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WITH THE
COMPLIMENTS OF
THE HEALTH ADVISER
ADEN PROTECTORATE

**Quinquennial (1951 - 1955) Report
on the Aden Protectorate Health Service
Including the Annual Report
for 1955**

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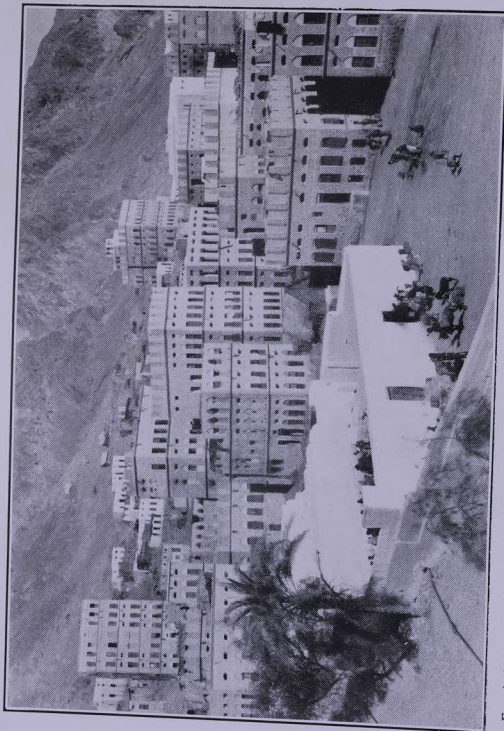
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Frontispiece: Fig. 1. Mukalla in the Qu'aita Sultanate. Town water-tanks and characteristic buildings with windows allowing free entry of air and sunlight. The ventilators above the windows conduce to air movement by permitting the escape of hot and vitiated air. Contrast with hinterland housing in Figure 2.

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Including the Annual Report
for 1955**

1957

QUINQUENNIAL (1951-1955) REPORT ON THE ADEN PROTECTORATE
HEALTH SERVICE INCLUDING THE ANNUAL REPORT FOR 1955

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PART I

INTRODUCTION

1. Introductory Comments

1. This report in addition to recording the work done in 1955 is a review of that done in the years 1951 to 1955. It is the first report relating to the Protectorate Health Service intended to reach outside the immediate administration. This is partly because outside help with development is being sought and partly to make available a conspectus of health circumstances and activities to expected new senior staff and to the indigenous Protectorate officials and public for whom it is hoped to provide an Arabic version. The assembling of this material in this way also enables gaps and inequalities to be appreciated and thus allows the next five years programme to be planned with a corrective bias where necessary. Some repetition in cross-reference has been unavoidable.

2. Progress in the five years has been much slower than hoped for, due mainly to delay in building up senior advisory, professional and clerical staff. Another retarding factor, particularly in the West in the last year or so has been insecurity, limiting movement and diverting general administrative potential. Yet other factors have been administrative lag in getting funds for basic building needs, and once obtained, in getting the buildings built, this last owing to labour and supervision difficulties in an extensive area.

3. The more outstanding needs at the moment are beds for the sick, more doctors in the field, consolidation of the standardisation coming into being in the component State services, and fusion of these as may prove possible in the interests of economy and efficiency.

4. In 1956 it is hoped to launch a comprehensive C.D.W. scheme for accelerated development of the Service, which will include the provision of certain specialists and the widespread improvement of hospital and health unit accommodation. In 1957 it is hoped with the aid of WHO/UNICEF to make a real start with maternal and child health and to extend importantly the training of female sick attendants. In these projects substantial sharing of the financial commitments is being found by the more advanced States, while at the same time their recurrent financial commitments are being conserved. A bibliography, probably far from complete, is given as a logical accompaniment to a report of this nature which attempts to give the available material that will assist future workers on health in the Protectorate. Certain material coming to attention after 1955 is included for convenience.

5. Acknowledgments for help in the past five years are gratefully made to the following: Aden Colony Medical Services for training laboratory and theatre assistants; the Aden Society for the Blind for sponsoring, in 1952 a useful statistical survey of the incidence of blindness and eye infections in Dathina and Beihan by Dr. S. E. Croskery, and in 1953, a treatment campaign against eye diseases in the purdah com-

munity of the Duan area; the Applied Nutrition Unit of the London School of Hygiene and Tropical Medicine for food analyses; Dr. J. Bequaert of Harvard for snail determinations; the Church of Scotland Mission and the Danish Mission medical staff for aid to, and co-operation in many ways with, the health work of the Protectorate, in Sheikh Othman, Jaar, Mudia, Beihan and Zingibar; H. F. Eilts Esq., formerly American Consul, Aden, for the loan of a cinema projector and health films in 1952-53; Dr. L. H. Harris of the Dunn Nutritional Laboratory, Cambridge, for food analyses; Mr. P. F. Mattingley of the British Museum for mosquito determinations; Dr. L. Merucci for much support and furtherance of public health policy and unending clinical aid to Government and State sick officers in the Wadi Hadhramaut; the Nuffield Foundation for a grant of £2000 which has been used for the provision of material and apparatus for health education and training; the Royal Air Force for invaluable help in emergencies with the transport of sick, staff and supplies; the Librarian of the Royal Society of Medicine for the bulk of the bibliography on *qat*; the medical officers of the Aden Protectorate Levies for the treatment of tribal sick in the field as opportunities have offered; His Highness the late Sultan Sir Salih bin Ghalib al Qu'aiti, K.C.M.G., for cinema facilities for teaching purposes; the United States Information Service in Cairo through the American Consul in Aden for the loan of a useful film on malaria control; the Wellcome Foundation for the gift of a film on bilharziasis.

2. Historical note

A. The Protectorate Medical Service of the Western Protectorate 1927-1951

6. Following the appearance of the British in Aden in 1839 and the inevitable relations with the Protectorate, cases were from time to time sent into the Aden Civil Hospital by Protectorate officers or were sent in with recommendations from rulers, but no systematised health work was actually attempted for the Protectorate till 1927, when following a recommendation by Lt. Col. M. C. Lake on his return from a tour in Yafa a tentative scheme of "tribal dispensaries" was initiated, more formal planning however not occurring till 1934. This work, and its further development was carried out essentially by the staff of the Keith Falconer Hospital of the Church of Scotland Mission. At the same time in 1932, the Abdali State itself opened a dispensary in Lahej which has formed a useful basis for later expansion.

7. The Lake scheme implied the sending of two trainees from each of certain localities for 3 months training in the treatment of the simpler diseases such as wounds, ulcers, malaria, bronchitis, dysentery etc., and the recognition of cases requiring removal to hospital, such as bilharzia and bladder stone. Those proving satisfactory were given a supply of drugs and dressings and sent back with a request to the local ruler to supply them with working accommodation. They were expected to make their living from their employment and were allowed to buy replacements of drugs at half-price from Aden Government. The scheme though excellent in that it introduced medical aid to areas hitherto without it, appears to have left two difficulties which later in some cases have taken a certain amount of overcoming. The first was the existence of

two functionaries based on the same unit, meaning that with limited budgeting some areas had 2 dispensers while others had none, and the second was a feeling by these men which has been hard to eradicate that they have a right to charge fees for their services and supplies even after they have become paid officers with free supplies from Government or State.

8. The Mission activities involved training of the "dispensers" at the Keith Falconer Hospital, their supply and inspection by a touring doctor—and later sister—and the removal of suitable cases as far as possible to either the Keith Falconer Hospital or Aden Civil Hospital for treatment.

9. Later advances were the introduction of pay on the scale Rs.96x1—180 *per annum*, the provision of advanced and revision courses and the inspection of dispensaries once yearly. Those instituted under this scheme were at Dhala, Shuqra and Museimir. Dr. Petrie was in charge of the scheme but in 1936 on his appointment as head of a British medical mission to the Yemen, the scheme fell into some degree of abeyance through lack of available supervision.

10. In 1937 when Aden came under the Colonial Office, Dr. J. C. R. Buchanan of the Colonial Medical Service, the Senior Medical Officer, gave further attention to the medical needs of the Protectorate and in 1939 a scheme was afoot for the formation of a Protectorate Medical Service linked with the Colony Medical Service, with mutually interchangeable personnel. An initial survey of part of the Western Protectorate to assess needs, was proposed, and was carried out by Drs. Petrie and Seal of the Keith Falconer Hospital (Petrie and Seal, 1943).

11. In July, 1939, Dr. C. H. Howat Acting Senior Medical Officer Aden, produced a scheme for training professional subordinates at the Aden Civil Hospital, including provision for the training of Protectorate "tribal dispensers". This was modified because of war commitments to refresher courses for those (incidentally, sometimes referred to as "tribal dressers") already in being, which started in 1940. At that time, it is interesting to note, the establishment was as shown in Table 1.

TABLE 1. ADEN PROTECTORATE: 1940; TRIBAL DISPENSERS (DRESSERS) ESTABLISHMENT IN WESTERN PROTECTORATE

STATE	STATIONS		DISPENSERS
	NUMBER	LOCATION	
Subeih	1	Tor Am Baha	1
Haushabi	1	Museimir	1
Amiri	2	Dhala, Dhubeiyat	4
Upper Yafa	3	Gurba, Sha'ara	5
Lower Yafa	1	Jaar	1
Fadhli	1	Shuqra	1
Audhali	1	Zara	2
Beihan	1	Beihan	1
Totals	11		16

12. In 1942, the British Agent, Mukalla was seeking information on the nature of tribal dispensers in the West, presumably with a view to a parallel service and from the correspondence it emerges that they were regarded as essentially tribal employees but trained, paid and supervised by the Aden Government, and supplied from "Protectorate Funds" (i.e., Her Majesty's Government) with an initial free issue of drugs and equipment, indents for replacements thereafter however being paid "half from the Protectorate and half from the dispenser". Their salary was Rs. 120x1—180 *per annum* plus a war allowance. It was laid down however that the aim was to establish in time a self-supporting indigenous medical service. Training was in the Civil Hospital and was at this time necessarily limited to practical ward experience.

13. In January, 1945 the Protectorate (i.e., Western Protectorate) Medical Service was again placed under the care of the Keith Falconer Hospital and from then until May 1946 Dr. P. W. R. Petrie was in charge as Protectorate Medical Officer with Miss L. J. Cowie of the Mission as Sister Tutor followed later by Miss Christensen, Miss M. Thorsen, Miss M. Thomas and Miss E. Montgomery. In 1946 the commencing salary of "dispensers" was raised to Rs. 720 *per annum*.

14. Training courses of three months duration were held in the Hospital in the years 1945, 1946, 1948 and 1949, schedules of equipment and supplies were drawn up and routine monthly touring of dispensaries was carried out, mostly of the 14 more accessible of the now 20 units.

15. In 1946-47 this was done jointly by two doctors from the Hospital. From 1947-48 Dr. G. L. L. Gurney was Protectorate Medical Officer, followed by Dr. B. C. Walker until February, 1953, since when the post has been filled alternatively by Dr. R. B. Smith or Dr. A. A. Affara, both of the Mission. In 1957, the post is to be filled by an Overseas Civil Service appointment as an intermediary step towards an intrinsically indigenous service, though the medical work of the Mission will persist, apart from that of the purely Mission medical clinics in the Protectorate, in the shape of the inspiration of an organised service on firm foundations of training and a tradition of service.

16. So much for broad structural development in relation to its origins and its builders, the staff of the Keith Falconer Hospital. There is however another subject of historical importance, concerning health development in the Western Protectorate, that is, health progress in the Abyan area of some 125 square miles where the potentialities of the promising cotton growing scheme were threatened in 1949 by hyperendemic malaria, which apart from damage to life and health, was keeping half the labour out of action.

17. With the advice of Dr. E. Cochrane, Director of Medical Services, Aden, a C.D.W. Scheme (D.958) was applied to the area and the Protectorate Medical Officer Dr. Walker assisted in the field by Dr. S. E. Croskey (formerly of the Sana Medical Mission with the Drs. Petrie) and Mrs. John Allen, wife of the Deputy British Agent, brought the malaria under control with six spraying teams using an oil attack on the aquatic phase of the mosquito, coupled with case treatment. Mr. Qaid Sallam was a most effective field executive as malaria inspector in charge of

the anti-mosquito work. Out of this situation and developed by Mr. Allen, came the Abyan Medical Scheme through which was projected the development of a local medical service to conserve health in the cotton area and which was to be financed by the Fadhlhi and Lower Yafai States and the Abyan Board, the local agricultural development body. This was to give rise in turn to the Fadhlhi-Lower Yafai Health Service.

B. The medical services of the Eastern Protectorate, 1934-1951:

18. From the documents available it appears that medical work in the Eastern Protectorate, apart from cautery, caustic, the eye quack's needle and the simple and magic of folk practice, started with the appointment of Dr. K. V. Ranade as a State doctor in Mukalla in 1934. In 1938 the building of an incinerator in Mukalla shows that sanitation was receiving attention. In 1939 progress was afoot. There is record of a Medical Officer, Shihri reporting on cleaning of privies, of Dr. V. V. Ankalikar taking up duty in Shibam, of Miss Hester Viney S.R.N., taking up duty as a child welfare worker on a year's contract in a clinic in the Mukalla Residency and of men being sent to Aden for training as dispensers for Habban, Azzan and Balhaf. In the same year in the Qu'aiti State in Mukalla, a Public Health (No. 1) Decree was enacted, more incinerators are mentioned, there is talk of an MCH scheme in the Wadi Hadhramaut and a dispensary in Sai'un is referred to. Samples of monthly attendances recorded are, for Mukalla dispensary, 1,939, for the MCH clinic 76 (for a week) and for Sai'un dispensary 68.

19. In 1941 Dr. Abdul Ghani Batti was seconded from the I.M.S. for service with the Hadhrami Beduin Legion and was posted to Sai'un, later serving in Gheil Bawazir and Lejun, and Dr. Mazhar was appointed by the Al Kaf family in charge of their dispensary in Tarim. There is a reference to two dispensers being trained in Mukalla and talk of a 12-bedded hospital for the town. On the loss side, two Balhaf dispensers are recorded to have left work because of a smallness of pay.

20. In 1942 a dispenser for Du'an returned from training in Aden to continue training in Mukalla. During this year malaria appears to have been rife. The next year 1943, the advent of the disastrous famine in the Wadi Hadhramaut appears to have been sensed as imminent. Causative factors appear to have been, relative drought since 1937, lack of purchasing power through cessation of remittances from S.E. Asia and cornering of grain from the Yemen by those controlling the entry point at Qaudha. Child welfare work in Mukalla ceased. There was much talk of malaria and trachoma.

21. In 1943 a small military hospital was opened in Dis near Mukalla and its figures for years were to show 50-60 per cent of cases as malaria. Dr. Hodiwalla of the Aden Service visited Mukalla and advised on malaria control, the site of the proposed Mukalla hospital and other matters. In May an H.B.L. patrol travelling Mukalla, Lejun—Bir Asakir—Mukalla reported widespread drought and famine attended by deaths from starvation, and slaughtering of cattle because of lack of fodder. At one place there had been no rain for 3 years and later it is recorded that there had been no rain of consequence in the Wadi Hadhramaut since 1937. Famine dropsy and deaths from starvation were reported from Sai'un

and Tarim. The main famine area appeared to be from Shibam to Einat in the Eastern Wadi Hadhramaut. Later there were said to be 2 deaths a day in hundreds of beggars arriving in Shibam from the East, 2-3 a day in Sai'un, 4-5 a day in Tarim. It was recorded that in August of that year, 1943, in the Wadi Hadhramaut there were 51 deaths from starvation. Famine dropsy was commoner in those working e.g., water drawers, and it affected men more than women. Thousands of camels are said to have died. Grain issues were started and the Beduin schools for sick children and orphans were opened in Mukalla, where refugees increased the population by an estimated 5,000 and where a water-shortage became felt. Smallpox appeared in Wahidi country.

22. In 1944 Dr. (Mrs.) Barrington was appointed Medical Assistant and Residency Surgeon, Mukalla. A medical mission of a doctor, a sister and 6 subordinate staff arrived for famine duties from Aden and were joined by 2 lady volunteers, also from Aden, who arrived to help with famine, hospital and camp management. There are references to dispensaries in Hauta, Haura and Bir Ali. In the Wadi Hadhramaut food kitchens were started. Famine was still taking its toll and in Sai'un in February 106 deaths were reported as due to starvation. In April there were 15 kitchens feeding 10,000 people twice daily. In the last week in August in Tarim 140 people are reported to have died from M.T. malaria, a tragic illustration of the lowering of resistance by subnutrition.

23. In 1945 Dr. A. M. Jasani was posted to the Wadi Hadhramaut as Famine Relief Medical Officer and Dr. B. R. Mehta was a Military Medical Officer, presumably in Mukalla. Famine relief developed and by September relief cases numbered 19,462. The heavy malarial incidence in Mukalla due to stagnant water in the adjoining wadi and house-breeding in Dis and Mukalla was tackled. In 26 months out of 17,000 cases of mosquito breeding 178 were referred for prosecution of which 80 were ultimately fined Rs. 10 each, the effect being excellent. From then on, the malarial incidence in the area became less. In August a supplementary water-supply from Galila, 6 miles from Mukalla was installed. The Quaiti State leper numbers were assessed at 47 in Mukalla, Shihir, Du'an and Laissir.

24. In 1946, it was decided to train 7 more dispensaries for the Qu'aiti State. Famine relief continued the cases dropping to 9,000 odd in August. Some 80 cases of scurvy occurred among them in Sai'un. The malaria figures in Mukalla were greatly decreased. In 1947 Dr. (Mrs.) M. K. Serjeant arrived and worked first in Tarim as Famine Relief Medical Officer and later on MCH work in Mukalla. The next year, 1948, Mukalla hospital was opened and also the dispensary later to become a hospital in Sai'un. In 1949 famine relief was still in progress in the Wadi Hadhramaut and some famine dropsy cases were reported in Mukalla. Famine relief was in operation in Shihir and Amd also.

25. In 1950, fresh ground in malaria control was broken by Wing Commander Marsack who introduced the use of mosquito-larvae eating fish, a measure that since then has been widely used where suitable. In 1951 Dr. Kali newly arrived in Tarim to run the dispensary of the al Kaf family died soon after arrival being replaced later in the year by Dr. L. Merucci. Dr. I. Sheikh was appointed as Residency Medical Officer,

Mukalla, which duties included looking after the health of the Residency staff, the Hadhrami Beduin Legion and the Beduin Schools, the clinics being in the Residency in what had been previously the Child Welfare Clinic, and in the H.B.L. lines. In the same year Dr. E. Hoeck was appointed the Qu'aiti Medical Officer for Shibam and Dr. K. D. Ahmed assumed duties as Kathiri State Medical Officer for Sai'un.

C. The Protectorate Health Service 1951-55

26. In 1950 Dr. E. D. Pridie (now Sir Eric Pridie) Chief Medical Officer, Colonial Office, visited the Protectorate and recommended an expansion of health work and this was commenced in mid 1951. Since it was decided to swing the emphasis of work from treatment to prevention and also because such is modern practice it was decided to call the services whether agglomerated or individual 'health' and not 'medical' services. It was decided to call the senior officer of a constituent service, Senior Medical Officer and where there were more than one in a State employ, the district officers District Medical Officers. The word "dispensary" an antiquated anomaly, was changed for "health unit", and "health assistant" was substituted for the words "tribal dresser", "tribal dispenser", "compounder", "district assistant" and "medical orderly". The emphasis in training was to be on prevention. Uniforms were standardised with grade badges, a standard health-unit was planned and a standard budget pattern for the health head of estimates, both HMG and State evolved.

27. It was clear that among other things required were the following:
- (a) standardisation in staff, training, equipment, supplies, methods of treatment and health service organisation,
 - (b) a wider application of preventive medicine,
 - (c) an extension of the rural health unit system, since most of the population lives in rural areas,
 - (d) more beds for the sick (there were none in the Western Protectorate) more doctors and special facilities such as surgery, X-rays, dentistry, eye treatment and those required to deal with midwifery and diseases of women and children,
 - (e) medical transport, (there was none in the East),
 - (f) health education of the public,
 - (g) the managing of this progress within the means available,
 - (h) health legislation.

28. Further it was established as an aim, that the expanded service evolved should be coherent but flexible, so that constituent individual services could fuse as they, the States wished, and when opportunities were ripe. It was clear that there were two components evolved, the H.M.G., controlling organisation and training and doing such work as any of the States could not handle, and State services, developing to maturity or already matured. The policy implied in the West a transition from Mission control, through a more formalised structure to States' administrations on a pattern parallel with that of an orthodox Government

Department. Not the least of the Mission's services to health, has been their co-operation in this phase, which has made the process much less difficult than it might have been.

29. It was clear that little could be done as quickly as would have been liked and that a planned advance was necessary with a long term series of objectives among which was the development of two main hospitals, one for the Western Protectorate and one for the Eastern Protectorate on which could be based small but complete hospital facilities, medical specialists, training facilities for staff, mobile sanitation units and a public health administration. It was obvious that all States could not afford their own such hospitals and that sharing of the health service expenses and these associated facilities was necessary as a matter of common sense.

30. Mukalla Hospital was indisputably indicated as the base for the East and it had to be decided whether Lahej or the Abyan area should be the site for the West. Whether similar medical bases for the Central Protectorate and the Wadi Hadhramaut would be necessary when possible, later, remained to be seen.

31. For the West, Lahej offered the advantages of a partially built hospital, a large town with a population with much disease providing good training material, a community with education advancing and also a location peculiarly suitable in that Lahej is on the main route in to Aden from the Yemen, giving it value as a centre for controlling the import of epidemic and endemic disease from over the frontier into the Protectorate and Colony. On the other hand, Lahej was at the time socio-economically unsettled and offered no prospect of easy initiation and advance.

32. The Abyan area was economically sound, but needed considerable health control to keep it so, had considerable health work already in being, had prospects of good and more central road relation with a wider area in the Protectorate and gave promise of immediate rapid advancement. Abyan, thus presented itself as a suitable health centre for the Western Protectorate.

33. In 1951 a scheme involving some £32,000 was proposed to the World Health Organisation to establish a hospital and embryo health service in Abyan, but it did not develop, since the organisation was sadly able to offer help where basic building, transport and staff already existed and these were precisely what were lacking.

34. This planned development in the West may be considered to have started with the formation of the Fadhli-Lower Yafai Health Service and Board in 1951. Health work in the Abyan area and the Fadhli and Yafai States was being carried out by no fewer than seven authorities, Head VIII of H.M.G. Protectorate Estimates, Fadhli State, Lower Yafai State, the Abyan Board, an Abyan Medical Scheme to which the foregoing also contributed, the Church of Scotland Mission and the Danish Mission. Clearly some co-ordination was advisable and the result was the formation of the Fadhli-Lower Yafai Health Service with its controlling Board to be responsible for all health matters in the Fadhli and Lower Yafai States but with a Protectorate wide function envisaged in due course.

35. The next step was deciding the site of the hospital, the building of which by the Abyan Board from its own funds had been offered, and the training hostel to be built from C.D.W. funds since it was to serve in due course as the training centre for the Western Protectorate. It was agreed after long delay that on political grounds the hospital should be on the inter-State border at Makhzan, a by no means ideal site. The hospital was opened late in 1954 and the training hostel started work in January, 1955. Four years' attempts at getting from any possible source an eye-specialist, a woman doctor, a dentist and a matron for work in both Protectorates had now got to the stage whereby the eye-specialist and the dentist were to be paid for largely by C.D.W. funds but with contributions from the Fadhli Lower Yafai Health Service, the Qu'aiti Health Service and perhaps the Kathiri and Lahej Health Services, and a lady doctor and a skilled sanitarian with field and teaching functions were hoped for from the World Health Organisation in conjunction with help from the United Nations Children's Fund.

