	-	-	-	-	-
Private	152	-	-	-	-	-	-	53	99	-

ANNEX VII

Table 4B

HEALTH INSTITUTIONS (MEDICAL CENTRES) WITHOUT BEDS BY MUQATAA, 1965 Mid-Year

MUQATAA	Total	Dispen-saries	Health Offices	MCH	TB	Tra-choma	Mobile Disp.	Priv. Clinics	Priv. Pharma-cies	Training Insti-tutes
Total	519	300	27	21	3	7	5	99	53	4
Tripoli	157	41	4	6	1	5	-	65	33	2
Benghazi	115	47	9	4	1	-	2	34	16	2
Sebha	33	33	-	-	-	-	-	-	-	-
Zawia	26	17	2	3	1	2	-	-	1	-
Derna	31	23	3	2	-	-	1	-	2	-
Misurata	15	13	1	1	-	-	-	-	-	-
Gebel Akhdar	33	25	6	1	-	-	-	-	1	-
Gebel Gharbi	49	43	2	4	-	-	-	-	-	-
Homs	20	19	-	-	-	-	1	-	-	-
Ubari	40	39	-	-	-	-	1	-	-	-

ANNEX VII

Table 4B

HEALTH INSTITUTIONS (MEDICAL CENTRES) WITHOUT BEDS BY MUQATAA, 1965 Mid-Year

MUQATAA	Total	Dispen-saries	Health Offices	MCH	TB	Tra-choma	Mobile Disp.	Priv. Clinics	Priv. Pharma-cies	Training Insti-tutes
Total	519	300	27	21	3	7	5	99	53	4
Tripoli	157	41	4	6	1	5	-	65	33	2
Benghazi	115	47	9	4	1	-	2	34	10	2
Sebha	33	33	-	-	-	-	-	-	-	-
Zawia	26	17	2	3	1	2	-	-	1	-
Derna	31	23	3	2	-	-	1	-	2	-
Misurata	15	13	1	1	-	-	-	-	-	-
Gebel Akhdar	33	25	6	1	-	-	-	-	1	-
Gebel Gharbi	49	43	2	4	-	-	-	-	-	-
Homs	20	19	-	-	-	-	1	-	-	-
Ubari	40	39	-	-	-	-	1	-	-	-

ANNEX VII

Table 5

DOCTORS, DENTISTS & PHARMACISTS BY NATIONALITY & EMPLOYER, 1965 Mid-year

EMPLOYER	TOTAL			DOCTORS			DENTISTS			PHARMACISTS		
	Total	Libyans	Aliens	Total	Libyans	Aliens	Total	Libyans	Aliens	Total	Libyans	Aliens
Total	502	36	466	409	29	380	36	1	35	57	6	51
Ministry of Health	359	32	327	324	29	295	20	-	20	15	3	12
INAS	60	1	59	52	-	52	2	-	2	6	1	5
Private	83	3	80	33	-	33	14	1	13	36	2	34

ANNEX VII

Table 6

DOCTORS, PHARMACISTS & DENTISTS BY MUQATAA, 1965 Mid-Year

Locality Muqataa (Districts)	Pharma-cists	Den-tists	D O C T O R S														
			Total	G P.	Health	T B	Gynae-colo-gist	Pae-dia-tric	Oph-thal-mic	Derma-tolo-gist	Psy-chia-tric	ENT	Uro-lo-gist	Gen Sur-geon Ortho-paedic	Ra(lolo gist	Bac-terio-logist & Pa-rasi-tolo-gist	Other spe-cial-ist
Total	57	36	409	215	1	19	25	26	16	9	9	9	5	40	9	13	13
Tripoli	45	24	215	101	1	5	15	16	8	6	9	5	3	22	7	10	7
Benghazi	9	6	95	57	-	5	4	4	4	3	-	3	1	8	1	1	4
Sebha	-	2	13	7	-	-	1	1	1	-	-	-	-	2	-	1	-
Zawia	1	-	12	7	-	1	2	1	1	-	-	-	-	-		-	-
Derna	2	2	24	12	-	2	1	2	1	-	-	-	1	3	1	-	1
Misurata	-	1	10	3	-	-	1	1	1	-	-	1	-	1	-	1	1
Gebel Akhdar	-	1	19	9	-	6	-	-	-	-		-	-	4	-	-	
Gebel Gharbi	-	-	15	13	-	-	1	1	-	-	-	-	-	-	-	-	-
Homs	-	-	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Ubari	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-