36. In 1951 a Protectorate Health Services Training Board was evolved applicable to both Protectorates and with a standardised curriculum of systematised lectures. In 1952 a course of instruction was held at Sheikh Othman heavily emphasising the preventive aspect. The next year 1953 and thereafter annually, further courses were held in Sheikh Othman and Mukalla, the Western courses however being transferred to Makhzan in 1955.

37. The Aden Society of the Blind sponsored in 1952 valuable surveys of eye diseases in Dathina and Beihan and in 1953 a useful campaign in the remote Duan wadi where eye diseases were known to be particularly prevalent among the women and children of a populous area.

38. In 1953 an epidemic of a dengue-like disease arrived and swept both Protectorates and underlined the need for a co-ordinated epidemiological control since the Aedes mosquito the vector common to dengue and yellow fever is common throughout the Protectorate.

39. In 1954 more systematic touring by medical officers was creeping into being and in the East the relatively inaccessible Hajr and Wahidi areas were under visitation as well as the Northern areas. In 1955 an X-ray was installed in Tarim and a C.D.W. Scheme following up previous ones was formulated to develop further in essentials the growing Protectorate Health Service.

PART II
ADMINISTRATION

3. Policy

40. The aim of the service is to develop, with homogeneity as well as flexibility, towards an indigenous self-sufficient health service of modern type i.e., with its bias on prevention, and of a type also that ultimately can be administered entirely within local resources. The homogeneity consists in standardisation in staff grades and salaries, in training, in equipment and supplies, in documentation, in budgeting and in practice and procedure generally. Such standardisation conduces to fusion between services when such is opportune and is a necessity where training is required.

41. The flexibility is in that certain of the subsidiary State Health Services require a minimum of advice only, while for the less developed in varying degree are required more direct control and actual executive work by the H.M.G. component. This lack of rigidity leads to developing responsibility in local authorities and allows of the giving of greater attention where it is more needed.

42. The H.M.G. component may be regarded as an organising and training element with lessening functions, as States either attain maturity with their individual health administrations or fuse to enable such maturity to be more readily achieved. Apart from this aspect but corollary to it, Her Majesty's Government are instrumental in obtaining and applying funds from non-States' sources for the provision of capital projects such as basically important buildings and expensive equipment, beyond the present resources of the States in capital outlay, but within their resources for maintenance. Such funds have derived from H.M.G. Middle East Vote, more largely from C.D.W. funds and from the Nuffield Foundation (a very helpful grant enabling health educational material to be bought), and in the near future also it is hoped will derive from the United Nations' Specialised Agencies.

43. Certain aspects of policy detail regarded of importance, are the recruitment and posting of Arab staff to their own home areas, at all levels and in all categories, the increasing of the beds available for the sick, siting of standard type health units in areas where justified in relation to parent district hospitals, and special campaigns against the more important endemic diseases, notably, malaria, intestinal infections, tuberculosis and eye diseases. It is aimed to give ever-increasing attention to health education of the public through the media of schools, security forces and the general public, by cinema, press, radio and leaflets. Progress depends to a large extent on the building up and expanding function of the two base hospital and health service training complexes, Makhzan in the West and Mukalla in the East.

4. Organisation

44. The Aden Protectorate Health Service as has been stated has an H.M.G. component, the organising and training headquarters, and a States' component, this being the States' own health services where they exist; some are mature, more are immature, and can only attain maturity by fusing with neighbouring States. Some of the smaller States are still in an elementary phase of administration in general.

45. The Health Adviser has been based on Mukalla for the last five years with a Sub-headquarters in Aden but is now in process of merging the Mukalla Office with that in Aden since the increasing office work makes Aden the more suitable headquarters. There is an Assistant Health Adviser (West) based on Aden at the moment but due to move to Makhzan, the base hospital-training centre complex for the West. His counterpart in the East is based on Mukalla. The function of the Health Adviser is to administer activities financed by H.M.G. and advise the States on health matters. The Assistant Health Advisers deputise for the Health Adviser when he is absent from their areas and in addition have clinical responsibilities for Her Majesty's Government's staff and for States for which no mature services (i.e., in fact States without medical officers) exist. The Assistant Health Advisers have each, office-clinics, clerks, health assistant aids, 2 drivers and 2 cars. They are honorary consultants to hospitals in their areas and hospitalise cases either in local Protectorate hospitals or in hospitals in Aden, and control, and contribute to, the training in the training centres.

46. H.M.G. specialist staff will be, it is hoped, an ophthalmologist, a dental officer, a matron, and in due course a sanitarian based on Makhzan and a gynaecologist with an interest in pediatrics based on Mukalla. These specialists, still to be recruited, are intended to tour and work in both Protectorates.

47. There is a Museum Assistant at the Mukalla Training Centre, who makes models and other visual aid materials for the teaching museum, hospitals and health units and it is intended that this service shall extend to suitable schools. In 1955 he put the teaching museum at Makhzan in order but in future will have ample occupation in Mukalla and it is hoped to establish a similar appointment for the West in Makhzan.

48. Her Majesty's Government's Estimates carry 2 Senior Hospital Assistants for training and tutorial duties. One is on loan to the developing Lahej Health Service and the other to the Fadhi-Lower Yafai Service which has no experienced subordinate staff. They also carry 7 health assistants for service with the mobile units of the Health Adviser and two Assistant Health Advisers, and for leave reliefs and field emergencies such as epidemics. Apart from these, H.M.G. Estimates provide for 22 health assistants in the West for States as yet unable to take them on their own Estimates and in the East there are 8 such. It is policy to transfer all these officers to the State or joint-State budgets as opportunities offer. In addition there are the clerks, drivers and other ancillary staff associated with the offices of the advisory and specialist staff.

49. Four States (Lahej, Qu'aiti and Kathiri) or joint State (Fadhli-Lower Yafai) Health Services have doctors (Senior Medical Officers) in charge and the Qu'aiti has in addition 3 District Medical Officers in sub-charge of Districts. All but one are based on hospitals, the exception, that for the Qu'aiti Western District has one planned for the near future in Duan. Health units are administered from parent hospitals.

50. There are 2 mobile sanitation units with health inspectors in charge, one based on Makhzan and one on Mukalla, associated with the training centres at these bases. The training centres are under the control of the local Senior Medical Officers, and will be shortly under the immediate advisory supervision of the Assistant Health Advisers. Each has or will have hostel accommodation for male and female trainees in training who are not local residents, a lecture room and teaching museum combined, and a preparation room housing the museum assistant who apart from assisting with the teaching in due course, prepares visual aid material for Protectorate wide distribution. The overall training aspect is controlled by the Protectorate Health Service Training Board which has Western and Eastern Committees under the deputy chairmanship of the Assistant Health Advisers and with the Health Adviser as chairman.

51. There are 3 State Health Boards, Fadhli-Lower Yafai, Qu'aiti and Kathiri, which discuss such major matters as policy, legislation, estimates, buildings and licensing of practitioners and drug-sellers. They pass recommendations to State Councils.

52. Recommendations are made by the Health Adviser in respect of draft State Estimates for the Health Heads and indents for States' Health Services supplies pass through the offices of the Assistant Health Advisers for advisory assistance. Standardisation and co-ordination is sought, apart from that following personal inspection and advice on specific matters as they arise, by means of Protectorate Health Service Instructions issued monthly. These are intended to be codified into Health Service Regulations.

53. Liaison with the Aden Medical Service and the Aden Hospitals and specialist services is largely through the Assistant Health Advisers and/or Health Adviser. A hostel for Protectorate patients awaiting entry to the Aden hospitals, or repatriation, after discharge from them, is being built in the near future.

54. Sanitation as a local government interest receives attention in varying degrees of effectiveness in the townships of Lahej, Jiar, Zingibar, Mukalla, Sai'un, Shibam, Tarim, Gheil Bawazir and Shihir. Elsewhere in the Eastern Aden Protectorate village councils are developing local responsibilities for the disposal of refuse. Mosquito control everywhere however for the present remains a matter for the State component of the Health Service (or in the less developed areas for the H.M.G. component).

5. Legislation

55. Before 1951 the Qu'aiti State had enacted three degrees relating to health:

No. 1 1357 A.H. (A.D. 1938): To grant pratique to vessels arriving at Qu'aiti ports.

No. 2 1357 A.H. (A.D. 1938): To secure and maintain health.

No. 3 1362 A.H. (A.D. 1943): To provide for the establishment and regulation of public markets and slaughter houses?

56. Only a few major States' administrations are sufficiently advanced to introduce formal health legislation. In 1953 the Lahej State adopted sanitary regulations. A simple ordinance to cover Protectorate requirements has been planned in six parts, Control of Treatment of Disease (including control of practitioners and drugs), Communicable Diseases, Sanitation, Foodstuffs, Registration of Births and Deaths, and Mental Disorder, the aim being to introduce these parts as individual Decrees in States as they become mature enough to accept them. So far the Fadhli, Lower Yafai and Kathiri States have enacted the Decree for the Control of Treatment of Disease. It is expected the Qu'aiti State will adopt it in 1956. One of the major difficulties with the acceptance of the Decrees for Sanitation and Communicable Diseases is likely to be the overcoming of the prejudice against right of entry by health service staff.

6. Staff

57. Table 2 shows the gradual increase in staff engaged on health work in the Protectorate since 1951 and Table 3 shows the senior professional staff working in 1955. It may be noted that three mission doctors were working during the year, two in Beihan and one in Zingibar. In the West the post of Senior Medical Officer, Lahej was vacant part of the year and in the East the posts of Assistant Health Adviser (East) and District Medical Officer, Western Qu'aiti District, moreover the District Medical Officer, Southern District was absent the latter part of the year on study leave, and Mukalla was thus, handicapped with its training programme. A new Senior Medical Officer, Lahej was appointed during the year.

58. Over the five years there has been much ebb and flow as between the various categories of hospital and district professional subordinate staff. Factors have been withdrawal of health assistants from units posted with two each, closing of 5 Kathiri units considered unnecessary apart from being economically unsupportable, wastage from weeding out and various other causes, difficulties in recruiting trainees, gradual adjustment of establishments in hospitals to conventional pattern and a general process of crystallisation into the meeting of needs by appropriately trained staff.

Table 2. Aden Protectorate 1951-55: Strength of Health Service Staff

(Figures are to some extent approximations, especially in the lower categories since there is some continual variation in establishments, wastage and ability to recruit. Those not in Government or State employ are included but also shown in brackets. Figures are for those actually working, not for established posts)

CATEGORY	Head Officers 1955	Western Professionals 1955	Eastern Professionals 1955	TOTALS				
				1951	1952	1953	1954	1955
SENIOR STAFF:								
Doctor	1	7(3)	6(1)	9(1)	10(1)	11(1)	12(1)	14(4)
Sister and midwife	—	4(4)	—	4(3)	4(3)	4(3)	3(2)	4(3)

[Table 2 contd. overleaf

Table 2—continued

CATEGORY	Head-Quarters 1955	Western Protectorate 1955	Eastern Protectorate 1955	TOTALS				
				1951	1952	1953	1954	1955
HOSPITAL STAFF:								
Senior technical assistant*	—	2	2	1	1	3	7	4
Technical assistant†	—	2	6	5	13(1)	14(2)	9(2)	8(2)
Head sick attendant*	—	—	3	—	—	—	2	3
Sick attendant‡	—	4	10	—	—	12	20	14
Trainee†	—	17(1)	20	31	33	20	22	37(1)
DISTRICT STAFF:								
Senior health assistant	—	12	—	—	—	16	14	12
Health assistant¶	1	29	24	60	63	47	51	53
Senior health inspector	—	—	1	1	1	1	1	1
Health inspector and health overseer†	—	5	8	15	13	16	17	17
Health technician†	—	—	4	15	12	10	4	4
ANCILLARY STAFF								
Clerk, accountant, and store keeper	2	5	7	6	8	9	9	12
Driver and assistant driver	3	8	7	6	8	9	16	15
Labour, unskilled§	2	9	10	14	44(1)	44(1)	52(1)	21

* Hospital, laboratory, pharmacy, and theatre and radiographical.

† Includes under training potential technical and health assistants.

‡ In 1955 included 10 women, 5 being literate, all in the Eastern Protectorate.

§ In 1954 included messengers, sweepers and 2 teams of 6 each of labourers for 2 mobile sanitation units, and a number of town-cleaners in certain subsidiary services to be transferred thereafter to local township authorities.

¶ Some of these are acting i.e., not yet fully diplomate.

59. Before 1951, staffing in hospitals and health units by professional subordinates was extra-ordinarily unequal due to different modes and standards of training, often the need to take whatever recruits were willing, owing to low rates of pay, poor character of many, lack of uniforms, lack of levels of responsibility among them and therefore no inducement for the better to show their value and gain the advancement due with capability and responsibility.

60. Over the past five years, training and diplomation at 3 levels in both curative and preventive medicines have been applied with difficulty since the health units are manned singly and there has been no pool of substitutes to replace in their units those under training and indeed many health units have been, and some still are, manned by partially trained staff. None-the-less, some order has emerged from chaos, and five years of largely opportunist training has separated wheat from chaff. New establishments have taken shape and there are now clear-cut levels of responsibility and function based on training and diplomation and recognisable by grade in uniforms—a very necessary point in early phases of service development.

Table 3. Aden Protectorate 1955: Senior Staff

NAME	QUALIFICATIONS	STATION	EMPLOYMENT
Government and States			
1. Corkill, N. L.	M.D., CH.B. (Liverp.)	Mukalla	Health Adviser, Aden Protectorate.
2. Afara, A. S.	M.B., CH.B. (Edinb.) D.T.M. & H., (Liverp.)	Aden	Assistant Health Adviser (West).
3. Smith R. B.*	M.B., CH.B. (Edinb.)	Aden	do
4. Vacant	..	Mukalla	Assistant Health Adviser (East); S.M.O. Lahej
5. Kulkarni, N. B.	M.B., B.S. (Bomb.)	Lahej	Health Service.
6. Sen Gupta, B. B.R.	M.M.F. (Calc.)	Makhzan	S.M.O. Fadhli-Lower Yafai Health Service.
7. Ranade, K. V.	M.B., B.S., (Bomb.)	Mukalla	S.M.O. Qu'aiti Health Service.
8. Ankalikar, V. V.	M.B., B.S., (Bomb.)	Mukalla	D.M.O. Southern Qu'aiti District.
9. Japanwalla, T. S.*	M.B., B.S., (Bomb.)	Mukalla	D.M.O. Southern Qu'aiti District.
10. Hoeck, E.	M.D. (Hamb.)	Shibam	D.M.O. Northern Qu'aiti District.
11. Uttanwallah, H. A.	M.B., B.S. (Bomb.)	Duan	D.M.O. Western Qu'aiti District.
12. Ahmad, K. D.	M.M.F. (Calc.)	Sa'jun	S.M.O. Kathiri Health Service.
Other than Government and States			
Merucci, L.	M.D. (Rome.)	Tarim	Physician to Al Kaf Family.
Croskery, S. E. (Miss)	B.Sc., M.D. (Edinb.)	Beihan	Church of Scotland Mission Clinic.
Morris, G. E. D.*	M.B., CH.B. (Edinb.)	Beihan	do
Morris, M. (Mrs.)	M.B., CH.B. (Edinb.)	Beihan	do
Carlsen, D. (Miss)	M.B., CH.B. (Edinb.)	Zinjibar	Danish Mission Clinic.

*In succession.

61. Neither before 1955 nor since has Her Majesty's Government paid for established hospital staff, and since that year the Fadhli and Lower Yafai States have relieved them of any financial commitments for health assistants. It is policy to continue the transfer of all health assistants to their own States as these can take them. For this reason, the approximate equation of salaries of Her Majesty's Government health assistants with those belonging to States, amongst whom themselves, there is much diversity, has presented a difficult problem, but has gradually yielded to Her Majesty's Government's conservatism and a States levelling up. In the earlier years some difficulty was caused by secondment from H.M.G. to certain States because of disparity in pay. All secondments to States were terminated in 1955 and for the future there remain only transfers on rates of pay, acceptable to the States.

62. There has been severe handicapping over the 5 years, with clerical staff which both in numbers and quality, has lagged behind development and increasing work, but by the end of the year 1955 the Fadhl-Lower Yafai and Kathiri Services appear to have got offices running on reasonable lines. Office procedure is by now fairly well standardised. The Lahej Service however has still to establish its office. Much work has to be done bilingually or in Arabic and it remains an unhappy fact that plenty of Arab clerks type English well, but very few Arabic. The drafting standard in general is not satisfactory.

7. Accommodation

63. Housing for Protectorate doctors, health assistants and ancillary staff whose duties required them to live in the Protectorate was one of the things noted to be completely lacking in 1951. In that year a combined residence, offices, laboratory, garage and stores was built in Mukalla for the Health Adviser. The Sub-headquarters of the Health Service in the West was housed jointly with the Medical Protectorate Office of the West in a small 3 roomed building in the grounds of the Keith Falconer Hospital in Sheikh Othman in the Colony. In 1954-55 the joint office was moved to the Champion Lines in Khormaksar and gradually expanded with growing needs. A Protectorate Health Service staff hostel for junior staff in transit exists in Sheikh Othman. When Makhzan hospital was built in 1954, the buildings included a house for the Senior Medical Officer and houses for 2 senior and 3 junior subordinates and a room in the training hostel for 10 in-trainees. Lack of adequate housing for staff of all categories, in certain stations remains an obstacle to recruiting, contentment and efficiency.

64. Hospital accommodation is inadequate in the Protectorate, largely because of lack of funds and planning inevitably inter-dependant, and also because of other more basic priorities. Lahej Hospital, seeming well, if not rather ambitiously, planned has remained partially built for several years. The hospital of the Fadhl-Lower Yafai Health Service, planned as the base hospital and training centre for the Western Protectorate, was as mentioned above after much and prolonged debate built in 1954 on the inter-State border as a political compromise in the rather unsatisfactory site of Makhzan which is something of a dust-bowl. Immediately it was built it was flooded by the bursting of a bund and has since been apparently threatened by the approach of the changing course of the Wadi Banna. With the increasing cultivation in the area, planting of trees and making of roads, the dust nuisance should lessen and boxing of the hospital area should rule out flooding. Limitation of erosion by the wadi flood is to be attempted by the building of a spur, to divert a proportion of the flood water. The hospital at the moment has 20 beds but is capable of expansion to 100 if ever necessary and feasible, economically. Adjoining is a training hostel accommodating students as stated above, a teaching and museum room and a visual aid exhibits preparation room. Ancillary buildings are male and female waiting rooms, pharmacy-laboratory complex, theatre complex, public health office, laundry, mortuary, stores and garage. The hospital is the headquarters of the Fadhl-Lower Yafai Health Service.

65. Mukalla hospital, the counterpart in the Eastern Protectorate, is the headquarters of the Qu'aiti Health Service and the base hospital and training centre for the East. Since 1951 it has amended considerably and added to its layout and accommodation and now comprises outpatient department, male medical and surgical wards (24 beds) female wards (16 beds), private wards, X-ray department, laboratory, pharmacy, a double surgical theatre complex, a teaching room and a T.B. ward of 10 beds. Public health offices, stores and workshop have also been added. An MCH unit is building. In 1951, medical and surgical work in Shibam was carried out in several rooms high up in the local administrative building and fort. The building of a hospital was commenced in 1954 and it was formally opened in 1955. The accommodation comprises office-clinic, male and female waiting and treatment rooms, male and female wards (20 beds), pharmacy, laboratory, theatre, kitchen, laundry, stores and mortuary.

66. Sai'un hospital, originally designed as a dispensary, since 1951 has added a laboratory, a female out-patient department and a public health office and store and has opened wards for 10 beds. Tarim hospital provided by the al Kaf family has evolved from "dispensary" status to that of a hospital with 20 beds, a theatre, laboratory and X-ray.

67. A small hospital is required somewhere in the central part of the Protectorate and it seems that Attaq will probably be the best site from all viewpoints. If Meifaa in Wahidi country develops agriculturally as it may, a small hospital here will be needed.

68. Bedding accommodation for cases capable of continuity of treatment in the health units and who can feed themselves or be fed by friends or relatives will fill a need and may suitably be sited in Dhala, Zara-Lodar, Mudia, Ahwar, Nisab, Beihan, Jol Bahawa, Sahwa, Du'an and Hadibu in Socotra. Mudia has partially built such accommodation. This will save lives, invalidism, money otherwise required for transport to Aden or Mukalla and of course will free potentially a number of the all too few hospital beds.

69. In 1951 it was noted that the "dispensaries", now called health units, were unsatisfactory. Some were rooms in the houses of the health assistants, and most others were rented rooms on upper floors of State buildings. Most were unsuitable for the purpose through lack of light, space, fittings and ease of approach. A standard health unit was designed, the nucleus being a 3 roomed unit of office-clinic, store-laboratory-dispensary complex and MCH room. This was designed to be expandable as needs and means grow, to hospitals of 20 to 100 beds. Makhzen was built on this pattern and illustrates the 20 bed phase. Over the past five years health units not of the standard pattern have been built at Am Shatt, Kersh, Qod and Am Wathia. Units of standard pattern or approaching it have been built at Dhala, Zingibar, Dirigag, Husn, Bateis, Jaar, Am Sawad, Beihan al Ulya, Zara-Lodar, Said, Nisab, Ahwar and Meifaa, and started at Muhfid.

70. Health units in the West of a highly unsatisfactory character being mostly single rooms, are those of Dar am Farsha, Tor am Baha, Dubeyat, Jabal Harir, Qasha, Khalla, Shuqra, Qod, Qara, and Aryab, and in the East, all, with the exception of a few that require some reconstruction. A programme of reform for the Eastern units has been formulated and a start it is hoped will be made in 1956 with Gheil Bawazir, Habban, Du'an, Qatn, Sah and Hautha and with new establishments at Sahwa, in Wadi Rakhya, Reidat Sei'ar and Hadibu.

8. Equipment

71. During the five years under review the hospitals at Makhzan Mukalla, Shibam and Sai'un have developed their hospital and surgical equipment from various sources mostly States funds, and H.M.G. Middle East Vote and C.D.W. Schemes Nos. D.876 (Sai'un), and D.1903 (Western Protectorate). Tarim hospital has been financed by the al Kaf Family. Mukalla and Tarim have instituted X-ray apparatus. Teaching rooms have received charts, exhibits, skeletons, obstetrical phantoms and teaching material generally, Makhzan and Mukalla training centres, cinema projectors and films, and Makhzan an epidiascope, from C.D.W. funds and the Nuffield Foundation Aden Protectorate Health Grant.

72. The two mobile sanitation units of Makhzan and Mukalla have each a Tifa machine, both bought with State funds with various accessories, but an experienced sanitarian will have to be available to train the units, before full advantage of the machines' value will be obtained. Apart from these units are equipped with knapsack pneumatic sprays, stirrup sprays, and the usual hand implements, spades, picks, sickles etc.

73. The health units were on the whole poorly equipped in 1951 and most of the Eastern units still are; many health units were in any case unable to house a wider range of equipment. With the aid of C.D.W. Scheme D.1903, 28 units in the West have been equipped reasonably, (Dar am Farsha, am Shatt, Tor am Baha, Sha'ab, Museimir, Dhala, Dhubeiyat, Jabal Harir, Awabil, Khalla, Qasha, Ahwar, Muhfid, Waht, Kersh, Qara, Husn, Bateis, am Sawad, Zingibar, Al Qod, Shuqra, Mukeiras, Zara-Lodar, Mudia, Said, Beihan (Ulya), Useilan (Naqub)). Most units in the East still require equipping to the standard schedule. Important items issued have been, insecticidal applicators, centrifuges, low-power microscopes, dispensing balances, water-stills, sterilizers and nursing equipment.

9. Supplies

74. Lahej Health Service pays for its own expendables, the Fadhli-Lower Yafai Service has done likewise since 1952 and the Kathiri Health Service has done so since 1953 up to which date it had some C.D.W. assistance (D.876). The Qu'aiti Service is self-sufficient in this respect. Her Majesty's Government's Health Service vote is being decreasingly required to finance the expendable needs of most other Health Services, the States concerned on the whole, showing a gradual increase in their ability to pay for their recurrent needs. This is offset to some extent by increase in work and the opening of new health units or establishment of new military aid posts.

75. The standard schedule of supplies is constantly under review and as more effective remedies come to notice or those with multiple functions, they replace the less suitable.

76. For important diseases, standard treatments are directed or recommended as may be applicable, to facilitate training and also to enable an efficient change over to be made should drug fastness develop. Thus Camoquin is used for malaria and chloromycetin for eye infections. BHC is the standard insecticide used so that if resistance develops a switch may be made to a chemical of a different nature.

10. Transport

77. In 1951, there were 2 lorries and 2 landrovers in the Western Protectorate for health work and in the East there was no medical motor transport. The position is now better in that the Health Adviser has a landrover and lorry, the Assistant Health Adviser (West) has the same, there is an ambulance based on Aden for use in the Western Protectorate (loaned when needed to Senior Medical Officer, Lahej, for tours of duty) and the Fadhli-Lower Yafai Service has a lorry and 2 landrovers. In the East, Assistant Health Adviser (East) has 2 landrovers and the Qu'aiti State has 2 ambulances given from C.D.W. funds, one in Mukalla and one in the Wadi Hadhramaut, shared with the Sai'un State in alternate months (an arrangement far from satisfactory). Bedford and Austin 30 cwt. trucks have been tried and found on the whole unsatisfactory for ambulance-general-utility purposes and standardisation is now being effected on the landrover 107" base chassis fitted with the Pilcher 2 stretcher ambulance body. It is fitted with extra tanks and jerry-can carriers. Table 4 shows the growth of the motor transport.

78. Over the five years there has been a growing increase in the transport by air to Aden of serious cases of injury, or disease or complications of labour, and if ever the territory can afford it, a light aeroplane to transport staff, supplies and sick is clearly indicated. Alternatively more money may be made available for air transport. The supply and visiting of Socotra is a pertinent problem. In 1955 an officer there with typhoid fever was tentatively diagnosed by wireless and flown out by a special aircraft.

79. Ambulance utility vehicles are needed badly by Senior Medical Officer, Lahej Health Service, Senior Medical Officer, Kathiri Health Service, Sai'un and by the Church of Scotland clinic in Beihan; a truck is required by the Qu'aiti mobile sanitation unit.

Table 4. Aden Protectorate 1955: Health Service motor Transport

POST	1955 LAND-ROVERS	TRUCKS	INCREASE OVER 5 YEARS				TOTAL CARS
			1951	1952	1953	1954	1955
(a) H.M.G.:							
Health Adviser ..	1	1	2	2	5	2	
Assistant Health Adviser (West) ..	1	2*	2	2	3	3	
Assistant Health Adviser (East) ..	2	—	1	1	2	2	
(b) FADHLI-LOWER YAFAI S.M.O. Makhzan ..	2	1	1	2	3	3	
(c) QU'AITI SERVICE: S.M.O. Mukalla ..	—	1	—	—	—	1	
D.M.O. Shibam ..	—	1**	—	—	—	1	
(d) NON-GOVERNMENT AND NON-STATE: M.O. Tarim (al Kaf) ..	1	—	—	—	—	1	
TOTAL ..	7	6	4	7	8	13	

*One shared with S.M.O. Lahej.

**Shared with S.M.O., Saiun.

11. Documentation

80. No census figures are available and there is no registration of births and deaths.

81. A combined outpatient and inpatient register is used by hospitals, health units, military aid posts, doctor's touring units and mobile sanitation units. It allows of records also for home-visits, cases seen in the field on tour and immunisations. In association is kept a register of cases of tuberculosis, leprosy, bilharzia and guinea worm and of cases requiring surgical attention such as cataract and hernia, willing to proceed to a local hospital for operation when called forward.

82. Monthly, the hospitals and units abstract their registers on to a monthly statistics return. There is provision on this for reports on tours, epidemics, matters of general health interest, sanitary matters and also for requisition of expendable supplies or replacements of equipment. Monthly these forms are forwarded to the parent hospital, which passes copies, together with comparable returns of its own to the local Health Service Headquarters. The parent hospitals keep master registers of the registrable diseases referred to above. Health Service Headquarters in each Protectorate consolidates the monthly health intelligence as received from the hospital-health unit groups.

83. Annual reports are rendered by D.M.O.s, S.M.O.s, and Assistant Health Advisers and are consolidated by the Health Adviser in February. This system of recording and reporting is not yet working efficiently but is well launched. Health Service Regulations and a Health Assistants' Handbook in English and Arabic are under preparation.

12. Non-Government and non-State work

84. The Church of Scotland Mission based on the Keith Falconer Hospital in Sheikh Othman and in association with the Danish Mission during the quinquennium expanded their traditional work in the Protectorate. They had clinics mainly concerned with the health of women and children and home-visiting in Jaar, Zingibar, Mudia, Beihan and most continuously in the East where for most of the time either one or two doctors worked.

85. It has been mentioned above that the Aden Society for the Blind sponsored an ophthalmological survey of the Mudia and Beihan localities by Dr. S. E. Croskery in 1951 and in the following year a useful visit by the same lady to the Du'an valley of the Wadi Hadhramaut, with the aim of reaching eye infections in the heavily affected purdah communities.

86. The al Kaf family of Tarim in 1952, engaged the services of Dr. L. Merucci to take charge of their dispensary in Tarim as a public charity. Over the 5 years the dispensary has become a hospital with beds, theatre, laboratory and X-ray. Women's and child health, pulmonary tuberculosis, malaria and preventive medicine in general have received enlightened attention.

13. Finance

87. Expenditure by Her Majesty's Government on the Protectorate Health Service is of three sorts. These are, a payment of £2,155 annually to the Colony, for hospitalisation of Protectorate sick in Aden Civil Hospital, the annual estimates for the Protectorate Health Service which cover the costs of services directly administered by the Health Service Headquarters and also occasional assistance with capital expenditure for the more advanced and otherwise self-sufficient States where this is specially needed. Normally however, grants from Colonial Development and Welfare funds meet such special expenditure. Table 5 shows such expenditure over the last five years. Table 6 shows the expenditure from States Estimates.

88. Table 7 shows that from other sources. These have been a grant of £2,000 from the Nuffield Foundation for the advancement of health in the Protectorate and several generous gifts from Qaitis who have prospered abroad, for public health projects in their home country. From inside the country assistance from the Qu'aiti Khairya, a State charitable fund has helped with hospital buildings, the salary of a doctor for Du'an, hospital equipment, the erection of a T.B. ward, transport and fees for cases sent to Aden Hospital and the cost of training 5 or so Qu'aitis as doctors in the more advanced Muslim States. In the Qu'aiti and Kathiri States, some of the larger municipalities collect rates and expend a proportion on town sanitation. In certain other States municipalities are financed as yet by the State, but control the expenditure on town sanitation in varying degrees.

89. In 1956 it is expected that C.D.W. Schemes for £90,000 will be initiated for developing the Health Service by the provision of specialist staff and their housing, improved hospital and health unit accommodation and equipment, and the further development of the two training centres at Makhzan and Mukalla. In 1957 it is hoped that the Service will be sufficiently basically established to be able to utilise aid from the United Nations Specialised Agencies.

90. It has had to be ensured throughout that the development plan has two financial points of importance, firstly, that recurrent costs shall not increase to a degree making it impossible for continuity to be ultimately borne entirely by the States and secondly that estimates and costing shall be standardised thus enabling State health services to fuse into joint services as opportunities offer, and thus eliminate certain duplications in establishment.

PART III
HEALTH OF LOCALITIES

14. Western Protectorate

91. Information relating to health in the Western Protectorate with its estimated population of 454,800 derives (a) from the reports of the Health Adviser and the Assistant Health Adviser (West) on work done by themselves on tour, (b) on certain cases from the Protectorate, hospitalised in the Keith Falconer Hospital in Sheikh Othman and the reports from 18 health units (Al Ara, Tor um Baha, Sha'ab, Dar am Farsha, Awabil, Jebel Harir, Dhala, Dubiyat, Khalla, Qasha, Museimir, Zara-Lodar, Mukerlas, Mudia, Ahwar, Said, Nisab, and Beihan Ulya) more or less directly administered by Her Majesty's Government, (c) from the work done by the Senior Medical Officer, Lahej with his 2 healths units (Lahej and Kersh), and (d) from the work done by the Senior Medical Officer, Fadhli-Lower Yafai Health Service at Makhzan and by the mobile sanitation unit and 10 health units (Qara, Husn, Bateis, Ja'ar, Qod, Zinjibar, Dirigag, Shuqra, Am-Wadhia and am-Sawad) of the joint State Service. Useful information is also received from the Mission clinics of Beihan and Zinjibar.

92. During 1955, the training courses were held for the first time at Makhzan for health assistants and trainees from the States of the Western Protectorate, and the hospital with its associated training centre and mobile sanitation unit may be considered to have been established as the Health Service base for the Western Protectorate. Insecurity during the year was a considerable obstacle to field work.

93. Table 8 shows the clinical work done in the Protectorate by the Health Adviser incidental to his administrative work, Table 9 that done on tour by the Assistant Health Adviser (West) and Table 10, the work done in the Keith Falconer Hospital for Protectorate patients.

94. New health units completed during they ear were 6 (Zara, Beihan al Ulya, Dirigag, Bateis, al Husn, and Ahwar), those continuing incomplete were 2 (Mudia and Muhfid) and those commenced during the year were 2 (Nisab and Ja'ar). Table 11 shows works done by health units and Mission clinics. The records in many cases are of obviously poor quality.

Table 5. Aden Protectorate 1951-55: Expenditure in £ on health services by Her Majesty's Government
(Based on Approved Estimates: in brackets health expenditure is shown as a percentage of total expenditure for (a) Heads I, VIII and XV in 1951-52, and (b) of total expenditure less Head I for Heads IV and 4 for the years 1952-55)

SOURCE	1951-52		1952-53		1953-54		1954-55		1955-56		
	CAPITAL	RECURRENT	CAPITAL	RECURRENT	CAPITAL	RECURRENT	CAPITAL	RECURRENT	CAPITAL	RECURRENT	
(a) PROTECTORATE ESTIMATES											
Head I: Contribution to Colony Civil Hospital ..	—	1,875	—	1,875	—	1,875	—	2,155	—	2,155	2,155
Head VIII ..	600	7,485	—	—	—	—	—	—	—	—	—
Head XV ..	3,650	4,088	7,590	16,864	2,260	16,318	3,555	20,897	16,600	26,048	42,648
Heads IV and 4	—	—	—	—	2,260	18,193	2,260	23,052	16,600	28,203	44,803
Total: Protectorate Estimates	4,250	13,448	7,590	10,739	26,329	20,453	3,555	26,607	16,600	28,203	44,803
(b) CDW SCHEMES											
D.876 *	598	—	598	1,031	—	—	—	—	—	—	—
D.1903 ..	—	—	—	—	44	4,090	426	2,418	105	540	105
Total CDW ..	598	—	598	1,031	44	4,134	2,844	2,844	645	645	645
Total ALL ..	4,848	13,448	8,621	18,739	27,360	24,587	6,399	23,052	17,245	28,203	45,448

* Scheme started in 1950-51, during which year £1,139 was spent on capital expenditure.

Table 8. Aden Protectorate 1955. Cases seen by Health Adviser on tour

CONDITION	WESTERN PROTECTORATE	EASTERN PROTECTORATE	TOTAL
Malaria	1	6	7
Bilharzia, Urinary .. .. .	..	4	4
Intestinal flux	4	13	17
Fever, undifferentiated	1	2	3
Treponematoses	1	1	2
Gonorrhoea .. .. .	..	2	2
Leprosy .. .. .	..	2	2
Tuberculosis, pulmonary	1	4	5
Pneumonia	2	..	2
Asthma	1	..	1
Ulcers, non-eye	6	24	30
Eye conditions	17	40	57
All other diseases	40	100	150
TOTALS	74	208	282

Table 9. Aden Protectorate 1955: Cases seen by Assistant Health Adviser (West) on tour

CONDITION	CASES
Malaria	25
Bilharzia, intestinal	1
Dysentery, amoebic	7
Fever, undifferentiated	6
Treponematoses	8
Tuberculosis, pulmonary	7
Tuberculosis, non-pulmonary	2
Asthma	4
Eye conditions	29
All other diseases	218
TOTAL	307
Minor operations done	30

Table 10. Aden Protectorate 1954-55: Keith Falconer Hospital: Protectorate Patients: Work done

CONDITION	IN-PATIENTS AND OUT-PATIENTS	
	1954	1955
Malaria	115	63
Bilharzia, Urinary	4	1
Bilharzia, intestinal	1	4
Guinea worm .. .. .	..	3
Round worm	2	2
Tape worm	2	2
Enteric fevers .. .. .	..	..
Intestinal flux	12	25
Puerperal fever .. .. .	..	..
Fever, undifferentiated .. .. .	..	24
Treponematoses	7	17
Gonorrhoea	9	3
Tuberculosis, pulmonary	15	29
Tuberculosis, non-pulmonary	19	6
Pneumonia	5	8
Asthma	9	..
Scurvy .. .. .	..	..
Ulcers (non-eye)	11	1
Eye conditions	68	52
All other conditions	95	382
TOTAL	375	620
B. OTHER WORK:		
O.P.D. treatments	2,364	?
Major operations	85	35
Minor operations	23	15
X-ray examinations .. .. .	..	..

15. Lahej Sultanate

95. The population including that of the now dependant Subeih area is estimated at 39,100. The State estimated for £4,116 (2.4 per cent) for health as compared with £2,283 (3 per cent) in 1944 an increase of 59 per cent.

96. The Lahej Health Service personnel comprise:

Senior Medical Officer	1
Senior Hospital Assistant	1 On loan from H.M.G.
Senior Health Assistant	4 2 paid by H.M.G.
Health Overseer	2
Health Assistant	2 1 paid by H.M.G.
Sick Attendant	4
Clerk Storekeeper	1
Unskilled	2

Table II. Aden Protectorate 1955. Work done by health units and Mission clinics in the Western Protectorate
(Health units were not all open for the 12 months of the year)

UNIT	CASES	MEAN CASES PER MONTH	HOME VISITS	TREAT- MENTS	IMMUNISATIONS	HOUSES SPRAYED	COMMONEST ILLNESS AS REPORTED*
LAHEJ	9,597	799	387	25,799	?	++	Malaria, bronchitis
Lahaj Town ..	2,071	1,139	1,139	1,299	—	++	Malaria, bronchitis
Kersh ..	805	209	610	3,644	—	?	Malaria, yaws
Am Shatt ..	2,743	274	663	6,188	—	?	Malaria, ulcers
Sha'ab ..	1,926	214	1,256	3,725	—	487	Malaria, ulcers
Tor-ann-Bahia ..					—	?	Malaria, ulcers
Dar-ann-Farsaha ..					—		
HAUSHABI	2,233	203	429	7,608	—	58	Vesical bilharzia, malaria
Musemir ..					—		
ALAWI	1,279	116	347	1,850	..	?	Vesical bilharzia, ulcers
Qasha ..					—		
AMIRI	3,269	297	736	3,756	—	485	Malaria, constipation
Dhali ..	1,439	144	710	2,709	—	?	Malaria, yaws
Dhubiyat ..					—		
SHA'IB	2,816	256	482	4,563	..	300	Malaria, eye conditions
Awabil ..					—		
MUFLAHI	2,309	210	684	3,387	—	1,169	Malaria, intest. flux
Khalla ..					—		
Jebel Harir ..					—		
LOWER YAFA	2,995	260	?	3,015	—	—	Fever, ulcers
Qara ..	2,995	250	242	3,415	—	++	Fever, ulcers
Bateis ..	3,464	289	1	3,795	—	++	Fever, ulcers
Husan ..	10,120	843	43	10,785	—	++	Fever, ulcers
Jaar ..					—		

30

Table II.—continued

UNITS	CASES	MEAN CASES PER MONTH	HOME VISITS	TREAT- MENTS	IMMUNISATIONS	HOUSES SPRAYED	COMMONEST ILLNESS AS REPORTED*
FADHLI							
Am Wadhia ..	1,306	108	—	2,501	—	++	Fever, ulcers
Am Sawad ..	4,472	372	298	5,829	—	++	Fever, ulcers
Dirgea ..	4,941	411	++	6,118	—	++	Fever, ulcers
Zingbar ..	2,042	170	7	2,006	—	++	Fever, ulcers
Qod ..	2,214	184	3	2,453	—	++	Fever, ulcers
Shuara ..	648	162	35	1,227	..	++	Fever, ulcers
Zingbar Mission ..					..
AUDHALI	2,078	260	126	3,456	—	2,073	Malaria, intest. flux
Zara-Lodur ..	1,563	195	685	3,839	—	?	Bronchitis, eye conditions
Aryab (Mukeiras) ..					—		
DATHINA	2,916	292	453	4,452	—	?	Malaria, ulcers
Mudia ..					—		
BEIHAN	204	204	475	530	—	146	Malaria, eye conditions
Mission Clinics ..	4,255	425	2,466	13,026	157	—	Eye conditions, yaws
UPPER AULAQI	2,925	293	1,115	4,499	—	?	Malaria and vesical bilharzia
Sa'id ..					—		
LOWER AULAQI	1,586	132	—	1,606	—	?	Ulcers, eye conditions
Alwar ..					—		
TOTAL	84,583	7,877	13,988	143,682	157	4,718	

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*Relative degree of incidences of diseases believed wrongly assessed in many cases.
†Operations 16 major and 228 minor.

97. The new S.M.O. took up his duties on 6th June, 1955 and now has the four Subeichi health units to administer. The State would probably now find the institution of a health board useful. It took over 2 out of 5 Subeichi health assistants paid by Her Majesty's Government and will probably budget to take over the remaining 3 in 1956.

98. Lahej hospital remains partially built. It is hoped that it will be built piecemeal and with a house for the Senior Medical Officer as funds permit and its constituent parts put into commission as soon as possible. It is badly needed. When built the present Lahej town health unit may well become a women and children's clinic with the residential flat above housing female senior staff, perhaps a senior Arab with qualifications as a home visitor, i.e., as nurse, midwife and sanitary inspector. It is believed there are 2 or more Lahejis training abroad as doctors.

99. Kersh health unit, incidentally an important frontier quarantine station fell into considerable disrepair during the year. Waht health unit remains unrented and unbuilt, though its equipment has been supplied. Dar am Farsha remains a single room, that cannot house its equipment properly, so does Sha'ab. Tor am Baha is rather better, and am Shatt opened in September 1955. If fitted with benches and sinks in the fashion recommended it should turn out a reasonable unit. The equipment of the health units was improved during the year, notably by the provision of insecticidal applicators to those without them. An ambulance utility car is badly needed by Lahej. At present a car is lent periodically by Assistant Health Adviser (West).

100. Table 11 shows the work done by health units. The insecticidal applicators should help considerably with the malaria control. The Tuberculosis Officer, Aden Colony, who had earlier initiated a useful degree of control and domiciliary work in Lahej town, in 1958 handed over the continuance of the work to the Senior Medical Officer. A number of cases with 4 deaths, was ascribed to meningococcal meningitis in Shaq'ah and Zaidah. They were not however bacteriologically confirmed.

16. Haushabi Sultanate

101. This small State has an estimated population of 3,100 only. No funds were provided for health work in 1955 although £50 was provided in 1954. There is a health assistant partially trained, and paid and supplied by Her Majesty's Government, who during the year replaced his aged father. There is no proper health unit but a very suitable building at Museimr was promised appropriate reconditioning in 1954 by the late Sultan. It would have provided waiting room, office clinic, kitchen, store, toilet, and wards for patients from a distance requiring continuity of treatment (ulcers and bilharzia for example) and able to feed themselves. The Wadi Tibn runs through the area and there are malaria, bilharzia and yaws or bejel to be combatted. Fusion with the Lahej Health Service would help the area with its health problems and the provision of a suitable building would enable proper equipment to be housed and used. The work done is shown in Table 11.

17. Alawi Sheikhdom

102. The population is estimated at 1,450 and there is a senior health assistant based in unsuitable accommodation at Qasha. The health unit does little work (see Table 11) and exists largely on political grounds.

18. Dhala Amirate

103. The estimated population is 25,750. In 1955 the State estimated for a health vote of £288, much the same as in the previous year. This was £1 per cent of total expenditure. The State has health units at Dhala (standard well-built type) and at Dhubeiyat (poor single small room). It could do with a third on Jebal Jehaf. The staff are a senior health assistant and a health assistant paid by Her Majesty's Government.

104. The work done is shown in Table 11. Malaria, bilharzia, yaws or bejel and eye-diseases are the main affections. It is hoped the State will take over its health assistants before long and build one or two wards for Dhala health unit to enable cases, that come from a distance, can feed themselves, and who require continuity of treatment, to receive it while resting in these wards.

19. Shaibi Sheikhdom

105. The estimated population is 5,500. The State produced a health vote of £50 as compared with £56 in 1954, 7 per cent of total expenditure. There is a health unit of modified standard type at Awabil and one senior health assistant. The work done is shown in Table 11. The apparent incidence of malaria treated in this relatively small community is something of a mystery and a non-housing, haunting anopheline may prove to be the answer. For over 4 years now this health unit has had insecticides and anti-malaria drugs and still gives malaria as its main disease. The splenic index of children in Awabil itself when last assessed in 1954 was nil. le

20. Muffahi Sheikhdom

106. This Sheikhdom has a population estimated at 70,750 together with Upper Yafai. Previous estimate puts the Muffahi at 56,000. There are two quite unsatisfactory health units at Khalla and Jebal Harir, staffed by a senior health assistant and a health assistant respectively. Jebal Harir was not open during 1955. The State provides no monetary assistance for its health needs. A single health unit of modern type in the valley below would probably be of more value. Table 11 shows the work done.

21. Radfan Confederation

107. At present the country is not workable from the health viewpoint.

22. Upper Yafai States

108. At present the country is not workable from the health viewpoint.

23. Fadhli-Lower Yafai Health Service

109. This service is controlled by a health board on which sit representatives of the Advisory administration and the 2 States. It has its own estimates and an annual audit by the Colony Auditor, owns certain of the service buildings such as all Makhzan accommodation, equipment and transport and pays its own staff. A senior hospital assistant is temporarily on loan from Her Majesty's Government. It is self-sufficient financially, receiving contributions from the Fadhli and Lower Yafai States and to the half-year 1955 from the Abyan Board also. It also received a contribution from the Fadhli Development Fund (See Table 12).