ANNEX VII

Table 7

HEALTH TECHNICIANS ACCORDING TO NATIONALITY AND EMPLOYER, 1965 Mid-Year

EMPLOYER		Total	Mid-wives	Assis-tant Mid-wives	Health Auxil-iaries MCH	Nurses (M & F)	Assis-tant Nurses (M & F)	Assis-tant Pharma-cists	Health Assis-tants (M)	Health Inspe-ctors	Labora-tory Techni-cians	X-ray Techni-cians	Den-tal Techni-cians	Others
Total	Total	1 955	76	27	56	760	737	33	20	105	60	29	5	47
	Libyans	1 462	23	19	50	550	576	31	20	104	46	23	-	20
	Foreign	493	53	8	6	210	161	2	-	1	14	6	5	27
Ministry of Health	Total	1 789	64	27	56	719	646	29	20	104	56	22	3	43
	Libyans	1 335	18	19	50	532	488	27	20	104	43	17	-	17
	Foreign	454	46	8	6	187	158	2	-	-	13	5	3	26
INAS	Total	107	8	-	-	15	67	4	-	-	3	7	-	3
	Libyans	97	5	-	-	9	67	4	-	-	3	6	-	3
	Foreign	10	3	-	-	6	-	-	-	-	-	1	-	-
Private	Total	59	4	-	-	26	24	-	-	1	1	-	2	1
	Libyans	30	-	-	-	9	21	-	-	-	-	-	-	-
	Foreign	29	4	-	-	17	3	-	-	1	1	-	2	1

ANNEX VII

Table 8

AUXILIARY HEALTH PERSONNEL BY MUQATAA, 1965 Mid-Year

Muqataa	Total	Mid-wives	Assistant Mid-wives	Health Auxiliaries MCH	Nurses M & F	Assistant Nurses (M & F)	Assistant Pharmacists	Health Assistants	Health Inspectors	Laboratory Technicians	X-ray Technicians	Dental Technicians	Others
Total	1 955	76	27	56	760	737	33	20	105	60	29	5	47
Tripoli	624	39	4	26	279	172	7	10	30	11	10	1	35
Benghazi	491	8	4	13	135	238	13	3	31	25	12	3	6
Sebha	170	7	-	-	102	45	3	1	4	6	2	-	-
Zawia	89	9	3	5	24	39	2	2	4	1	-	-	-
Derna	180	3	4	6	68	65	7	1	12	7	4	1	2
Misurata	71	2	-	-	20	39	1	-	7	1	1		-
Gebel Akhdar	124	2	9	-	48	48	-	1	10	6	-	-	-
Gebel Gharbi	115	5	3	5	36	56	-	-	4	2	-	-	4
Homs	35	1	-	1	11	19	-	-	2	1	-	-	-
Ubari	56	-	-	-	37	16	-	2	1	-	-	-	-

ANNEX VII

Table 9

GENERAL HOSPITAL BEDS

(Excluding Special Tuberculosis, Psychiatric & Leprosy Hospitals)

District	Population[A] 1964 Census	Beds in Mid-1965[B]		Beds per 1000 Popul'n	Est Beds End 1966	Present Firm Proposal (Additn'l)	Total	Beds[C] Per 1000 Popul'n
Tripoli &	212 577	Government	1250		1381	1200		
Suk el Giuma	163 600	INAS	50		150	200		
		Private	169		169	-		
	376 177		1469	3 9	1700	1400	3100	8.2
Benghazi	227 499	Government	576		630	700		
		Municipl	63		190			
		INAS	-		120	130		
		Private	32		33	37		
			671	3 0	973	867	1840	8.1
Agedabia	44 684	Government	67	1 5	-	120	187	4.2
Kufra	7 482	Government	22	2 9	-	-	22	2 9
Sebha	15 953	Government	212	13 3	-	120	340	21 3
Jufra	11 994	" Hun	23	1 9	-	-	23	1 9
El Shati	18 753	" Brak	20	1 6	-	-	20	1 6
	46 700		255	5 5			383	8 2
Gharian	61 366	Government	46	0 7	-	120	166	2 7
Yefren	60 044	" Yefren)	142)	2 5	-	-	153	2 5
		"Giado)	11)					
Nalut	35 524	Government	29	0 8	-	-	29	0 8
Misda	18 177	"	-	-	-	-	-	-
Ghadames	6 223	"	23	3 7	-	-	23	3 7
Zawia	110 466	""	73	0.7	-	120	193	1 7
Subratha	42 431	"	10	0 2	-	-	10	0 2
Zuara	36 135	"	45	1.2	-	120	165	4 6
Misurata	70 015	"	171	2 4	-	120	291	4 2
Zliten	45 551	"	12	0 3	-	120	120	2.6
Sitre	29 902	"	25	0 8	-	-	25	0 8
Homs	66 559	"	10	0 2	-	120	120	1 8
Ben Ulid	22 211	"	25	1 1	-	-	25	1.1
Tarhuna	48 435	"	10	0 2	120	-	120	2 5
Beida	47 936	" Beida	253					
		" Messa	118					
			371	7 7	-	-	371	7 7
El Merj	39 867	"	122	3 1	-	250	250	6.5
Derna	45 197	"	286	6 3	-	120	406	9.0
Tobruk	38 804	"	155	4 0	-	120	275	7 1
Ubari	9 866	"	-	-	20	-	20	2 0
Murzuk	15 059	"	20	1 3	-	-	20	1.3
Ghat	4 457	"	14	3 1	-	-	14	3 1
Oragen	2 632	"	-	-	-	-	-	-
	1 559 399		4 072	2 6			8 208	5 3

[A] Figures from "Preliminary Results of General Population Census 1966"

[B] Figures provided by "Health Statistical Section of Ministry of Health".

[C] The ratio worked out in the final column is based on the 1964 Population figures and not on any projection of population growth by the time new buildings will be completed