Table 12. Aden Protectorate 1955. Fadhli-Lower Yafai Health Service, 1955-56
Approved Estimates in £

SOURCE OF CONTRIBUTION	REVENUE	EXPENDITURE
Abyan Board	8,000	Personal emoluments .. 9,377
Fadhli State	3,950	Recurrent other charges .. 6,155
Lower-Yafai State	3,000	Special 3,650
Fadhli Development Fund	1,000	
Other	360	
TOTAL	15,910	TOTAL .. 19,182

N.B.: On revision the estimates balanced with a reserve in hand.

110. The individual States build and own their own health units which in the present phase of development is convenient. These health units are discussed below under their respective States. Both States have passed a decree to control the treatment of disease, i.e., of practitioners and the sale of drugs.

111. The hospital at Makhzan with its training hostel for in-trainees and its mobile sanitation unit may now be considered as the Health Service base for the Western Protectorate.

112. The staff are:

Senior Medical Officer	1
Senior Hospital Assistant (1 on loan from H.M.G.)	2
Senior Laboratory and Pharmacy Assistant	1
Health Assistant	12
Health Inspector	1
Health Overseer	2
Sick Attendant	6
Labourer (mobile sanitation unit)	6
Clerk/Accountant	1
Storekeeper	1
Mechanic	1
Driver	3
Unskilled	5
Trainees from Western States (number variable) ..	

113. The staff on the whole must be considered largely in the trainee phase. No female staff have so far been obtainable. The work done by Makhzan Hospital is shown in Table 13, that done by health units in Table 11. See also under Sections 24 and 25 below.

114. The teaching room of the training hostel was fitted out during the year with visual aid material by the Museum Assistant from Mukalla. Senior but poor quality staff largely active in illicit practice were dispensed with during the year.

Table 13. Aden Protectorate 1954-55: Makhzan Hospital: Work Done
(1954 figures are for 11 days only)

A. CASES:	NEW CASES			
	IN-PATIENTS		OUT-PATIENTS	
	1951	1958	1954	1955
Malaria	1	92	2	830
Bilharzia, urinary	1	2	3	161
Bilharzia, intestinal .. .. .	..	..	..	18
Guinea worm .. .. .	..	..	..	29
Round worm .. .. .	..	..	..	32
Tape worm .. .. .	..	..	..	15
Enteric fever .. .. .	..	1	..	37
Intestinal flux .. .. .	..	27	10	43
Puerperal fever .. .. .	..	..	..	19
Fever, undifferentiated .. .. .	..	2	9	302
Treponematoses .. .. .	..	..	1	293
Gonorrhoea .. .. .	..	..	2	135
Tuberculosis, pulmonary .. .. .	..	3	..	94
Tuberculosis, non-pulmonary .. .. .	..	..	..	65
Pneumonia .. .. .	..	13	1	65
Asthma	1	2	..	19
Scurvy .. .. .	..	1	..	39
Ulcers (non-eye)	1	48	35	2,567
Eye conditions .. .. .	..	1	..	353
All other conditions	1	99	..	5,745
TOTAL	5	291	63	10,861

Table 13—continued

	1954	1955
B. OTHER WORK:	177	17,950
Out-patients treatments	1	81
Home visits .. .. .	..	+
Minor operations .. .. .	..	..
Major operations .. .. .	..	..
Immunisations .. .. .	..	..

24. Lower Yafai Sultanate

115. The estimated population is now put at 135,250. Much of the northern part of the State is unworkable and in fact Qara health unit is understood to be still represented by heaps of building stone, the health assistant working in a private house. It has not been visited since 1952. The State contributed £3,931 (9.2 per cent) of its total expenditure to the joint State Health Service and also spent money on building health units.

116. During the year Husn and Bateis health units were built and that of Jaar commenced. The standard of construction was excellent but unfortunately, they were not built quite to specification and in Husn and Jaar they were built on unsuitable sites providing against expansion and the provision of waiting rooms in due course.

117. Malaria and bilharzia are common affections of the hills but the diseases fortunately do not take root in the Abyan area.

25. Fadhli Sultanate

118. The population of the State is estimated at 55,000. The State spent £3,750 (6.1 per cent of its total expenditure) as a contribution to the joint State Health Service as well as money on health units. Dirigag health unit, well built, well sited and approaching specification as regards fittings was finished during the year. Other units are Am Wadhia and Qod, 2 roomed units of very poor design, Am Sawad, well built in stone, Zingibar a poor mud building with no room for expansion or waiting rooms, and Shuqra, one of the earliest health units in the State and quite the worst being a single room in the town fort, with no fittings and up several flights of dark stairs. A new unit is needed near Qod ginnery. The nearby labour lines require improvement from the health angle.

119. During the year the Danish mission at the invitation of the Fadhli State opened a clinic for women and children in Zingibar, the accommodation to be from the State, the expendables from the joint Health Service and the staff from the Mission. The sister is to be joined by a lady doctor in January, 1956.

26. Audhali Sultanate

120. The population of the State is estimated to be 14,850. The State budgetted for £255 for its health vote in 1955 compared with £460 in the previous year, being 0.7 per cent of the total expenditure. Its staff are a senior health Assistant and a health assistant based on Lodar-Zara and Mukeiras (Aryab) respectively, the latter in unsatisfactory one-roomed accommodation, the former in a standard unit built with help from C.D.W. funds.

121. There was a small epidemic during 1955 at Urr near Mukeiras, with 22 deaths from pneumonia; it may have been influenza or measles.

27. Dathina Confederation

122. The population is estimated at 11,950. The State provided £15 in its estimates for health work in contrast with £305 for 1954. This was 0.1 per cent of its total expenditure.

123. There is a health unit at Mudia which has for several years been under re-conditioning to provide not only standard fittings but also ward accommodation for a few cases coming from a distance and requiring continuity of treatment.

124. A clinic mainly for women and children provided by the Danish Mission was closed in April owing to insecurity, having done very useful work on both the curative and preventive sides.

28. Beihan Amirate

125. The population of the State is estimated to be 12,400. In 1955 the State estimated for £310 for its health vote being 1.5 per cent of its total expenditure compared with £285 in the previous year. The health unit of Beihan Ulya was closed most of the year owing to the lack of a health assistant, who is still under training at Makhzan with a fellow intended for Naqub in which it is hoped a health unit will be built in 1956.

126. The Church of Scotland Mission clinic in Beihan was staffed throughout the year by personnel which at different times included one of two lady doctors, a male doctor, a sister and a local sick attendant. Their work has been invaluable in all respects. Common diseases are malaria, eye diseases, pulmonary tuberculosis and venereal disease. The area badly needs an ambulance/utility vehicle which it is hoped to supply from C.D.W. funds in 1956.

29. Upper Aulaqi Sultanate

127. The estimated population is 15,850. The State provided no contribution towards health expenditure during the year. Her Majesty's Government from the Middle East vote provided a standard health unit for Nisab which at the end of the year was practically finished, good building on a good site and to plan. A local youth was placed under training in Makhzan. Attaq is probably the most appropriate site for a hospital for the northern area of the central Protectorate serving the Beihan area, Upper Aulaqi, Wadi Jardan and Wadi Irma, all hotbeds of disease.

30. Upper Aulaqi Amirate

128. The population is estimated at 11,250. They provided £85 for health expenditure in 1955 compared with £65, being 0.7 per cent of total expenditure.

129. There is a health unit at Said requiring considerable work to make it conform to the standard pattern. There has so far been no success in recruiting a suitable youth from this area for training as the local health assistant. There is bilharzia and yaws in the area.

31. Lower Aulaqi Sultanate

130. The population is estimated to be 13,900. The State's expenditure on health in 1955 was £168 being 3.5 per cent of total expenditure compared with £118 in 1954. A standard health unit built from local funds was opened during the year at Ahwar and the building of a new one from C.D.W. funds was started at Muhfid, insecurity however interfering with any rapidity of work.

131. There is malaria in patches in the area and bilharzia is suspected. Ahwar has a development scheme, an airstrip and a port. It is the seat of the Sultanate, is a key roadstop and about half-way between Makhzan and Mukalla. A small hospital might well be sited here.

32. Eastern Protectorate

132. Information relating to health in the Eastern Protectorate derives from (a) records and reports of the work done by the mobile units of the Health Adviser and Assistant Health Adviser (East) (this latter post was vacant during the year 1955), (b) the reports and records of the Senior Medical Officer and District Medical Officers of the Qu'aiti Health Service, (c) the S.M.O. of the Kathiri Health Service, (d) the health unit monthly returns of the States and also (e) from those administered directly by Her Majesty's Government (Habban, Hautha, Meifaa, Bir Ali and Hadibu on Socotra). The Al Kaf doctor in Tarim also supplies useful information from time to time.

133. Table 8 shows the work done in the Eastern Protectorate by the Health Adviser incidental to his administrative duties, and Table 16 shows the work done by the Mukalla Residency Health Unit and that of the Hadhrami Beduin Legion H.Q.

33. Balhaf (Wahidi) Sultanate

134. The population of the State is estimated at 10,000. Its administration includes those of the Sheikhdoms of Irqa and Haura but not as formerly that of the Sultanate of Bir Ali.

135. The State provided £549 for health expenditure in its 1955 Estimates being 1.0 per cent of total State expenditure and comparing with £333 (1.5 per cent) in 1954. There are 3 health assistants, paid by Her Majesty's Government, the intention being to transfer one a year to the State Estimates hereafter. There are three health units. One, at Habban in a rented room with no windows and one door is quite unsuited to the function and it is hoped to replace it by a standard unit in 1956 with C.D.W. help. In Hautha a room in an upper floor of the fort is used and again is quite unsuitable. A standard unit is required here also. In Meifa'a a unit not built to specification, with other buildings encroaching on the area intended for its expansion, and with its room intended for women and children, used as living accommodation exists in unsatisfactory form.

136. There is malaria in patches in the State, guinea worm in the Wadi Amakin and also, together with bilharzia in the Wadi Jordan. The work done is shown in Table 16.

34. Bir Ali Sultanate

137. The population is estimated at 1,500. In 1955, the State estimated £30 for its health vote this being 1 per cent of its total expenditure.

138. The health unit is of a simple type, but has a store and a waiting room and is of importance in that for motor and seacraft casualties it is the only medical aid centre between Meifa on the Hajr river and Ahwar. A local trainee for training as its permanent health assistant is still being sought. He will be paid for by Her Majesty's Government for some time ahead.

139. There is a little sporadic malaria in patches. The work done is shown in Table 16, and is naturally little.

35. Qu'aiti Sultanate

140. The estimated population of the Sultanate is 230,000. The State in 1955 provided £20,868 for its health vote, this being 7.1 per cent of the total State budget. It compares with £19,666 (7.2 per cent) for 1954. There are 5 provinces, Mukalla, Shihir, Hajr, Du'an and Northern which last now includes the former Irma province. The Health Service is organised into a Headquarters in Mukalla, and three medical districts, the Southern being the provinces of Mukalla and Shihir under District Medical Officer, Southern District, Mukalla, the Western being the provinces of Hajr and Du'an under District Medical Officer, Western District, Khoreiba, and the Northern District being Northern province under District Medical Officer, Northern District, Shibam.

141. The Headquarters consists of the Senior Medical Officer, the Senior Health Inspector, clerk etc., the Health Services Training Centre for the Eastern Protectorate, with a Museum Assistant and a mobile unit with its labourers. The Museum Assistant is at present paid by H.M.G.

142. The Senior Medical Officer, apart from his administrative duties as Senior Medical Officer, is the Director of the Mukalla Health Services Training Centre based on Mukalla Hospital, is responsible for the health of the Qu'aiti security forces, is Secretary of the Qu'aiti Health Board and also works as a clinician in the Mukalla Hospital.

Qu'aiti Southern District (Mukalla and Shihir Provinces)

143. The Province of Mukalla has a population of 70,000 and that of Shihir 50,000 and together they form the Southern Medical District which is controlled by the District Medical Officer, Southern District based on Mukalla Hospital, of which he is also the Superintendent. He shares an ambulance utility truck with the Senior Medical Officer. He teaches in the Mukalla Training Centre.

144. The Health Service establishment for Mukalla and the Southern District is:

A. HER MAJESTY'S GOVERNMENT

I. PROTECTORATE HEALTH SERVICE HEADQUARTERS:

Health Adviser	1
Assistant Health Adviser	1
Clerk	1
Drivers and Assistant Driver	5
Health Assistant	2
Unskilled	2

II. H.B.L. AND BEDUIN SCHOOLS

Senior N.C.O. (health)	1
Private (health)	8

B. QU'AITI HEALTH SERVICE HEADQUARTERS

Senior Medical Officer	1
Senior Health Inspector	1
Clerk	1
Driver and Assistant Driver	2
Unskilled	1

C. QU'AITI SOUTHERN DISTRICT

I. HOSPITAL:

Medical Officer	1
Senior Hospital Assistant	1
Senior Pharmacy Assistant	1
Senior Laboratory Assistant	1
Theatre and Radiographical Assistant	1
Hospital Assistant	2
Head Sick Attendant	3
Sick Attendant	15
Trainees of other services	varies
Clerk	2
Storekeeper	2
Other	5

C. QU'AITI SOUTHERN DISTRICT

II. DISTRICT:

Health Assistant	6
Health Inspector	2
Health Overseer	2
Health Technician	2
Sick Attendant	2

FORCES (M.R.A. AND Q.A.C.)

Sick Attendant	2
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Table 14. Aden Protectorate 1951-1955: Mukalla Hospital: Work Done

A. CASES:

CONDITIONS	IN-PATIENTS				OUT-PATIENTS					
	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955
Malaria	150	42	60	50	22	620	901	506	568	308
Bilharzia, urinary	20	3	6	2	2	150	26	1	17	16
Bilharzia, intestinal	20	3	10	1	—	110	—	—	—	—
Guinea worm	15	7	9	3	—	1,800	464	290	315	185
Round worm	2	2	7	3	1	50	—	—	8	—
Tape worm	8	6	7	7	2	—	—	—	—	11
Enteric fever	—	—	—	—	—	—	—	—	—	3
Intestinal flux	80	6	27	43	36	1,200	321	429	470	548
Acute liver	—	—	—	—	—	—	—	—	—	—
Febrile illness	—	6	10	19	22	40	290	586	354	191
Typhoid	5	3	5	2	2	140	72	14	32	13
Typhus	3	5	3	2	2	400	96	52	37	27
Typhus	60	26	5	7	18	150	14	52	28	26
Gonorrhoea	—	—	—	—	—	—	—	—	—	—
Tuberculosis, pulmonary	10	27	25	36	8	100	35	90	32	9
Tuberculosis, non-pulmonary	—	12	8	4	1	—	231	135	100	56
Pneumonia	—	8	4	—	—	—	—	—	—	—
Asthma	—	12	8	4	1	—	—	—	—	—
Hayry (non-eye)	25	15	12	9	8	40	11	29	21	10
Uveitis	20	20	?	73	105	—	7,366	?	1,667	3,930
Eye conditions	28	31	31	65	40	300	2,644	1,351	1,743	3,598
All other conditions	140	193	413	241	208	3,257	2,988	5,989	3,812	3,799
TOTAL	540	404	631	572	477	8,337	15,459	9,524	9,209	12,705

B. OTHER WORK	1951	1952	1953	1954	1955
	Out-patient treatments	40,975	3,542	27,604	22,887	22,446
Home visits or tour cases	?	?	?	594	?
Major operations	59	75	182	239	254
Minor operations	—	303	600	380	295
X-ray examinations	1	?	265	466	445
Smallpox immunisation	6,365	5,033	9,351	6,930	6,392
Other immunisations	1,401	3,501	5,997	4,971	5,807

145. Mukalla Hospital over the last 5 years has reconstituted and increased its buildings. They now comprise joint male and female out-patient departments intended to be split in 1956, male surgical, medical and T.B. wards, female general and T.B. wards, 2 private wards, 2 theatres, sterilizing room, duty room, laboratory, dispensary, X-ray room, and teaching room, office, kitchen, stores, etc. In 1956 it is hoped an MCH unit will be built and a new male out-patients' department, this latter allowing of the re-shaping of the old out-patient block into a women and children's wing. There is also to be built a training hostel to house in-trainees, with a teaching room, a museum, and a visual aids preparation room on the Makhzan model. There will still be needed, a laundry and disinfector sub-unit, a mortuary, an S.M.O's and S.H.I's. office, more stores, and piped water supply.

146. Tables 14 and 15 show the work done in Mukalla Hospital and that in spite of a greater number of cases the figures for malaria, fever, and venereal diseases are less. The increased figures for pulmonary tuberculosis and eye diseases suggest that the campaigns launched against these diseases in 1955 are uncovering more cases which are coming under treatment. Table 15 shows the laboratory work done.

147. The health units of the Southern District are mostly either rented or rooms in State forts and are on the whole unsatisfactory. Gheif Bawazir is to have a unit of standard type completed in 1956. The work in health units is shown in Table 16.

148. Sanitation in Mukalla town moves slowly but in the right direction. A big handicap is the lack of wet sweeper labour. Some 200 more existent privies were closed-in during the year 1955 and those of 66 new houses built to an enclosed pattern. Some 600 or so of such have now been constructed and the programme of privy reform is systematically dealing with the town from West to East.

Table 15. Aden Protectorate 1955: Mukalla Hospital: Laboratory Work

EXAMINATION	No.	POSITIVE FINDINGS	REMARKS
STOOLS	1,410	<i>A. lumbricoides</i>	176
		<i>S. mansoni</i>	1
		<i>T. saginata</i>	5
		<i>H. nana</i>	4
		<i>T. trichiurus</i>	8
		<i>E. histolytica</i>	5
		Cysts of <i>E. histolytica</i> <i>G. lamblia</i> lis	12 221
URINES	1,335	<i>S. haematobium</i>	52
		Sugar	7

S. haematobium from
Dufan and Irma
Provinces.

Table 15—continued

EXAMINATION	No.	POSITIVE FINDINGS	REMARKS
SPUTUM	160	<i>M. tuberculosis</i>	37
SMEARS			
(a) urethral	18	<i>N. gonorrhoeae</i>	6
(b) nasal	3	<i>M. leprae</i>	0
BLOOD:			
Films	?	P. spp.	?
Counts-total	23		
Counts-differential	248		
Haemoglobin per cent	33		
E.S.R.	110		
P.C.V.	2		
Blood sugar	7		
Blood urea	1		
Blood protein	4		
Kahn reaction	35	5	
Widal reaction	12	6	
Weil Felix reaction	1		
C.S.F.	3		

Qu'aiti Western District (Du'an and Hajr Provinces)

149. The population is estimated at 40,000 for Du'an Province and 50,000 for Hajr Province. The proper establishment of the District Medical Officer, Western District, with a house and a health unit capable of expansion to hospital status still await agreement on site, finance and building. It seems probable that 1956 will bring action and it seems the site will be at Khoreiba, in Wadi Du'an.

150. The establishment for the District is as follows:

A. KHOREIBA UNIT:

Medical Officer	.. .. .	1
Hospital Assistant	.. .. .	1
Head Sick Attendant	.. .. .	1
Sick Attendant	.. .. .	2
Clerk/Storekeeper	.. .. .	1
Driver	.. .. .	1
Unskilled	.. .. .	4

B. DISTRICT:

Health Assistant 3 (Amd, Laisser (Subeikh) and Jol Bahawa)
Health Inspector 1 for the District.

151. The work done by health units in 1955 is shown in Table 16. Du'an and the neighbouring wadis are full of malaria, schistosomiasis, guinea worm, eye infections and tuberculosis and a doctor on the spot has

long been desirable. It is expected the doctor will tour Hajr and Du'an Provinces in alternate months.

Qu'aiti Northern District (Shibam and Irma Provinces)

152. The Qu'aiti Northern District including the old Irma Province with its population of some 5,000 is now estimated to contain 55,000. The Headquarters of the District Medical Officer is in Shibam Hospital and there are 3 health units, Einat, Qatn and Haura under her administration. By mutual arrangement with the Senior Medical Officer, Kathiri Health Service, he administers the easternmost Qu'aiti health unit at Einat while District Medical Officer Shibam balances by administering the Kathiri unit at Hautha, thus avoiding much tedious travel for both.

153. The establishment is as follows:

A. SHIBAM HOSPITAL:

District Medical Officer	.. .. .	1
Hospital and Theatre Assistant	.. .. .	1
Laboratory and Pharmacy Assistant	.. .. .	1
Sick Attendant (2 female)	.. .. .	4
Clerk/Storekeeper	.. .. .	1
Driver	.. .. .	1
Unskilled	.. .. .	4

B. DISTRICT:

Health Assistants 3 (Einat, Qatn, Haura).

Health Inspector 1 (Shibam town and District.)

154. The Shibam hospital built in 1954, was formally opened in April 1955. It comprises clinic, office, male and female waiting rooms, with adjoining O.P.D. treatment rooms, laboratory, dispensary, surgical theatre, male and female wards, kitchen, stores, laundry, garage and mortuary. Some accommodation for tuberculosis and chronic cases is also provided in the adjoining fort.

155. During the year 1955 (see Table 17) there was an increase in the surgical work done and the surgical equipment was improved. For pulmonary tuberculosis, the Tarim X-ray provided facilities helping with 33 cases and special attention was given to this important local disease there being a big increase in cases diagnosed and coming under treatment. The District Medical Officer, Dr. Eva Hoek, also gave special attention to trachoma, conjunctivitis and amoebiasis, important local causes of invalidism. At the same time she was able to do a certain amount of touring, but the full time availability of an ambulance/utility truck for the area is necessary. Considerable laboratory work is done in Shibam. In 1955 out of 925 stool examinations 177 showed *E. histolytica*.

156. There was an epidemic of malaria in the Irma villages which was dealt with by the Qu'aiti mobile sanitation unit with Camoquin and B.H.C. Some objection to residual spraying was experienced but the epidemic closed. In 1956 it is hoped to establish a health unit in the adjoining Wadi Rakhya.

Table 16. Eastern Aden Protectorate 1955: Work done by Health Units

UNIT	CASES	MEAN CASES PER MONTH	HOME VISITS	TOTAL TREATMENTS	IMMUNISATIONS	HOUSES SPRAYED	COMMONEST ILLNESSES AS REPORTED
Hal, HQ	2,011	2,067	—	5,134	—	—	Ulcers (non-eye), bronchitis, Ulcers (non-eye), bronchitis.
Residency	1,096	91	—	1,965	—	—	Fever, eye conditions.
BALHAF	698	98	116	1,834	—	84	Fever, eye conditions.
Habbani	1,074	89	155	2,197	—	168	Eye conditions, ulcers.
Madhani	1,115	93	74	2,624	—	126	Ulcers, eye conditions.
BIR ALI	807	67	—	1,574	—	—	Fever, intestinal flux.
QU'AITI	710	65	—	2,668	—	—	Intestinal flux, ulcers.
Mukalla, M.R.A.	383	31	—	771	—	—	Fever, ulcers.
Mukalla, Q.A.C.	261	22	—	410	—	169	Fever, ulcers.
Mukalla Prison	237	20	22	708	—	—	Ulcers, eye conditions.
Gheil Bawazir	9,903	823	162	114,745	—	—	Eye conditions, ulcers.
Shibri	2,441	203	278	10,000	—	—	Eye conditions, round worms.
Hami	492	41	—	8,595	—	—	Eye conditions, ulcers.
Dis	1,777	148	72	1,978	—	—	Fever, ulcers.
Jol Ba Hawa	562	47	781	1,058	—	—	Fever, eye conditions.
Khoreiba	733	61	173	858	—	—	Eye conditions, ulcers.
Hadi	673	56	190	957	—	—	Eye conditions, ulcers.
Hana	1,056	88	—	2,212	—	—	Eye conditions, ulcers.
Einat	705	59	31	1,333	—	—	Round worm, ulcers.
KATHIRI	1,635	135	30	3,287	—	589	Eye conditions, bronchitis.
Tarim	207	20	—	328	—	—	Ulcers, fever.
Hautha	1,468	87	—	1,333	—	—	Bronchitis, ulcers.
Sah	1,892	99	—	1,210	—	—	Eye conditions, intestinal flux.
Gheil bin Yomein	893	—	—	—	—	—	
MAHAX	1,545	128	206	3,651	—	—	
Hadibu	—	—	—	—	—	—	
TOTAL	34,696	2,932	2,585	115,728	—	1,165	

36. Kathiri Sultanate

157. The estimated population is 50,000. The State budgetted for £2,620 on health in 1955, being 6.3 per cent of total expenditure, as compared with £2,865 (6.8 percent) for 1954.

188. The Kathiri Health Service is based on Sai'un where there is a small hospital. There are 4 health units at Hautha, Tarim, Sah and Gheil bin Yomein.

159. The Service establishment is as follows:

A. HEADQUARTERS AND SA'IUN HOSPITAL:

Senior Medical Officer	.. .. .	1
Hospital and Theatre Assistant	.. .. .	1
Pharmacy and Laboratory Assistant	.. .. .	1
Head Sick Attendant	.. .. .	2
Sick Attendant	.. .. .	4
Clerk/Storekeeper	.. .. .	1
Unskilled	.. .. .	2

B. DISTRICT STAFF:

Health Inspector	1 for whole State.
Health Assistant	5 (for Hautha, Sah, Tarim, Gheil bin Yomein and 1 relief)

160. The Service shares an ambulance/utility truck month and month about with the Qu'aiti State's District Medical Officer, Shibam. They need a car of their own, otherwise field emergencies cannot be met and inspection and supply of health units is difficult.

Sai'un Province

161. Reference to Table 18 shows the work done in Sai'un Hospital and is similar to that of Tarim i.e., relatively high incidences of malaria, roundworm, gonorrhoea, intestinal flux and asthma dominate the picture. Sai'un Hospital figures are the only ones in both Protectorates which have ever shown cases of puerperal fever—an odd phenomenon. It occurs elsewhere of course. The Kathiri health units also record the remarkable incidence of round worm. The remedy apart from a mass treatment campaign is the discontinuing of the use of human manure for the salad vegetables, radishes, carrots, onions and tomatoes, for these are inevitably inadequately washed. Sai'un had an epidemic of enteric fever during the year. As usual where there is much roundworm there is much asthma.

Hautha Province

162. Table 16 shows the work done in Hautha. There was a small focus of urinary bilharzia in this area which is apparently being cleared up by the treatment of the cases.

	1951	1952	1953	1954	1955
B. OTHER WORK:					
Out-patient treatments	9,197	6,629	9,466	8,386	11,604
Home visits or tour cases	—	—	—	44	123
Major operations	19	10	2	12	21
Minor operations	62	14	64	155	91
X-ray examinations	—	—	—	—	(Tarim) 33
Smallpox immunisations	—	—	154	785	1,495
Other immunisations	—	—	131	904	1,510
School treatments	—	—	200	—	—

PART IV

TECHNICAL SUBJECTS

38. Vital Statistics

166. No census has ever been carried out in the Protectorate and there is no registration of births and deaths. Table 20 shows the population as estimated from what information is available. Sex distribution in the population is affected especially in the Wadi Hadhramaut by the large number of males who emigrate to work abroad for lesser or greater periods or permanently, the women-folk mostly being left behind.

167. Tables 21 and 22 give some idea of the pattern of morbidity as shown by cases admitted to, or treated by, hospitals and health units and it is seen that malaria, and other fevers, intestinal infections, ulcers, eye diseases and pulmonary tuberculosis are of importance. The group of undifferentiated fevers, includes some malaria, and also infective hepatitis, sandfly fever, dengue, influenza, and it is suspected a not inconsiderable amount of poliomyelitis. There is a system of registration of cases of leprosy, tuberculosis, guinea worm and schistosomiasis by health units and hospitals, as the first measure in control, but it will be some time before the figures have other than minimal value.

168. In interpreting the figures in Table 21 it should be noted that factors working in opposite directions affect the figures. The health service is expanding and serving a wider public with more beds and thus absolute figures tend to increase but certain endemic diseases are being reduced in incidence proportionately. Special campaigns against tuberculosis and eye-diseases are bringing more cases to attention although the actual incidence is lessening, so we believe.

169. No useful mortality records are available. Infant and maternal mortality are known to be high in places, the former of the order of 500 per 1,000 live births.

39. Climatology

170. The coastal temperature may range from 80°—105° F in the summer and 65°—90° F in the winter while at Saiun in the interior the figures may be respectively 60°—110° F and 42° or less to 90° F. Humidity is marked on the coast and is low in the interior except after rains and in the higher mountains of the West. Rainfall may characteristically occur in January or July and in the West floods may occur at any time following rain in the hills. The S.W. monsoon blowing from June to September has a cooling affect owing to the coolness of the sea. On the whole 1955 was a dry year and this was therefore naturally associated with no serious malarial outbreaks while at the same it was a poor grain year bringing a threat of famine.

Table No. 18. Aden Protectorate 1951-55. Sium Hospital. Work Done

A. CASES:

CONDITIONS	NEW CASES									
	IN-PATIENTS					OUT-PATIENTS				
	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955
Malaria	—	—	13	19	9	606	1,171	363	220	157
Bilharzia, urinary	—	—	4	3	2	10	35	18	9	12
Bilharzia, intestinal	—	—	—	—	—	—	—	—	—	—
Guinea worm	—	—	—	—	—	—	—	—	—	—
Round worm	—	—	—	4	2	1,049	1,152	683	872	805
Tapeworm	—	—	—	—	1	—	—	—	—	—
Ascariasis	—	—	—	—	1	—	—	—	—	—
Intestinal flux	—	—	4	4	11	342	182	106	267	18
Puerperal fever	—	—	—	—	—	10	—	324	46	496
Fever, undifferentiated	—	—	2	2	3	—	—	30	438	16
Typhoid	—	—	—	3	—	—	—	19	111	44
Typhus	—	—	3	2	5	—	—	257	87	116
Gonorrhoea	—	—	—	2	1	12	467	16	8	4
Chlamydia	—	—	—	2	4	4	—	16	8	4
Tuberculosis, non-pulmonary	—	—	—	1	1	—	—	58	14	32
Tuberculosis, pulmonary	—	—	3	2	1	—	—	42	8	13
Pneumonia	—	—	—	1	—	53	—	41	57	164
Asthma	—	—	—	1	6	101	—	4	2	3
Scurvy	—	—	—	—	—	3	—	709	680	677
Ulcers (non-eye)	—	—	—	4	4	—	—	873	619	882
Eye conditions	—	—	43	37	40	5,486	6,766	4,264	5,233	4,931
All other conditions	—	—	—	—	—	—	—	—	—	—
TOTAL	—	—	72	90	90	7,692	12,172	7,625	8,757	8,732

B. OTHER WORK:

	NEW CASES				
	1951	1952	1953	1954	1955
Out-patient treatments	—	16,530	12,608	12,556	13,852
Home visit and tour cases	—	—	—	458	494
Major operations	—	—	—	3	—
Minor operations	—	—	—	102	112
X-ray examinations	—	—	—	—	—
Smallpox immunisations	—	4,000	790	1,428	1,439
Other immunisations	—	—	661	1,208	1,096
School immunisation	—	—	—	—	—

Table 19. Aden Protectorate 1955. Tarim: Al Kaf Hospital: Work Done

A. CASES:

CONDITIONS	IN-PATIENTS	OUT-PATIENTS
Malaria	1	209
Bilharzia, vesical	1	5
Bilharzia, intestinal	—	1
Guinea worm	—	—
Round worm	—	533
Tape worm	—	—
Enteric fever	—	12
Intestinal flux	—	427
Puerperal fever	—	—
Fever, undifferentiated	—	12
Treponematosi	—	22
Gonorrhoea	—	34
Tuberculosis, pulmonary	52	61
Tuberculosis, non-pulmonary	2	11
Pneumonia	—	14
Asthma	—	45
Scurvy	—	15
Ulcers (non-eye)	—	22
Eye conditions	—	572
All other conditions	15	502
TOTAL ..	71	2,497

B. OTHER WORK:

Total Out-patient treatments ..	9,932
Home visits	+++
Major operations	14
Minor operations	70
X-Ray examinations	136

Table 20. Aden Protectorate 1955. Estimated Population of the States

WESTERN PROTECTORATE		EASTERN PROTECTORATE	
Lahej Sultanate	39,100	Balhaf Sultanate	10,000
Haushabi Sultanate	3,100	Bir Ali Sultanate	1,500
Alowi Sheikhdom	1,450	Qu'aiti Sultanate	230,000
Sha'ibi Sheikhdom	25,750	Kathiri Sultanate	50,000
Radfan and Halmin	5,500	Mahri Sultanate	12,000
Upper Yafa'i States and Mufahi Sheikhdom	38,700		
Lower Yafa'i Sultanate	70,750		
Dhala Amirate	135,250		
Fadhli Sultanate	55,000		
Audhali Sultanate	14,850		
Dathina Confederation	11,950		
Beihan Amirate	12,400		
Upper Aulaqi Sultanate	15,850		
Upper Aulaqi Amirate	11,250		
Lower Aulaqi Sultanate	13,900		
TOTAL ..	454,800	TOTAL	303,500
Both Protectorates Total	758,300		

40. Economics and Health

171. The relationship of a cash crop to an improved standard of living which includes feeding is steadily becoming more apparent in the Abyan area where ulcers and eye affections are no longer as prominent as they were in 1951 and 1952, and where the bulk of cases of serious disease attending for treatment are to be found in imported labour. Milk, meat and vegetables of local production are now more available to the indigenous population and money also buys fish from the coast.

172. The consumption of *qat* (*Catha edulis*) in some of the Western States remains a factor adverse to health in that much ground and energy are occupied by it and money is devoted to its purchase that could more beneficially be given to increased consumption of meat and vegetables, or improvement of housing, clothing, education and better living generally.

41. Water Supplies

173. By conventional standards there is not a safe water supply in the Protectorate, local economics providing against this in the present phase of development. On the other hand most intestinal infections are undoubtedly fly-borne or due to hand contact and not water-borne. The primary need in the matter of water in any case is more of it. There are many persons suffering from stone or gravel and the shortage in Mukalla and other places necessarily contributes much to the dirt diseases such as skin fungus, eye infections and others conveyed by contact.

Table 21. Aden Protectorate 1955. Cases and Treatments of Disease

(Those treated in Aden Colony Hospital and the Aden Protectorate Leish Hospital are excluded and no figures have been returned for States doctors on tour)

CATEGORY	WESTERN PROTECTORATE		EASTERN PROTECTORATE		TOTAL	
	CASES	TREATMENTS	CASES	TREATMENTS	CASES	TREATMENTS
HOSPITALS						
Keith Falconer	620	++	—	—	620	++
Makhan	11,548	17,950	—	—	11,548	17,950
Mukalla	..	..	13,203	22,446	13,203	22,446
Shibam	..	..	6,566	11,604	6,566	11,604
Saun	..	..	8,806	13,852	8,806	13,852
Farin	..	..	2,620	9,932	2,620	9,932
HEALTH UNITS						
Western	82,083	144,502	—	—	82,083	144,502
Eastern	..	..	34,896	175,928	34,896	175,928
TOURING DOCTORS (Advisory Staff)	381	381	208	208	589	589
TOTALS	94,632	162,833	66,299	233,970	160,931	396,803

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Fig. 2. Dhala in the Dhala Amirate. The housing is governed by security needs and the windows are small. The area is endemic for malaria and bilharzia. The population is addicted to *qat*, *Catha edulis*. There is a good health unit in the town.

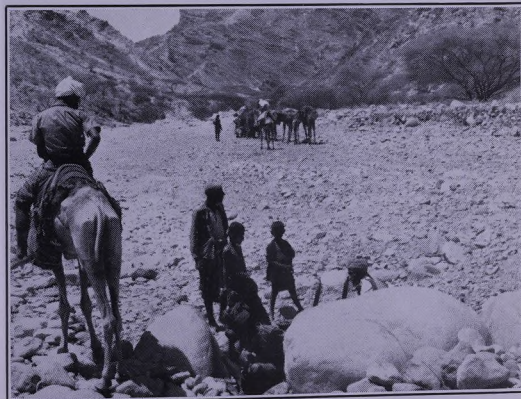


Fig. 3. Wadi Hatat in the Lower Yafai Sultanate. A water-hole. Malaria and bilharzia are endemic.



Fig. 4. Balhaf in the Wahidi Sultanate. Shark flesh drying. This is exported well north into the interior and constitutes a common foodstuff providing good animal protein.



Fig. 5. Wadi near Hautha in the Kathiri Sultanate. Limestone pool at head of wadi heavily infested with the snail *Bulinus truncatus* the carrier of urinary bilharzia of which there was a small focus at the wadi mouth.

Table 22. Aden Protectorate, 1951-55; Hospital Cases with those of certain diseases related to all cases from all causes. Hospitals and beds are Keith Falconer 10 for official PHS patients, Mukalla 50, Shibam 20, Mukalla 20, Saitim 10 and Turim 20.

DISEASE	CASES										% OF ALL CASES				
	1951		1952		1953		1954		1955		1951	1952	1953	1954	1955
	40 BEDS	45 BEDS	1,513	1,506	1,513	1,506	1,513	1,506	1,711	1,711					
Malaria	1,477	2,286	1,513	1,506	1,513	1,506	1,513	1,506	1,711	1,711	9	9	7	6.4	3.9
Bilharzia, vesical	220	84	53	53	53	53	53	53	224	224	1.3	0.3	0.2	0.6	0.4
Guinea-worm	132	12	18	18	18	18	18	18	33	33	0.8	0.01	0.05	0.07	0.08
Round-worm	2,973	1,679	1,018	1,285	1,285	1,285	1,285	1,285	1,569	1,569	18	6	5	5.6	3.5
Enteric fever	9	9	30	20	20	20	20	20	75	75	0.05	0.03	0.1	0.08	0.1
Typhoid	1,807	626	921	910	910	910	910	910	2,093	2,093	11	2	3	4.9	2.6
Fever, indifferent	107	107	107	107	107	107	107	107	107	107	0.7	0.7	0.7	0.7	0.7
Tropenmalaria	208	117	131	131	131	131	131	131	131	131	1.2	0.4	0.4	0.9	0.8
Gonorrhoea	1,004	575	349	195	352	352	352	352	304	304	6	2	1.7	0.8	0.6
Tuberculosis, pulmonary	121	110	102	152	152	152	152	152	146	146	0.7	0.4	0.5	0.6	0.7
Pneumonia	163	83	151	129	146	146	146	146	146	146	1	1	0.7	0.5	0.3
Ascariasis	113	246	192	197	293	293	293	293	293	293	0.6	1	0.9	0.8	0.6
Schistosomiasis	68	8,977	50	48	48	48	48	48	48	48	0.4	1	0.2	0.2	1
Ulcers	9	9	713	2,652	2,652	2,652	2,652	2,652	7,497	7,497	15.6	15.6	17	14	16.7
Eye conditions	505	3,711	2,141	3,265	5,679	5,679	5,679	5,679	5,679	5,679	3	3	3	3	3
All causes	16,124	24,401	20,369	23,117	23,117	23,117	23,117	23,117	44,263	44,263	100	100	100	100	100

*includes dysenteries specifically diagnosed.

174. Sources of water may be springs, wells, reservoirs filled from springs or storm-water and perennial water in places in certain of the water-courses either still or running. Perennial water is apt to be accompanied by malaria and bilharzia. The reservoir (*jabia*) usually open to the air, may be of masonry or just cement lined or it may be a pit or depression in the ground (*karif*). During periods of rain, surface pools may be used as drinking water sources. Reservoirs and *wadi* pools are notable sources of infection from guinea-worm and bilharzia.

175. Storage of water which is untreated, in the bigger towns is in covered reservoirs, usually without taps as the supply medium. This is commonly the case with mosque tanks which form a source for the conveyance of intestinal infections, and mosquito breeding.

176. Distribution by day in some place is by water-drawers who work at night as night-soil removers, a most undesirable state of affairs. There are large numbers of small domed water-tanks (*sagata*) usually by pious bequest, as drinking water supplies for the public. These are of course a health hazard from the dual viewpoints of microbial infection and mosquito breeding. Covered tanks and taps are the remedy.

177. During the years under review public-spirited Hadhramis who have prospered abroad have instituted among other things water supply systems of conduits leading to storage and distribution tanks in Hajreim and Gheil Bawazir. Adequate and safe water supplies must wait upon improved economics.

42. Nutrition

178. Of the staple cereals, polished rice is preferred by most when obtainable but the bulk of the population eat whole-meal *dura* millet as an unleavened bread. It may however be fermented. Wholemeal wheat is eaten in the Wadi Hadhramaut. Bulrush millet (*Pennisetum*) and *Gracostis* are eaten to some extent. Dates figure largely as a secondary staple in certain areas and among certain categories.

179. Animal protein is consumed mostly in the form of fish, fresh, smoked, dried or salted and in the East is carried into the interior as far as the Wadi Hadhramaut. Pre-eminent is *laqm*, dried shark. Mutton and goat meat are less commonly eaten. Milk is drunk raw, with or without tea, but is also drunk fermented, with or without its fats. Clarified butter is made and used. It is a major export from Socotra. Poultry is eaten, eggs to a lesser extent and more commonly in the larger centres of population.

180. Cooking media are clarified butter, sesame oil and coconut oil. Mustard and olive oils are used by certain categories. Salt, chillies, tamarind and onions are used. A spinach is used, tomatoes are grown in many places and eggplant and edible hibiscus. Tinned tomato juice is commonly used as a relish with cooked rice. The green tops of the white radish are widely eaten as salad.

181. As beverages other than milk and tea, coffee is drunk and in the west, a special drink decocted from coffee husks and ginger, called *qishr* is popular in tribal communities. A drink *nebidh* non-fermented or fermented, the sap of a palm (apparently *Hyphaene* spp.) is drunk in certain places. Gourd (apparently *Citrullus* sp.) seeds are eaten as a snack and appear to contribute importantly to the protective elements of the food.

182. Table 23 shows nutrient values of certain local foodstuff that have been specially assessed and Tables 24, 24 (a) and 24 (b) show a diet scale with local variants thought to be suitable for use in the Protectorate, for troops, schools, prisons and labour groups, etc.

183. Meals may be three a day, but for many there are two only, the midday meal being more important. Grain is ground on rotary and rubbing querns and may be fermented.

184. Children as elsewhere in similar climatic and economic circumstances are weaned as late or later than two years and often largely on to carbohydrate but the condition of *kwashiorkor* though widely sought for, has not been found, at any rate in its obvious classical form.

185. Diet characteristics on the whole are deficiencies of animal protein though not as marked as in many hot countries, of vitamin A, of riboflavin and of ascorbic acid. Malnutrition is discussed below in Section 69.

186. No ration scales so far have been considered nutritionally sound, but here economics are the primary conditioning factor. Gift milk from Her Majesty's Government and food yeast have been used as food supplements for certain school groups and the latter also for remote outposts in desert country.

43. Food Control

187. Food control is in its infancy. Musty flour and blown tins have been condemned from time to time in Mukalla and an end put to the use of picrotoxin as a fish poison. A praiseworthy fish-canning industry in the town is run under sanitary conditions with all essential precautions including final sterilization. In Sai'un a reasonable watch is kept on shops for defective food packs. All bigger towns have markets for perishable foods and meat is inspected.

188. Food handlers in Mukalla are medically screened, sweets and confectionary are required to be covered from flies and eating-shops are required to have fittings that can be cleaned, hot water for washing eating utensils and reasonable fly-exclusion. In Mukalla the use in eating shops of communal mouth pieces for the tobacco pipes has been discontinued.

Table 23. Adso Protectorates, 1952-53, South Arabian Foodstuffs: Certain Chemical Values per 100 gm.
Seed and coffee values by applied Nutrition Unit of London School of Hygiene and Tropical Medicine and the ascorbic values by Dunn Nutrition Research Laboratories, Cambridge.

CONSTITUENT	Handful SEEDS		Coffee WHOLE BEAN		COFFEE HUSKS		DICCATIONS FROM 100 GMS WHOLE HUSKS		JUICE FROM DEEPSOWER		CHILLIES, C. annam		TAMARINDS, T. indica	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
Moisture	6.2	5.2	—	—	—	—	—	—	—	—	—	—	—	—
Fibre	26.3	1.6	—	—	—	—	—	—	—	—	—	—	—	—
Ash	2.5	2.7	4.40	9.94	11.33	—	—	—	—	—	—	—	—	—
N X 6.25	—	—	18.2	32.2	27.5	13.5	10.00	8.1	3.7	2.3	—	—	—	—
Fat	—	—	26.3	52.4	—	—	—	—	—	—	—	—	—	—
Calcium mg.	200	40	120	600	540	30	120	160	—	—	—	—	—	—
Iron mg.	—	38	10	24	32	250(d)	9	0	34	—	—	—	—	—
Phosphorus mg.	—	372	—	—	—	—	—	—	—	—	—	—	—	—
Phytic acid phosphorus mg.	—	250	402	—	—	—	—	—	—	—	—	—	—	—
Thiamin mg.	—	390	140	14	14	14	14	14	14	14	14	14	14	14
Riboflavin mg.	—	120	100	63	30	13	30	14	13	22	—	—	—	—
Niacin mg.	—	1.3	—	31	65	48	27	59	43	—	—	—	—	—
Ascorbin mg.	—	—	—	—	—	—	—	—	—	0.0	21.0	9.0	11.0	10.0
														24.0
														30.0

(a) Green (*Crotalaria* sp.) seeds, called *shambhal* in the East and *azouk* in the West, widely eaten as snacks at all seasons particularly by women.

(b) Called *qadir* and widely used to make a hot beverage particularly in the West.

(c) Called *jabra* used as a cheap source of coffee.

(d) High value in iron believed due to contamination.

(e) High value in iron believed due to contamination.

(f) Commonly used in the cooking of fish and meat.

(g) Commonly used in the cooking of fish and meat.

(h) An important local anti-scorbutic.

(i) An important local anti-scorbutic.

44. Disposal of Waste Matter

189. The greatest single factor adverse to health throughout the Protectorate is the non-exclusion of flies from human dejecta. Firstly fly-breeding is facilitated, and secondly, flies may carry trachoma, conjunctivitis and possibly yaws from person to person and from dejecta, amoebic and bacillary dysenteries, enteric fever, infective hepatitis and poliomyelitis. The use of latrine deposits for manuring of salad vegetables in the Wadi Hadhramaut is directly related to the high incidence there of roundworm.

190. The typical privy system is that of a groove or channel usually open to the exterior in the whole of its extent down the side of a house, the material lying below on the ground in a recess for collection and disposal in due course. In many places it is just left.

191. Since the installation of pit latrines or more sophisticated privies, is a practical economic and socio-political impossibility at present and for some time to come, the realistic compromise is to render these privy chutes and collection chambers flyproof by closing them in, access being by a well-fitted door at ground level. This is simple, obviously so, but it is only in Mukalla after four years of driving that any substantial progress has been made. Here some 600 have been reformed or built to the new style and a planned scheme is being systematically carried out to reform the remainder. A modest start has been made in Gheil Bawazir, Dis, and Hami also in the Qaiti State. In Saiun and Tarim in the Kathiri State a real start has yet to be made though some administrative and health officials have set an example.

192. There has been considerable advance in street-cleaning mainly however in main streets that meet the eye of the visitor and officialdom, but removal of household waste and refuse heaps from side streets and adjoining certain villages still requires attention. The use of borrow-pits and derelict buildings as latrines and refuse dumps provide plenty of scope for sanitation, i.e., the cleansing of the environment, where public-spirited and informed municipalities and village councils are able to give effective action to these basic matters related to health.

45. Noxious Animal Life

193. Table 25 based on Mattingly (1956) gives the available data on the distribution of mosquito species found in the Protectorate including vectors and possible vectors of malaria, yellow fever, dengue and filariasis. Sandfly fever and dermal leishmaniasis occur, and kala-azar has been reported from the Yemen (see Section 65 below) but no specific determinations of sandflies are known. Onchocerciasis has been reported from the Yemen also but no cases and no *Simulium* have been reported from the Protectorate.

194. *Anopheles gambiae* appears to be the main malarial vector of the coasts, and nearer plains and hinterland. *An. sergenti* is suspected to be a vector in the hills and the Northern areas. The vector status of *An. dthali* widespread throughout both Protectorates including Socotra, is not clear.

Table No. 24. Aden Protectorate 1955. Yardsfick diet with Variants

(Antiscorbutics are in italics. Alternatively sprouted seeds, e.g., item 8, may be used.)

(1) ITEM	(2) QUANTITY DAILY IN OZ.	(3) PRICE IN CENTS MUKALLA	(4) HOW USED	VARIANTS APPROXIMATELY NUTRITIONALLY EQUIVALENT (Quantities and use as in columns (2) and (4) unless otherwise stated).
1. Mutton with bone at 25% ..	4	25	alternately with No. 2	Beef, No. 2 item, No. 3. item 16 oz., legs, No. 2, ..
2. Fish, fresh with bone at 33% ..	4	10	alternately with No. 1	Dried fish 2 oz., smoked fish 2 oz., salt fish and tinned fish 3 oz., No. 1 item, No. 3 item, 16 oz. 1 egg, cheese 2 oz.
3. Milk ..	8	30	daily with tea	Cheese 1 oz., dried milk 1 oz., condensed milk 4 oz., Nos. 1 and 2 items 2 oz., eggs 1/2 ounce, other millet, barley, bread, wheat, maize, other millet, barley, bread, biscuits, dates 18 ozs., <i>Potatoes</i> 48 ozs., macaroni.
4. Millet, wholemeal ..	12	15	as porridge or chuppatti	<i>Potatoes</i> 16 ozs., other cereals, dates 6 ozs.,
5. Rice ..	4	15	boiled with meat or fish	Rice, other cereals.
6. Dates ..	2	1½	alternately with 8 for break- fast	honey, dates 4 ozs., <i>potatoes</i> 10 oz., cereals 2½ ozs.
7. Sugar ..	2	10	with tea daily	beans, lentils, peanuts, chick peas, peas, sesame seed.
8. Cowpeas ..	1	1½	alternately with 6 for break- fast.	vegetable oils, butter, clarified, cotton seed oil, olive oil, coconut oil.
9. Butter, clarif. 10. Oil, sesame ..	½ ½	3½ 3½	alternately with 10 alternately with 9	<i>tomatoes, tamarind</i> 1 oz., <i>sweet-pepper</i> 1 oz.
11. Onions, bulb ..	3	12	cooked or salad	

Table No. 24. Aden Protectorate 1955. Yardsfick diet with Variants—continued

(Antiscorbutics are in italics. Alternatively sprouted seeds, item 8, may be used.)

(1) ITEM	(2) QUANTITY DAILY IN OZ.	(3) PRICE IN CENTS MUKALLA	(4) HOW USED	VARIANTS APPROXIMATELY NUTRITIONALLY EQUIVALENT (Quantities and use as in columns (2) and (4) unless otherwise stated).
12. Tomatoes ..	2	1½	alternately cooked or salad with 15	<i>citrus fruits, guavas, bananas, sweetpepper</i> 1 oz.
13. Hibiscus, edible ..	2	1½	alternately with 14	egg-plant, green beans, <i>sweetpepper</i> ,
14. Spinach ..	2	1½	alternately with 13	<i>Parslane, coriander, lettuce, or sweet</i>
15. Radish leaves ..	2	2	salad alternately with 12	<i>potatoes, beans, cabbage, sweetpepper</i> 1 oz.
16. Garlic ..	½	3	—	Sesame seed (high calcium) ½ oz.
17. Chillies ..	½	2	—	Items 11-15; 1-2 oz.
18. Spices ..	½	2	Twice daily with sugar and milk	Coffee 1 oz.
19. Tea ..	½	6	—	
20. Salt ..	½	1	—	
	E.A.Sh.	1.48		

Table 24(a). Nutrient values for the Protectorate Yardstick Diet of Table 24 compared with a standard considered reasonably practicable for Southern Arabia

NUTRIENT	YARDSTICK DIET		STANDARD		NUTRIENT	YARDSTICK DIET		STANDARD	
Calories	2,776	2,500	575	1,500 or 4,500	Carotenol (b) IU.	..	..	..	..
Protein, total g.	91	65	8,881	..	Carotenoids (c) IU.	..	..	..	..
Protein, animal (a) g.	(35)	(10)	..	..	Thiamin (d) mg.	..	2.4	..	1.2
..	Riboflavin (e) mg.	..	1.48	..	1.0
Fat g.	54	50	16	..	Niacin(f) mg.	12
Calcium	827	500	57	..	Ascorbin(g) mg.	30
Iron	27	8

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NOTES: (a) Included in protein total (b) Vitamin A (c) Vitamin A precursors (d) Vitamin B1 (e) Vitamin B2-part (f) Vitamin B2-part (g) Vitamin C.

Table 24(b). Proportionate variations from yardstick diet of table 24 for certain categories and under certain circumstances

CATEGORY	% TO BE ADDED	% TO BE DEDUCTED	RESULTANT CALORIES
1. Heavy men (over 60 kg.)	10—20%	—	3,000—3,400
2. Light men (under 60 kg.)	—	5—10%	2,500—2,600
3. Boys 13—18	0—20%	—	2,700—3,400
4. Women, normally	—	20%	2,200
5. Women 2nd half pregnancy	—	10%	2,500
6. Women lactating	—	3%	2,600
7. Girls 13—18	—	10%	2,500
8. Children 1—2	—	66%	900
9. Children 3—4	—	55%	1,200
10. Children 5—6	—	50%	1,400
11. Children 7—8	—	40%	1,600
12. Children 9—10	—	33%	1,700
13. Children 11—12	—	20%	2,200
14. Hard work	10—20%	—	according to category
15. Cold Weather	10—20%	—	do
16. In-patients, non-fever	—	20%	do
17. In-patients, fever	—	40%	do
18. Pottens, fracture	10%	—	do
19. T.B. contacts: vulnerable groups	20%	—	do
20. Pre- and post-operation cases	20%	—	do

NOTE: For items 18—20. Increase in meat, milk, pulse, fruit and green leaf items particularly valuable.

195. Of the snails, conventionally regarded as bilharzial vectors *Bulinus contortus (trunatus)* (Michaud) is known to occur in Dhala, Muserim, Mukeiras (Haythornthwaite 1935), Wadi Yebb near Hautha (Kathiri) Bequaert 1952), Geidun in Wadi Duan and Sot in Wadi Irma (PHS, 1953), and *Biomphalaria (Planorbis) alexandrinus arabica* (Melville and Ponsonby), in Muserim and Mukeiras (Haythornthwaite 1953), Dhubyat, (Petrie and Seal 1943), Wadi Hatat, Lower Yafa (Bequaert, 1952.) Geidun in Wadi Duan and Sana in Wadi Rakya (PHS 1953). Their real distribution is of course much wider. None have been found on Socotra though sought for.

196. Poisonous snakes found in the Protectorate (none so far in Socotra) are the Arabian cobra, *Naja haje arabica* Scortecci, the puff adder, *Bitis arietans* Merrem, the carpet viper *Echis carinatus* (Schneider), its fellow species *Echis coloratus* Gunther, the horned viper, *Cerastes cornutus* (Linn.), and the South Arabian mole viper, *Atractaspis andersoni* Boulenger. In five years no deaths have been encountered and none fully authenticated heard of. They are believed to occur however. The Haffkine polyvalent antivenin is considered useful since it is prepared against both *Naja* and *Echis* poisoning. Sea snakes should be noted also as a possible source of envenomation.

197. Scorpions and centipedes occur but appear to cause little trouble. The spider *Monocentropus Balfouri* Pocock in Socotra is feared as being lethal. Sting-rays, weaver-fish and venomous eels may cause casualties.

198. Dogs are a nuisance in many places and are kept down by strychnine poisoning in the larger centres. Rats are common in the seaports and their control awaits attention. Bugs (*Cimex*) are a common-place but are disappearing from the more sophisticated localities with the widespread use of BHC as a water-dispersible residual spray. Lice are common among the tribesmen, less common among school-children (see Table 30) and again are disappearing with the widespread availability of BHC dusting powder. Fleas are not obtrusive. Flies are the biggest menace to health in the Protectorate as emphasised *ad nauseum*.

Table 25. Aden Protectorate 1951-55. Mosquito Species and Distribution

(Based on Mattingley and Knight 1956).

SPECIES	WESTERN PROTECTORATE	EASTERN PROTECTORATE	SOCOTRA
<i>Anopheles demelloni</i>	+	—	—
<i>Anopheles pretoriensis</i>	+	—	—
<i>Anopheles cinereus</i>	+	—	—
<i>Anopheles turkhadi</i>	+	—	+
<i>Anopheles gambiæ</i>	+	+	—
<i>Anopheles rhadensis rupicollis</i>	+	+	—
<i>Anopheles sergenti</i>	—	+	—
<i>Anopheles culicifacies adenensis</i>	+	+	+
<i>Anopheles dhali</i>	+	+	+
<i>Aedes hirsutus</i> var. <i>adenensis</i>	+	—	—
<i>Aedes arabiensis</i>	+	—	—
<i>Aedes caballus</i>	+	+	—
<i>Aedes vittatus</i>	+	+	+
<i>Aedes egypti</i>	+	+	+
<i>Aedes granti</i>	+	—	+
<i>Aedes caspius</i>	—	—	+
<i>Culex decens</i>	+	—	—
<i>Culex duttoni</i>	+	—	—
<i>Culex ethiopicus</i>	+	—	—
<i>Culex theileri</i>	+	—	—
<i>Culex tigrisipes</i>	+	—	—
<i>Culex pipiens</i> var. <i>molestus</i>	+	+	—
<i>Culex pipiens</i>	+	+	—
<i>Culex lateictetus</i>	+	+	+
<i>Culex pipiens fatigans</i>	+	+	+
<i>Culex sinaiticus</i>	+	+	+
<i>Culex tritaeniorhynchus</i>	+	+	+

46. Accommodation

199. From the health viewpoint buildings in the Protectorate require consideration from the angles of protection from heat, dust, rain, and insects and other vermin. Unfortunately in practically the whole of the Western and much of the Eastern Protectorate these points have of necessity yielded precedence to protection from man and security domi-

nates most architecture. The result is generally housing with very small shuttered windows with few or none on the ground floor. In the East in the bigger centres of population the influence of further Asia is evident, verandahs are present, and windows are larger, and on all floors may be seen commencing at floor level, reaching well up, and with ventilators above them just short of the ceiling, an excellent arrangement allowing of the access of fresh air at low level and the exit of hot and vitiated air by the ventilator (*manwar*), thus also causing air-movement and giving additional coolness. Sophistication provides against their value in places where the *manwar* are closed with coloured glass. Another indigenous device with a cooling effect is the use of light coloured lime surfacing. This might well be more widespread than it is. Through ventilation is another cooling factor and this is not always given adequate consideration. Flat roofs are rarely sloped to give the sporadic rain which may be heavy, an easy run-off. Privy arrangements, their harmful nature and practicable rather than revolutionary reform have been referred to above (Section 44, Disposal of Waste Matter). A too frequent evil with them is their proximity to kitchens and feeding rooms and the ease with which flies may make the flight between infected matter and food. The counsel of perfection is plastic fly-screening to kitchens feeding rooms, and the privy room itself, combined with closure of the squatting slab, privy shute and collection recess.

200. Drainage of sullage fluid is usually by open drains—a few are closed—to pits, these being only too often improperly closed and with no trap to prevent insect access. Kitchens if they have any benching inside, usually have it too near the floor. Insect screening is found in a few official buildings only. Termite-proof cement courses are to be found in Ahwar health unit and some of the newer official building in Mukalla only. Cracks and crevices are numerous and tend to be left, allowing harbourage of rats mice, scorpions, cockroaches, sandflies and bugs. Rounded corners, cement floors, better plastering and periodic efficient re-rendering would rule out a lot of such nuisances.

201. A few comments on special types of buildings are called for. Ablution tanks in mosques require covering to prevent mosquito-breeding and taps to allow of their use without fouling of the water in the tanks themselves. Their drains also are frequently a source of mosquito breeding. Schools call for a more widespread use of cement flooring, rounded corners, model privies, protected water supplies and in boarding schools, insect screening to kitchens, dining rooms and privies. Government and State buildings and houses of Advisory and State officials and of enlightened and influential notables could contribute much to building reform in relation to health by applying the above principles. Advisory staff of the nature of an architect, and a works inspector for each Protectorate have been badly felt needs, over the last 5 years. Their influence in ensuring the production of the most suitable plans, building to specification and in reducing costs of construction would alone appear to justify their employment. In addition, the saving of time of other advisory staff would enable the latter to get ahead faster with their own particular technical activities.

202. The practice of leaving unwanted buildings derelict and leaving excess building materials lying in heaps and the dangers to health of unfilled borrow pits have already been referred to. Towns and villages would be healthier and cleaner, and easier to keep clean, if these matters received appropriate attention. Efforts at establishing senior advisory sanitary staff (i.e., the equivalent of the British sanitary inspector) to help systematically in these matters have been continued over the five years under review and will be persevered with. Their functions are largely tied up with buildings and effective officers could help greatly to reduce a vast volume of disease related to housing; intestinal infections, malaria and tuberculosis may be specially mentioned. It is time that in the more advanced areas plans for buildings were submitted for advice on the health aspect, to the local health authority, that is a Senior or District Medical Officer. At present this happens to a small extent in Mukalla only.

203. Wellheads are on the whole insanitary. Their lips are often flush with the ground—and there are areas in the Protectorate affected with guinea-worm, and where raised there is usually no sloping surround to drain away the surplus water. Such drain-aways should appropriately water trees giving shade and fruit. Tamarind and jujube trees are suitable and where citrus or mango will grow, these are better still. Such trees may with advantage to health and its propaganda, also be planted in the enclosures of schools, hospitals, health units, barracks and prisons supplying shade from the sun to the body and particularly the eyes, and also a useful contribution of one of the commoner vitamins in deficiency in the Protectorate, that of vitamin C, the preventive of scurvy, a relatively common disease.

204. During the five years under review Makhzan Hospital with housing for its doctor and senior subordinate staff has been built, Mukalla hospital has reconstituted its main building to provide a double surgery theatre complex, an X-ray room, dispensary and laboratory and has built a ward block to house tuberculosis patients, Shibam hospital has been built, Saiun has provided itself with a female outpatient department, a public health office and a laboratory and Tarim has expanded its ward accommodation and added an X-ray department. Accommodation for the Health Adviser, and his headquarters including a laboratory, 3 offices, stores and garage was also built in Mukalla.

205. In the Western Protectorate, eleven standard Protectorate health unit three-roomed nuclei were built at Dhala, Zara, Husn, Bateis, Jaar, Dirgag, Am-Sawad, Ahwar, Said, Nisab and Beihan Ulya, a unit with ward accommodation is slowly evolving at Mudia, and units of less standard type were built or converted from other buildings in Am-Shatt, Kersh, Am-Wadhia and Qod. In the East, the building of health units has barely started, one only, partially to specification having been built at Meifaa in the Balhaf Sultanate and a conversion of a part of a not entirely suitable building having been effected at Bir Ali.

47. Epidemics

206. During the five years under review there were no cases of the six quarantine diseases but the occurrence of an epidemic of a dengue-like disease in 1953 seemingly brought by sailing craft from the East African coast was a reminder that with the *Aedes* mosquito widespread in the Protectorate both on the coast and in the hinterland, the possibility of yellow fever being imported from the same area has to be borne in mind.

207. Of the endemic diseases that may flare into epidemic form not uncommonly are malaria, the dysenteries, enteric, hepatitis, poliomyelitis, measles, mumps, chickenpox, whooping cough, sandfly fever and conjunctivitis.

208. Malaria epidemics, in 1951 a year of heavy rainfall were the common medical topic and emergency but by 1955 they were much less frequent, less serious and well controlled. Minor epidemics occurred in Dhala, Zara, Dathina and Gheil bin Yomein areas in 1952 and in Subeishi, Shaibi, Audhali, Beihan, Wadi Amd and Du'an areas in 1953. Abyan has been free from malaria epidemics though there is much in imported labour.

209. Sandfly fever was epidemic in Abyan, Shuqra and Ahwar in 1954. Whooping cough, measles and influenza occur frequently in epidemic form and in 1953 in the Nisab and Yeramis areas measles complications caused many deaths in children. In 1951 and 1952 in October bacillary dysentery and conjunctivitis were epidemic in many places in the Abyan area. In 1955 an epidemic of poliomyelitis came to notice in Mukalla and thereafter many cases were found elsewhere in the Eastern Protectorate. The Mukalla epidemic closed shortly after the privies of all infected houses were dusted with BHC insect powder. In 1953 and 1955 there were small epidemics of enteric in Sai'un and Tarim in the Kathiri State.

48. Immunisation

210. Table 26 shows the more important immunisations done. Apart from 1952 when a vaccination campaign had very limited success, most smallpox vaccinations have been done for travellers, the majority in those proceeding to the Hedjaz during the pilgrimage season. This same group is that which receives cholera immunisation. Those travelling or returning via Africa receive yellow fever vaccine also.

211. A more rigid adherence to the policy of vaccinating against smallpox all Government and State officers, troops and prisoners and of offering vaccination more insistently to patients at hospitals, and health units, for babies at MCH clinics and for school children is being persevered with.

212. Immunisation against enteric is recommended for officials and troops and has been sporadically applied also for school children. A limiting factor is that of cost, in relation to, on the whole, a low incidence, and more important demands on available money.

213. In 1957, it is tentatively in view to commence BCG vaccination in the larger towns if development in staffing, organisation, equipment and finance should by then permit it.

Table 26. Aden Protectorate 1951-55. Immunisation

STATION OF AREA	SMALLPOX	CHOLERA	YELLOW FEVER	OTHER	TOTALS				
					1951	1952*	1953	1954	1955
Makhzan	15	—	—	—	6	727	118	—	15
Lahej	+	—	—	—	?	—	—	—	—
Mukalla	6,392	4,759	775	273**	7,821	8,534	15,948	11,901	12,199
Shibam	1,495	1,307	3	1	—	+	285	1,689	3,006
Sa'iun	1,439	1,096	+	—	—	4,000+	1,451	2,636	2,535
Tarim	?	—	—	—	—	—	—	—	—
TOTAL	9,341	7,362	778	274	7,827	13,261	17,202	16,226	17,755

* In 1952 a vaccination campaign was launched with disappointing results.

** TAB inoculations in school children.

49. Health Facilities for the Public

214. Table 2 shows that the number of doctors and health assistants is gradually increasing but 1 per 54,000 head of estimated population spread over 112,000 square miles is too fine a distribution to meet the needs of much chronic disease that could be relieved by surgery and for surgical emergencies which are common. Surgery is practised in Mukalla, Shibam and Tarim and before long it is hoped will be practised in Makhzan and Sa'iun. More equipment is required and is being provided by CDW funds, and of course, a surgeon specialist, ophthalmologist, gynaecologist and dentist are very badly needed and it is hoped will be established and appointed before long. A hospital for the central Protectorate area, apparently best sited at Attaq, is badly needed. All hospitals have laboratories. Mukalla instituted an X-ray in 1952 and Tarim in 1955. One for Makhzan it is hoped to arrange for in 1956. For fractures and chest and stomach diseases these are necessary.

215. Beds adjoining health units are needed to enable certain cases requiring continuity of treatment to be accommodated while they are under courses of treatment for such affections as ulcers, bilharzia, pneumonia, treponematoses and guinea worm. This can be arranged in some places for patients who can arrange their own food, but for all health unit locations in the present phase of economics it is quite impossible. Such wards would lessen the reservoir of infection in the country, save expense in transport to what is only too often a relatively distant hospital and leave free beds in such already over-taxed hospitals for more urgent and more local cases. Table 27 shows figures respecting beddage.

216. In practice Aden Colony Hospital accepts all evacuated to it from the Protectorate. The Church of Scotland Mission Keith Falconer Hospital has its own Protectorate clientele, and also keeps ten beds available for official Protectorate patients sent in by Health Service doctors. The Aden Protectorate Levies Hospital helpfully takes certain types of Protectorate cases. Salvation as regards the hospital bed shortage, necessarily lies however in the direction of more beds in more Protectorate localities.

217. With expansion of work in both Protectorates, there has been a growing volume of cases requiring urgent evacuation to Aden and with increasing insecurity a larger number of gunshot wound cases and hence a greater need to utilise air-transport. The volume is likely to increase further, till the Protectorate has more staff practising surgery and more beds available optimally distributed.

218. Many of the people of the Protectorate are remote from either hospitals or health units, and drugs capable of relieving suffering and saving life, or are exposed to the mercenary ministrations of charlatans, some to our sorrow ex-members of the Health Service whose concept of treatment is that of an invariable syringe-full of penicillin; not so far back it was a syringe-full of quinine. The damage done is to the pocket of man, the credit of orthodox medicine, the health of the patient and the health of the public *en masse* though the perseverance of reservoirs of certain disease-causing microbes which have become resistant to the ordinary appropriate remedies, through inadequate dosage.

Table 27. Aden Protectorate 1955. Hospital and Health Unit Beds

PLACE	IN BEING		DESIRABLE		TOTAL	REMARKS
	HOSPITALS	DISTRICT HEALTH UNITS	HOSPITALS	DISTRICT HEALTH UNITS		
	Aden Hospital	++	—	+++		
Lahej Hospital	—	—	40	30	70	MCH wing 10
Makhan Hospital	20	—	60	10	70	MCH wing 30
Ataq Hospital	—	—	30	30	60	MCH wing 10
Makalla Hospital	50	—	80	20	100	MCH wing 30
Shibam Hospital	20	—	30	20	50	MCH wing 20 Better an MCH hospital essentially.
Du'an Hospital	—	—	30	20	50	MCH wing 10
Sa'un Hospital	10	—	30	10	40	MCH wing 10
Tarim Hospital	20	—	20	—	20	MCH wing 10
TOTAL	120	—	320	140	460	MCH wings 130.

219. Decrees providing for the control of treatment of disease and the sale of drugs have been passed by several States but so far have not been honoured to a very useful degree. Difficulties are the gullibility of the public itself, its demand for injections of antibiotics and the ease with which drugs can be obtained in Aden and imported into the States.

220. In contrast is the situation away from the larger centres of population, where cases die from conditions curable by sulphamezathine or Camoquin, go blind from conjunctivitis curable by a tube of eye ointment or develop crippling ulcers because of the lack of an antiseptic ointment and a bandage.

221. For five years an attempt has been made to get into effective being a scheme for selling of "household" remedies at controlled prices by merchants in rural areas, the remedies being packs of sulphamezathine, Camoquin (earlier paludrine and chloroquin), chloromycetin eye ointment, a cetrimide cream, BHC insect powder sprinklers, etc.

222. The trade agreed to sacrifice a proportion of trade profit and to label in Arabic, States customs agreed to waive duty and the merchants approved by the Health State authorities were to agree to charge only the controlled price, which was marked on the package and which gave a 15 per cent only profit. Success has been minimal owing to cumbersome administrative difficulties, because of the large number of offices involved and transport obstacles. Since the scheme's success will mean much saving of life and suffering among the poorer and remoter strata it will be persevered with. Also it will ultimately mean a saving on drugs by Government and States budgets.

223. Apart from this the more sellers of medicaments, dressings and insecticides there are distributed about the territory as long as they stock appropriate materials, the better for the health of the people. Competition will prevent cornering and overcharging. There is considerable unethical drug-selling in certain places. A tube of eye ointment at 10/- whereas an ethical price would have been 2/-, isoniazid tablets at ten times the Crown Agents' price and the sale of individual tablets of anti-malarial and sulpha drugs are examples of how the sick have been imposed upon.

50. Health Education of the Public

224. As stated above the public on the whole is mostly disoriented in the matter of injections and antibiotics. It is apathetic in the matter of anti-smallpox vaccination except as a travel necessity. It is usually apathetic in the matter of sanitation and conservative in such matters as privy reform, removal of derelict buildings, filling of borrow pits, disposal of waste and food hygiene.

225. On the credit side however has been the widespread acceptance of BHC as an insecticide, of Camoquin as an anti-malarial drug, of chloromycetin eye ointment for trachoma and conjunctivitis and of a cetrimide cream as a dressing for burns, cuts and ulcers. There has been a growing public demand for more health units and better hospitals and in certain places an undoubted advance in town and village sanitation.

226. It is sought to reach the public by leaflet, radio and press items, posters and through school-teachers, school-children administrative officials, and security forces personnel. Special talks are given at conferences. The material is published in bilingual form. Leaflets, revised when necessary, have been published on malaria, eye-diseases, and tuberculosis. Others are in project. Girls' schools are issued with hand books on infant feeding. The Lahej Service issued a leaflet on meningococcal meningitis.

227. The development of the training hostels at Mukalla and Makhzan and the production of more visual aid health propaganda material is envisaged as contributing a useful reinforcement to these efforts in due course. The expansion of MCH work, an increase in literate female staff and the emergence from them ultimately of the trained midwife—district nurse—home visitor category are viewed as most important mechanisms to improved health knowledge in the general public.

51. Training of Staff

228. One of the outstanding needs has been the development of training. Apart from sporadic efforts in earlier years to get training done in Aden—an inevitable and useful start, in the West, training, largely in curative procedures, has been traditionally carried out at the Keith Falconer Hospital in Sheikh Othman and in the East youths were placed with the Mukalla hospital pharmacist for a few months before being posted. In both cases, the graduates were then sent out to "dispensaries" in the Protectorate as often as not rooms in their own houses or rented rooms, almost invariably unsuitable for good work.

229. Mukalla hospital had a number of attendants or dressers mostly ignorant and some illiterate. There were no levels of responsibility nor an appreciable division of labour, based on competence.

230. Training centres were planned for Mukalla in the East and Makhzan in the West. A start was made in 1951 with the formation of a Protectorate Health Services Training Board, to establish curricula, appoint teachers and examiners and hold diploma examinations annually at three yearly levels in joint curative and preventive medicine. There were four difficulties to overcome, teaching accommodation, teachers, teaching aids and suitable recruits.

231. In the West, the Keith Falconer Hospital continued to supply the accommodation and teachers including the Protectorate Medical Officer (West) till late 1955 when the newly opened Makhzan Hospital with its training hostel filled its designed but belated role and accommodated trainees for all Western Protectorate States. In Mukalla accommodation was improvised and H.M.G. and State doctors taught, 1953 being a bumper year with trainees for all States and security forces in the Eastern Protectorate receiving instruction by 5 doctors. A hostel provided partly by the State and partly by C.D.W. funds is planned for Mukalla in 1956. In Shibam in 1951 the District Medical officer started the first real teaching of female staff in both Protectorates and over the

5 years, the S.M.O. Saiun has taught his staff within local limitations. Training was also started in Lahej in 1954 to a useful degree. Dr. Merucci in Tarim trained laboratory assistants for Shibam and Saiun in 1952 and 1953.

232. Teaching aids have been built up over the 5 years at the two training centres and the other hospitals, much expensive equipment in the shape of projectors, models and charts having been supplied by the Nuffield Foundation Aden Protectorate Health Grant, and other non-official sources. There has been accumulated a good library of instructional photographs and slides relating to Protectorate conditions.

233. In the East the training of female staff, started by Dr. Hoeck in Shibam as mentioned above, with literate girls from the Beduin Girls' School in Mukalla was later also carried out in Mukalla and some 7 girls now have diplomas. It is hoped that the Beduin Girls' School with the advent of a woman MCH specialist and a matron will become an increasingly useful source of female subordinate staff and ultimately feed out to hospitals and health units, girls trained in nursing, midwifery and sanitation. Its graduates will probably supply the staff to start parallel activity at Makhzan in the West.

234. Insecurity in the West has affected recruiting badly and there has been considerable wastage due to weeding and resignation. In the East there has also been wastage partly due to brighter diplomates seeking better paid posts in the Hedjaz and again partly to weeding. In Mukalla, it is hoped in future to recruit boys from the intermediate and secondary schools with a view to their progressing in the standard three years course to the status of health assistant and in the West it is hoped boys from the Zingibar secondary school will in time provide recruits. Table 28 shows the diplomas issued over the five years under review.

235. Systematic teaching of in-trainees runs for most of the year excluding Ramadan in the subjects of elementary physics and chemistry biology (mainly human), first-aid, nursing, medicine, surgery, preventive medicine and for seniors only, legal medicine (simple points) and administration (records, returns, supplies, etc.) In January all health units, close and the health assistants attend a course of a new skills and refresher nature at the two training centres. Diploma examinations follow thereafter. A Health Assistants' Handbook is in course of compilation.

52. International health and quarantine

236. In 1952 Her Majesty's Government adhered to the new *International Sanitary Regulations* 1951 without reservation. The *Aedes aegypti* mosquito is widespread throughout the Protectorate and the Protectorate is, under the Regulations, a "yellow fever receptive area". Its airports, which may deal with international air traffic are Riyan in the Qu'aiti State which is R.A.F. administered but used by civil craft, Qatn in the Qu'aiti State and Ghuraf in the Kathiri State, both State administered. Appropriate health services adjoin these airports, they are under weekly supervision for the control of mosquito infestation and their buildings are mosquito-proofed, these latter requiring constant maintenance at Qatn and Ghuraf.

Table 28 Aden Protectorate 1951-55; Sub-Professional Staff: Diplomas Awarded
(No diplomas were awarded in 1951)

DIPLOMA GRADE	WESTERN PROTECTORATE				EASTERN PROTECTORATE				TOTAL			
	1952	1953	1954	1955	1952	1953	1954	1955	1952	1953	1954	1955
Sick attendants and health technician	—	3	11	—	—	9	19	7	—	12	30	7
Head sick attendant and health overseer	—	4	6	6	—	21	7	10	—	25	13	16
Health assistant ..	9	8	—	6	—	13	10	7	9	21	10	13
TOTAL ..	9	15	17	12	—	43	36	24	9	58	53	36

237. The largest seaport is Mukalla at which ocean going mechanically propelled shipping calls sporadically. Of more health importance are the smaller ports of call for sailing craft from the coasts of Africa, the Red Sea, India and Pakistan, Socotra and the Persian Gulf. These ports are from West to East, Ras Amran, Khor Ameira, Shuqra, Ahwar, Iqra, Balhaf, Bir Ali, Burum, Mukalla, Shihr, Hami, Dis, Qoseir, Raidat Abdul Wadud, Maseina, Gheidha, Seihut and Qishn.

238. In the five years under review no quarantine diseases were imported from abroad but a dengue-like disease was seemingly imported from the African coast in 1953 and spread widely through both Protectorates. The sea-borne dangers to be kept in mind are yellow fever from the African coast, plague from Africa, India and perhaps the Persian Gulf, cholera, typhus and relapsing fever from India and the Persian Gulf, and smallpox, the biggest danger, from all directions. On the landward aspect, the Yemen has to be borne in mind as a possible source of plague, typhus and relapsing fever.

239. The Mecca pilgrimage has special dangers associated with returning pilgrims, more particularly smallpox in a smallpox year, but with the developing health organisation in the Middle East as a whole, the danger should lessen yearly.

240. Pilgrims from the Protectorates are of three categories, those from the Western Protectorate, those from the Eastern Protectorate and itinerant pilgrims mostly Pakistanis, embarking at Gwadar in Makran landing in Muscat or Mahra and making their way on foot along the coast to Aden and thence *via* Lahej and the Yemen through the Asir to the Hedjaz. These constitute a special danger mostly from smallpox. Chronic plague carriers however cannot be ruled out. They also carry infections of malaria and dysentery.

241. From the Western Protectorate most indigenous pilgrims proceed by sea *via* Aden but a number leave by the northern frontier particularly from Beihan and Attaq. From the Eastern Protectorate the bulk of the indigenous pilgrims, who formerly went by sea, of latter years have travelled, some by charter-plane but more by road, leaving the Wadi Hadhramaut at Gaudha where there is a seasonal quarantine station and the frontierpost of al Abr. Kersh health unit in Lahej State may serve as a quarantine station on the Yemen frontier in the West.

53. Harmful social practices

242. Purdah, the traditional seclusion of women in sophisticated and mostly urban communities is associated inevitably with adverse effects on health. Directly follow obesity, rickets, obstructed labour and tuberculosis. Less directly through prejudice against male doctors and hospitals there is non-availability of responsible medical attention, implying in turn, no, or improper, or inadequate, diagnosis and treatment. Specially involved are venereal diseases, eye diseases and blindness, non-vaccination against smallpox, and much otherwise avoidable mortality in mothers, infants and children. Increasing education among girls and the development of MCH work are the solution to the problem.

243. The chewing of the green leafy twigs of the *qat* bush, *Catha edulis* is characteristic of the Western States of Lahej and Haushabi, and the tribes of Yafa. There is a fairly extensive literature on *qat* (a bibliography is attached) but its persual throws little light on any clear cut adverse direct effects that might be expected on pharmacological grounds on mental or physical health. Measured observations on the physique of comparable samples of *qat* eaters and non-eaters in the same area have not yet been made. To those however in contact with *qat*-eating communities, obvious evils are addiction, under-development, constipation, haemorrhoids and peridental disease. Mental characteristics attributed to *qat* addiction are a sense of temporary well-being. There is apparently however nothing about which one can be dogmatic relating to adverse mental change. At the same time there is no doubt at all about the indirect bad effects on the health of the addict and his family, due to money and energies that could be spent on improving the standard of living and feeding, going to the growing and chewing of *qat*.

244. Folk practices relating to medicine may be harmful in two ways (a) by replacing the more orthodox forms of treatment now fairly widely available in the Protectorate and (b) by the causing of positive physical damage. In the latter category the cautery takes pride of place for its use in splenomegaly, jaundice, fevers, lung infections, dislocations and indeed most ills. A case has been seen of microphthalmus with the eyeballs themselves cauterised with of course resulting destruction of the eyes. Another fatal case seen was of cauterisation of the abdomen in a child for splenomegaly followed by a fistula from the small intestine and death from inanition, since little or no food was digested and absorbed.

245. Cataracts are needled, piles are treated with corrosives or caustics, snake-bites are treated with ligatures causing gangrene, and lepers (fortunately there are not many) are needlessly turned into outcasts from family and community. All these things will yield only to wider rural health services and increased health education of the public. Time is against them if progress of the Health Service continues. There is a third type of spurious medicine, the misuse of modern drugs, especially antibiotics from the point of a needle in the hands of illicit practitioners. Again health education of the public and wider reputable medicine from the Health Service in rural areas coupled with more rigid application of the *Control of Treatment of Disease Decree* in the more advanced States will tend to eliminate this evil.

246. Harmful practices relating to the care of mothers and infants exist. Weaning on to carbohydrate is common as might be expected and elementary maternal and infant hygiene and knowledge of milk mixtures and mixed feeding require wider application in replacement of less enlightened practices. Cauterisation of the anterior fontanelle in the new born is practised in some localities a sufficient pointer perhaps to the distance of the goal to be achieved.

54. Rural health

247. Despite the five hospitals and some sixty health units of the Protectorate there is still much of the rural population remote from any medical aid of a continuously available nature.

Iteca Pilgrimage Travellers.

less from Makalla are foreign pedestrians pilgrims mostly Pakistanis)

Year	Motor					Foot or Animal					Total					
	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955	
51	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	
	1,495			1,798+	5,335											
				(1,266)												
	20	(9)		(1,798)	2,212						250	200	705	2,884	1,685	
											+	2,120	844	2,457	1,387	
															(1,798)	
																(2,212)
											220+	2,320+	3,044+	6,839+	8,407+	

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Table 29. Aden Protectorate 1951-55: Mecca Pilgrimage Travellers.

(Travellers in brackets are repeated in totals for Riyan and Qaudha. Foot travellers from Mukalla are foreign pedestrian pilgrims mostly Pakistani)

PLACE OF EXIT	SEACRAFT					AIRCRAFT					MOTOR					FOOT OR ANIMAL					TOTAL				
	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955	1951	1952	1953	1954	1955
Aden (Protectorate pilgrims)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tor al Baha	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	?	?	?	?	?	?	?	?	?	?
Kersh	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Dhala	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	?	?	?	?	?	?	?	?	?	?
Mukeiras	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	?	?	?	?	?	?	?	?	?	?
Beihan and Attiaq	-	-	-	-	-	-	-	-	-	-	?	?	?	+	+	?	?	?	?	?	?	?	?	+	+
Qaudha	-	-	-	-	-	-	-	-	-	-	-	-	1,495	1,798+	5,335	?	?	?	?	?	-	+	1,495	1,798	5,335
Qatn	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Saiun	-	-	-	-	-	-	-	-	-	-	-	-	+	+	(1,264)	-	-	-	-	-	-	-	+	(1,208)	(1,264)
Ghuraf	-	-	-	-	-	-	+	-	-	(6)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(6)
Mukalla (Riyan) Airport	-	-	-	-	-	250	200	705	2,584	1,685	-	-	-	-	-	-	-	-	-	-	250	200	705	2,584	1,685
Mukalla	?	2,100	835	2,457	1,387*	-	-	-	-	-	-	20	(9)	(1,798)	2,212	+	+	+	+	+	+	2,120	844	2,457	1,387
TOTALS	+	2,100+	835+	2,457+	1,387+	250+	200+	705+	2,584+	1,685+	+	20+	1,495+	1,798+	5,335+	+	+	+	+	+	250+	2,320+	3,044+	6,839+	8,407+

* 998 of them by sailing craft via Aden.

248. In the more closely administered areas, the local hospital has its sphere of activity laid down, and its dependant health units with the localities for which they are responsible clearly defined. The health assistants in charge of health units are expected to tour the second week of every month except in Ramadhan, taking all localities of their districts in turn and then re-commencing, thus ensuring their knowing the foci of endemic disease and their combing of the district for cold surgery and other cases requiring hospital treatment and also ensuring that no epidemic escapes notice.

249. These health assistants look to their local hospital for administration and supplies, advice in clinical difficulties, reception of cases and general control. It is the local doctor in this hospital to whom they look for help in all matters. This doctor has a mobile sanitation unit at his disposal or a health inspector or health overseer available for district work in epidemic emergencies to back up the health assistants of the health units. The doctor is expected to visit all localities i.e., health unit districts during the third weeks of the months, once a quarter. It is an aim in due course to have a literate woman home visitor (nurse-midwife-sanitarian) based on every health unit.

250. It is sometimes suggested by lay officialdom that special doctors to do nothing but touring should be engaged by the wealthier (a very relative word) States. In the present phase of development, it is considered this would be a retrograde step. Rural health at present needs very close interest from the nearest district doctor who should be familiar with the area in an intimate day to day contact.

251. Additional district hospitals are badly needed to father existing remote and as yet unexisting health units. Such hospitals are in view for Lahej and Duan and are needed for Attaq and Lodar, Ahwar, Meifaa and the Mahra coast (Gheidha). Doctors on tours of inspection or field duty, now some fourteen, invariably carry drugs and do what they can *en route*. More systematic work in communities remote from health institutions will develop with the advent of specialist staff such as the ophthalmologist, the MCH specialist the matron and the dental officer.

252. In the Eastern Protectorate village councils in some places are authorities who may be expected to have increasingly useful influence on rural sanitation, using the better of local health assistants as their technical referees. Much death and suffering in rural areas will be avoided when the scheme for the sale of household remedies at controlled prices is applied affectively for then the harmless but life-saving sulphadimidine (Sulphamezathine) and Camoquin tablets, and anti-biotic eye ointment may be available from small merchants at cheap price.

253. With the growth in number of schools, health knowledge will spread in rural areas and the Service bilingual leaflets will supply up-to-date lessons in health matters. There is an increasing tendency for security posts to issue medicines and dressings from their own issues to the local tribal populations. Where this is qualified by reasonable control, against abuse in the shape of misapplication of remedies and their

improper disposal, it provides a useful means of reaching a wider rural public. More knowledge of first aid and curative and preventive medicine is now reaching the security forces and with an ever increasing sense of responsibility the degree of wastage of supplies is becoming less a matter of major concern.

55. Urban health

254. Most of the larger towns by now have either hospitals or health units with either doctors or health assistants responsible for both curative and preventive measures. Certain towns have in addition developing municipalities responsible for sanitation, technical supervision being given by health inspectors or health overseers. Health overseers or the trainee lower grade called health technician are in subcharge of town quarters in Mukalla. Town cleaners are employed directly by municipalities. Public health offices and stores are in being in Mukalla and Saiun. Port health control in Mukalla is the function of a health overseer.

255. Development in urban health apart from sanitation lies in improvement in the hospital facilities, more female staff in general and particularly the institution of trained midwives and home visitors. In sanitation, important matters for attention are the closure of privies to fly access, better drainage systems, better refuse disposal, the filling of borrow-pits and other depressions, the clearing of derelict buildings and building debris, the protection of wells and water-supply mechanisms against contamination, the better hygiene of eating establishments, tea-hops, food-handlers and markets and of course as in so many places, improved housing with a lessening of over-crowding and inadequate ventilation in certain types of accommodation. The wealthier and more informed and certainly Government and State employees could set useful examples by improving in the light of the foregoing their own accommodation and that under their control; for instance by closing privies and using anti-fly screening for kitchens and eating rooms.

256. The time has arrived (one might say passed) for enlightened local authorities to firmly establish the practice of taking the opinion of the health authority on the lay-out and nature of all new building projects from the health angle.

56. Maternal health

257. In Mukalla over recent years there has been an increase in the cases of difficult labour seeking medical attention, and in Shibam and area where the District Medical Officer is a woman, Dr. Eva Hoeck, there has been over the past five years great progress in the care of women and infants, a first real step in the training of female staff in the shape of literate girls from the Mukalla Beduin Girls' School, and in the institution of home visiting mainly for maternity and tuberculosis cases by these girl trainees. One of these is now in subcharge of the MCH out-patient department of Sa'un Hospital. In Tarim Dr. Merucci has had a large clientele of women and children.

258. In the West, so far, such MCH work as has been possible has been done by Mission women doctors and nursing sisters. In the earlier years the work was done mostly on tour, but later in stationary clinics in the Abyan Area, Beihan and Mudia. It is hoped literate girls from the Lahej and Fadhli States will in due course be trained at Makhzan Training Centre for which place an experienced arabic-speaking matron is in mind.

259. All Protectorate hospitals are planned to have their female departments, and such have developed considerably over the last five years in Shibam, Sa'un and Mukalla. In Makhzan the accommodation exists but so far no female staff have been obtainable. The standard Protectorate health unit has one of its three rooms specifically designed as an MCH clinic with a view to the development of MCH work in due course by visiting staff and local trained midwives.

260. There is now need for a woman MCH specialist as well as the matron referred to above, but their housing has still to be built. In 1956 it is hoped to get ahead with this and to seek aid from UNICEF to make a major advance with MCH work in 1957.

57. Infant health

261. Much that has been written in the preceding section necessarily relates to infant health and child health. Infant mortality is hard to assess and generalise on but where figures have been collected as in Tarim from interrogation of a series of mothers the mortality was very high being of the order of 500 per 1000 live births.

262. The common obvious causes have been intestinal and respiratory infections, malaria in places, harmful feeding and infant care practices and it is strongly suspected but not proven, polio-mylitis. The fly as a lethal agent once more figures importantly, settling as it is so often seen to do, on the unwashed lips of infants. *Kwashiorke* has been specially sought for but no undoubted case has been found.

263. All health units for some four years have had manuals in Arabic on infant-feeding and the subject is dealt with in systematic training lectures and refresher courses. Much interest has been shown by the Arab staff and the public, the latter certainly in Mukalla where infant-feeding text books sold rapidly. Real progress awaits the advent of expert female staff of high technical standing and the indigenous female home-visitor whose coming in due course has been heralded by the seven literate Beduin girls trained in Shibam and Mukalla.

58. Child health

264. Observations on child health in the Protectorate at the present stage amount largely and most usefully to such as can be collected from the examination of school children. The aim is to examine all school children twice a year with a six months interval for splenomegaly, eye infection, bilharzia, ulcers, fungus and lice. The task is a big and exacting one for what is a relatively scanty and heavily employed staff a number of whom of subprofessional status are still below the level of efficiency aimed at.

265. Tables 30-32 shows the figures available and Table 32 shows the overall contrast with 1954. The figures are of poor quality for general comparative purposes, some known bad foci of malaria, eye infections and bilharzia being not reported on. Those for certain localities however are significant, the proportion of trachoma reported on by the Beihan Mission Clinic for example and probably the spleen rates also.

266. Vacation courses are held for teachers on school health and the treatment of the commoner conditions. It is hoped in 1956 to intensify a campaign against eye diseases and this will be particularly directed to schools. The vaccinal state of the Protectorate population is unsatisfactory and further efforts will be made to, at any rate, vaccinate school children. By contrast the children of Gheil Bawazir school appear to have been inoculated against enteric, which seems a doubtful medico-economic investment. More staff, more health units, more organisation and more time should greatly improve school health, for on the whole the public is receptive. For other children, improvement in the health knowledge of the public is receiving attention and a programme of MCH work is in being.

267. The better health assistants near schools may well give an hour of their time to lessons to senior classes on first-aid and another hour to preventive medicine each once weekly, where this suits the educational authorities. Treatment for trachoma with eye-ointment can be and should be carried out by senior pupils and should save what is in places a wholly fantastic drain on the time of doctors and health assistants. There is a tendency in places to expect health assistants and inspectors to over-inspect schools and scholars. A sanitation visit once a month should be sufficient.

268. Ultimately when staffing and development have further advanced, doctors will be able to give more time to school health and there will before long, it is hoped, be visits from the touring ophthalmologist and dental officer.

59. Health of security forces

269. The forces considered here, are State forces and the Government Guards in the Western, and the Hadhrami Beduin Legion in the Eastern, Aden Protectorates. Both of the last two have medical staff and health units in their depots in Aden and Mukalla respectively and the Government Guards have a families' clinic run by voluntary effort. The Government Guards have their recruits medically examined in Aden and hospitalisation is effected in the Civil Hospital. The Hadhrami Beduin Legion are the health concern of the Assistant Health Adviser (East) and are hospitalised in Mukalla Hospital except for a few cases housed in an observation ward in their own lines. Both forces man a number of posts or patrols in the remoter areas away from hospitals and health units, many in areas unhealthy because of malaria, bilharzia, non-availability of fresh food, bad water and fly infestation.

Table 30. Eastern Aden Protectorate 1955. School Health: Certain Diseases only
(Most figures from health assistants. No figures from the Kathiri State. There are no schools in Socatra)

PLACE	SPLENO-MEGALY		BILHARZIA VESICAL		TRACHOMA		ULCERS		RINGWORM		PEDICULOSIS	
	Exam-ined	Posi-tive %	Exam-ined	Posi-tive %	Exam-ined	Posi-tive %	Exam-ined	Posi-tive %	Exam-ined	Posi-tive %	Exam-ined	Posi-tive %
BIR ALI SULTANATE	27	0	—	—	27	0	27	0	27	10	27	0
BALHAF SULTANATE	80	7	—	—	80	2	80	3	80	7	80	8
Beihan	41	8	—	—	41	4	41	6	41	11	41	9
Mel'ra	257	7	—	—	257	10	257	12	257	12	257	7
QUATTI SULTANATE	—	12	—	—	—	17	—	—	—	—	—	4
MUKALLA PROVINCE	50	1	—	—	50	25	200	50	200	22	150	8
Gheil Bawazir	—	2	—	—	—	50	—	—	—	—	—	5
SHIR PROVINCE	—	—	—	—	297	30	283	17	283	5	—	—
Dis Ham	—	—	—	—	191	45	—	—	—	—	—	—
SHIRAH PROVINCE	59	0	—	—	99	30	99	4	99	0	99	6
Haura	—	0	—	—	—	30	—	—	—	—	—	6
TOTAL	375	15	2.6%	—	1,022	328	32%	1,001	93	1,008	87	668
												61
												8%

Table 31. Western Adm Protectorate 1955. School Health: Certain Diseases only

PLACE	SPLENOMEGALY		BILHARZIA, VESICAL		TRACHOMA		URICEMIA		RINGWORM		PEDICULOSIS							
	Examined	%	Examined	%	Examined	%	Examined	%	Examined	%	Examined	%						
Lahaj Sultanate	535	10	535	3	—	—	20	1	—	0	20	—						
Shab	20	4	20	0	—	—	78	8	20	4	78	10						
Dar-cam-Fasha	78	22	27	—	78	4	5	—	10	5	78	15						
Dhala	80	6	80	6	80	2	3	80	1	80	1							
Mutlahi Sheridoom	55	1	35	0	35	2	5	35	3	35	7							
Khalah	13	1	7	—	—	—	63	8	—	—	—	—						
Lower Yabi Sultanate	102	8	12	—	102	0	0	102	0	102	0							
Bahis	30	4	30	0	7	3	2	30	7	30	—							
Hiss	30	3	30	0	30	0	0	30	26	30	—							
Fadeli Sultanate	38	2	38	0	38	0	0	38	6	38	—							
Abi Sawad	38	2	38	0	38	0	0	38	6	38	—							
Kof	38	2	38	0	38	0	0	38	6	38	—							
Dathina Confederation	38	2	38	—	—	—	—	—	38	2	—							
Mudra	38	2	38	—	—	—	—	—	38	2	—							
Bihan Amirate	35	1	4	—	25	13	52	—	70	1	70	—						
Belhan Mission	55	1	4	—	—	—	—	—	55	4	55	3						
Upper Aulaoi State	70	0	70	0	70	0	0	70	0	70	0							
Said	70	0	70	0	70	0	0	70	0	70	0							
Lower Aulaoi State	70	0	70	0	70	0	0	70	0	70	0							
Abwar	70	0	70	0	70	0	0	70	0	70	0							
TOTAL	1,247	169	877%	978	16	1.6%	598	28	4.5%	384	92	15%	671	46	6.8%	598	21	3.5%

Table 32. Aden Protectorate 1954-55: School Health: Certain Diseases only

(% incidence on boys examined)

DISEASES	WESTERN PROTECTORATE		EASTERN PROTECTORATE	
	1955		1954	1955
	Splenomegaly	8.7	6.0	2.6	2.6
Bilharzia, vesical	1.6	22	7	7
Trachoma	4.6	38	32	32
Ulcers (non-eye)	15	1	9	9
Ringworm	6.8	13	8	8
Pediculosis	3.5	5	8	8

270. There has been an improvement over the last five years due to training of the health staff, medical supplies based on an appropriate schedule, and the application of residual insecticide to posts. There is not an atom of room for complacency however and regimental medical officers based on their depots, but visiting all posts periodically, giving attention to their recruiting, their sanitation, their feeding, their sick and their family needs would make a big difference to their fitness, and in places their morale. Special scourges which have to be watched for are scurvy, B complex deficiency, malaria, bilharzia, intestinal infections, eye diseases and in winter, respiratory infections. The Legion medical officer would also have the associated Beduin schools as his personal interest.

271. In addition there are in the West, the Lahaj Armed Forces and the Tribal Guards of the various States and in the East the Mukalla Regular Army, the Qaiti Armed Constabulary, the Kathiri Armed Constabulary and the Wahidi Tribal Guards. These States Forces of the major States are properly the concern of the States S.M.Os. but an advisory interest by the two R.M.Os. referred to above would help to secure uniformity and completeness in health matters.

272. As things are in the Protectorate, the acquainting of soldiers, and by extension their families and villages, with orthodox health matters and standard remedies, is a very useful means of increasing the health education of the public.

273. The training of the Legion medical orderlies has been at the Mukalla Training Centre. That of the Government Guards may well be similarly at Makhzan in the future. Three years is considered essential, the orderlies passing through the three diploma phases to the grade of health assistant as with civil staff and being thus usefully competent in curative and preventive procedures and moreover having a useful niche in the health administration to fit into, on their return to civil life.

274. With the issue of up-to-date medical supplies on schedule to the garrison posts, there was initially considerable apparent wastage of drugs, much going to the treatment of local tribesmen, although issues were made for the garrison needs only. With the growth of more responsibility and knowledge regarding proper use of these supplies, this practice need no longer be frowned on, since a wider sick public is being reached by this means and certain drugs issued can do no harm and may do much good. Examples are the three tablet dose of Camoquin for malaria, the tube of anti-biotic eye-ointment for eye-infection, sulphaguanidine for dysentery and sulphadimidine (sulphamezathine) for many infections.

275. The issue of morphine to remote posts for use in severe cases of trauma was originally viewed with some apprehension but again a growing knowledge and sense of responsibility has suggested that the advantage outweighs the disadvantage. No cases of addiction or improper disposal have come to light.

60. Health of staff

276. It is considered there is more disease among officials than there need be and over the years there is considerable wastage of time and health from causes that with developing administration should be lessening. Intestinal infections are a perennial source of invalidism and are usually fly-borne. All Government and State houses at least should have kitchens and dining rooms fly-screened. Annual anti-enteric inoculation is advised but tends not to be done. Lighting in offices is frequently too poor for the evening work that so many are called upon to do and cases of eye-strain have repeatedly come to notice. Cases requiring dental attention are frequently left too long. The appointment of an ophthalmologist and dental officer to tour both Protectorates is being persevered with and there is promise of their appointment with Colonial Development and Welfare aid. Bilharzia and malaria are not common complaints amongst officers and against the latter disease nets and suppressants are rarely required or used.

277. From the mental health aspect, there is the strain attaching to lonely postings in insecure areas or areas of political stress. Here the answer would seem to be that of annual leave, which in any case is advisable physically and incidentally from the view point also of administrative continuity. Housing and associated amenities in many stations in the Protectorate are of a type not conducive to mental and physical health and many officials have to make their own housing arrangements of a standard lower than they would be accustomed to in their own home localities.

61. Health of labour

278. There is little or no organised labour in the Protectorate but during the years under review several improvements relating to the health of labour have been instituted. Child labour, successive shifts with the same personnel and the absence of humidifiers in the Abyan cotton gineries were early remedied and a health unit is being built on an adjoining site to the present ginery. In 1951, gangs working on the Eastern roads, were noted to be on a diet scale devoid of ascorbic acid and were badly crippled with scurvy. Tamarind was issued to road gangs and appears to have been effective.

62. Health of prisoners

279. There is little to be said on prison health in general. The prisoners are visited by doctors or health assistants periodically. The time has come for more standardised medical attention however and it is expected that in future in the bigger towns, prisoners will on admission be examined for any of the endemic diseases and if need be, treated. They will also be immunised against smallpox and enteric, screened for pulmonary tuberculosis and it is hoped weighed once monthly.

280. Mukalla has a model prison of its type with a garden, occupational activity and its own dressing post and literate prisoner medical orderly who is to attend at Mukalla Training Centre for training with a view to diplomation. Prisons are sprayed with residual BHC insecticide when this is indicated.

63. Quarantine diseases

281. In the five years under review there were no cases of the six quarantine disease, cholera, plague, smallpox, yellow fever, typhus and relapsing fever. The dangers to the Protectorate from these diseases have been indicated above in Section 52.

282. In 1954-55 111 valid blood samples mainly from adult males, were collected from Ras Imran, Khor Umeira, Huweirib, Shuqra, Bir Ali, Mukalla, Shihir, Dis, Quseir, Reidat Abdel Wadud and, by courtesy of the Consulate, from Muscat, and were tested by the Virus Research Institute at Entebbe for yellow fever antibodies. Three positives were followed up, all were sailors, two admitted having visited the African coast in early life and one could not be traced further. There is thus no undoubted evidence of yellow fever infection on the Protectorate coast say in the last 30 years. However, *Aedes* mosquitoes are widespread and a dengue-like disease appears to have been brought from Africa in 1953.

64. Metazoal diseases

283. Table 30 shows that pediculosis is not heavy among school children and therefore may be expected to be likewise in the town and village population. Among the Beduin however infection is usual. Sprinklers of BHC powder are on sale in shops or available in hospitals and health units as are also dust-guns. Further, the mobile sanitation units of Makhzan and Mukalla have Tifa machines with multiple dust-gun attachments. Staff should be fully conversant by now with these and simpler delousing measures against typhus and relapsing fever, the main danger from which is by importation, as in the past, from the Yemen.

284. Scabies emerges into prominence occasionally and when infected gives rise amongst the uninformed to suspicions of smallpox. A solution of the BHC water-dispersible preparation available in all health units as an anti-malarial agent has been found very effective with no unpleasant side-effects. From the preventive viewpoint the carpets or rugs on which the bulk of the population recline bare-legged have to be specially remembered and dusting or spraying with BHC is the preventive measure of choice and practicability.

285. Beef is not eaten much in the Protectorate, sheep and goats usually providing the meat. Tapeworm is occasionally encountered however. Hydatid disease though rare has been encountered in cases from the Yemen and Beihan and has to be remembered.

286. Ascariasis is found throughout the Protectorate, but is especially a scourge in the Wadi Hadhramaut where presumably Indonesian influence has been responsible for the widespread use of night-soil as a manure involving its use in the cultivation of such salad vegetables as tomatoes, onions, radishes and carrots. These are believed to be commonly inadequately washed before eating and infection occurs through adhering activated eggs. Advice to restrict night-soil to manuring of cultivation other than that of salad vegetables has so far been received with no obvious effect. In the end eradication by mass treatment with piperazine citrate may produce better results pending the surer medium of enlightenment in health matters.

287. Schistosomiasis calls for attention. Section 45 above gives the available knowledge relating to the distribution of the classical vectors, *Bullinus contortus* and *Biomphalaria alexandrinus*. As might be expected the recorded distribution of the vector is greater than that of the disease.

288. According to laboratory and clinical records, cases of the vesical (*haematobium*) form of the disease have derived from the Subeihi area at Tor am Baha, Khor al Umira, Dhala area, Northern Lower Yafa, and the Upper Aulahi area in the West, and in the East from Hanaka, Wadi Jardan, Hedah, Salmin, Al Abr, Wadi Irma (Dohur and Set), Wadi Rakya, from Hajr Province, from the Wadis Laisser and Duan (Khorciba, Budha and Rashid), and Hautha in the Wadi Hadhramaut, Qaseir, Reidat Al Sei'ar and Reidat Ma'arer. Laboratory and clinical records of the intestinal (*mansoni*) form are many fewer being from the Wadi Tiban area and Jebal Jihaf in the West and in the East from Yawan in Wadi Hajr and Geidun in Wadi Duan.

289. In the Protectorate, these diseases like malaria and guinea-worm are undoubtedly very patchy in distribution but also more widespread than our imperfect records at present suggest.

290. Guinea-worm is fortunately limited to a few foci and appears to be particularly associated with uncovered storage reservoirs. Foci of infection are in the Wadis Hajr, Meifaa, Duan (including Hajarein) and Jardan, and at Raudha in Wahidi country.

291. The only case of hookworm coming to light in the five years under review was in a Pakistani pilgrim. There is probably no piece of ground anywhere in the Protectorate conducive to the disease establishing itself.

292. The condition of elephantiasis is known in the Protectorate and tradition has it that Shihir was once notably infected. There is at least one case in an untraveller Socotran. The potential vectors are listed in Section 45 above.

293. Onchocerciasis has been reported (Faudry 1956) in Yemen and a suspected case has been seen in a Socotran. The former were understood not to have visited Africa, the latter almost certainly had. No potential vectors in the shape of *Simulium* gnats have been reported from the Protectorate or Socotra but many of the inhabitants have travelled to Africa and the disease has to be borne in mind.

65. Protozoal diseases

294. The three specific types of malaria are found in the Protectorate and this is recognised in folk terminology. To the majority of the population who have attained a little medical knowledge only, most fevers except pneumonia are malaria. In the Abyan area, much malaria is imported from the Yemen and Yafai hills. The splenic indices of the local Abyan children however are negligible. Two cases of blackwater fever only have been reported over the past five years, both from the Sai'un area.

295. Epidemiologically or endemically there are various malaria situations. There is, or rather was, the lagoon type in which breeding is in pools, crab-holes and the stagnant edges of tidally affected lagoons in water of varying degrees of salinity. There are perennial pools or stagnant patches of seepage in wadis and rivers as in the wadis Hassan, Hajra and Mascila and similar situations on a lesser scale at spring sources. In some areas notably Dhala and Mukeiras, wells have long been under suspicion as breeding sources but so far the case is non-proven. Flood irrigation with subsequent stagnating pools provides yet another type of breeding locality. Other man-made sources are stagnant patches and seepage from water channels and drains both above and below ground, mosque ablution tanks and drains, the small covered reservoirs called *sagaia* established as benefactions to passers by near inhabited localities, major town and village reservoirs and of course domestic containers. Rainfall and flood may magnify all these sources of infection and add to them by the creation of storm-water pools and the filling of borrow-pits.

296. The main control measure is that of residual spraying of habitations of all types with water dispersible BHC, one to four times a year as may be found desirable in the varying conditions of temperature, humidity and absence or otherwise of infestation. In addition aquatic infestations are controlled where possible within a mile of habitations.

297. Staff are thin on the ground and the work is done by casual labour superintended by health inspectors or overseers in and near towns or by the health assistants of the health units in the smaller towns and villages. The mobile units of Makhzan and Mukalla take over when an epidemic situation develops beyond local resources, the States visited for this purpose paying the cost to the Fadhli-Lower Yafai or Qaiti Health Service according with the mobile unit used. Lahej and Tarim have been dealt with in this way. Knapsack or stirrup pumps and BHC are on the standard schedule of supplies for all health units but as with so much else implementation is not everywhere as close on the heels of planning as could be wished. Indigenous fish of the species *Aphanius dispar*, *Therapon* sp. and *Garra* sp. have been used for stocking of ponds, springs, wells, tanks and even domestic jars. The first two experimentally were found more voracious than imported *Gambusia affinis*.

298. In 1951 and 1952, the usual and universal medical topic was malaria. By the end of 1955 the word was rarely heard. Table 30 shows some figures for the splenic index in children. It seems that the disease is under a degree of control, reasonable considering the paucity of staff and the fact that training has had to be opportunistic with much wastage of those trained. Occasional epidemics do occur but answer very well to Camoquin, and house spraying with BHC.

299. Camoquin in a three tablet single dose, is the standard treatment used, with intra-muscular chloroquin diphosphate for pernicious cases and paludrine for splenomegaly. There seems no reason to doubt that with a little more development of the Health Service and further health education of the public, the disease may be eradicated from the indigenous population. A bilingual leaflet on the disease is widely issued.

300. In 1955 a bad epidemic of M.T. malaria in Wadi Irma closed quickly in association with the visit of a doctor, Camoquin and the Quaiti mobile sanitation unit who sprayed 1,215 habitations. This unit also sprayed 682 houses in Saiun and 589 in Tarim, payment being made by the Kathiri State.

301. The malarial vectors would seem to be, throughout both Protectorates in the coastal and southern areas, *A. gambiae*, and in the northern hills perhaps also *A. sergenti*. *A. dhali* occurs widespread, including the island of Socotra, but its status as a local vector is still unknown. Table 25 above gives the species distribution of anophelines. On the coast between Mukalla and Shihr anopheline larvae are to be found wriggling in saturated brine but developed imagines have not yet been obtained. Adult harbourage would seem to be probably in rock and crab-holes.

302. A Leishmanial sore confirmed by laboratory diagnosis was noted in 1952 from Tarim in an untravelling inhabitant. A suspicious sore has been seen in the Shaib area. Kala-azar in Yemenis has been reported by Faudry and Mazhar (1951). In any case, many of the inhabitants of the Protectorate have travelled to Africa and the Indian sub-continent and leishmaniasis has to be borne in mind by the clinician. The sandflies of the Protectorate have not yet been identified.

303. Amoebic dysentery is common and widespread and much together with its sequel of hepatitis is believed to not come to light.

66. Bacterial and treponemal diseases

304. Bacillary dysentery is one of the commonest infections in the Protectorate and usually readily answers to food-deprivation and sulphguanidine or sulphamezathine. Its classical sequelae have occasioned no report.

305. Enteric fever is a fairly widespread infection and is almost certainly nearly always fly-borne owing to the traditional defective sanitation allowing of fly-access to dejecta. There have been epidemics in the Kathiri State in 1953 and 1955. Protective inoculation is advised for officials and visitors. The school children at Gheil Bawazir were inoculated during 1955. On economic grounds it is doubtful whether the incidence justifies the expenditure on vaccine for this or a wider application. Prisoners perhaps should be done.

306. Pulmonary tuberculosis is widespread, and the gland and bone varieties also but in a lesser degree. Table 22 shows that 352 cases of the pulmonary form were reported in 1955, the big increase over previous years being due to a special drive. The problem is being tackled from hospitals and health units by registration of suspected cases, diagnostic confirmation, domiciliary treatment with B-Pasinah, prevention by health propaganda through bilingual leaflet and protective food issues, and removal of special cases for hospitalisation in Mukalla, Shibam, Tarim and Makhzan. Domiciliary care in Lahej was during 1955 an interest of the Aden Colony Tuberculosis Officer and it is hoped the work he has started there will continue. During the year in Mukalla the State built the first half of a 20-bedded tuberculosis pavilion. It is hoped to start BCG work in 1957.

307. Lepers registered by the local hospitals and health units are shown in Table 33. The figures are minimal but the disease is not a major public health problem. There are small groups of indigent lepers specially housed at the public expense at Mukalla, Duan and Dis in the Eastern Protectorate. Sulphone is the standard specific used. Domestic segregation and domiciliary treatment are applied when feasible.

Table 33: Aden Protectorate 1955: Lepers Registered at Hospitals and Health Units

WESTERN PROTECTORATE		EASTERN PROTECTORATE	
Makhzan	9	Mukalla	59
Jaar	2	Gheil Bawazir	10
Husn	2	Dis	9
Am Sawad	4	Shihr	4
Shuqra	2	Khoreiba	15
Dirgag	1	Shibam	4
Lahej	5	Bir Ali	2
Qod	1	Meifaa	2
Zara	4	Habban	3
Aryab	11	Hautha (Balhaf)	7
Said	9		
Dhala	2		
Tor am Baha	6		
Dar am Farsha	4		
	62		115

308. No case of diphtheria has been recorded from the Protectorate in the 5 years under review and only one reference in the files has been seen, that relating to a case in Tarim in the 1940's.

309. Classical syphilis is decreasing and so is a condition called indifferently yaws or endemic non-venereal syphilis. This latter has been particularly noted on the edge of the Rub el Khali, and the Yemen frontier.

67. Coccid diseases

310. Tarim and Saiun, in the East, have been badly effected with gonorrhoea and the Abyan area in the West. The relationship to puerperal fever is referred to below. Gonorrhoeal *ophthalmia neonatorum* has not been a condition occasioning comment.

311. Puerperal fever is probably fairly common but Saiun Hospital is the only institution reporting it. Saiun formerly had a high incidence of gonorrhoea and also has many unattached women. Purdah must cloak much of the disease. Fortunately confidence in antibiotics and sulpha-drugs exists to the point of abuse and between them there seems little doubt that coccal diseases in general are decreasing.

312. For *Brucella* infections no laboratory diagnoses have been established in Protectorate patients but cases are believed on clinical grounds to have occurred in Beihan, Khoir in the Fadhli State and Mukalla.

313. No undoubted cases of rheumatic fever have so far been formally recorded in the Protectorate but they have been suspected on the Audhali plateau and have been diagnosed in Sheikh Uthman in the Colony.

314. Occasional petty outbreaks of meningococcal meningitis have been recorded from Lahej State and the Kathiri State. In the Kathiri State only, was diagnosis established by laboratory technique.

315. Apart from pneumococcal pneumonias viral types occur and lung infections terminal to whooping-cough and measles cause considerable child mortality. Shortage of protein and vitamin A and C in children, and also in soldiers in the cold winter of the higher altitudes in the hinterland are considered to affect adversely the outcome in many cases.

68. Viral diseases

316. Clinically influenza, i.e., attacks of fever with rhinitis and, or laryngitis and tracheitis, occasionally going on to pneumonia are common and widespread. Measles epidemics are fairly common and cause considerable mortality in children from pneumonia and intestinal flux. Ear and eye complications are also fairly common. Sulphamezathine has been found very useful for many of the complications. Epidemics of whooping cough are common and also cause considerable child mortality. Sooner or later immunisation may be organised. As it is, little can be done outside the biggest towns where the expensive Chloromycetin is available. Mumps is encountered from time to time and calls for no special comments. Chickenpox is widespread and occasionally the abnormal case gives rise to false alarms of smallpox.

317. Poliomyelitis is found throughout the Protectorate including the island of Socotra. In 1955 there was an epidemic in Mukalla which closed in association with house quarantine and the dusting of the privies of affected houses with BHC powder. In Hautha in the Balhaf Sultanate a case was seen in a boy in the winter of 1951 which had been preceded in each of the two previous winters by fatal cases, one in a brother, one in a sister. It is suspected that the disease may contribute importantly to the heavy infant mortality in parts of the Protectorate. Here again our hope must lie largely with women home visitors of the future.

318. Infective hepatitis, presumably mainly fly-borne, is a fairly common disease and probably accounts for not a few deaths at all ages in those dying away from medical intelligence. Its relationship if any as a precursor to the not uncommon cirrhosis of the liver which is encountered in the Protectorate is not clear. It seems the disease is common enough to perhaps be the literal inspiration of the term "*al-kibd*", "the liver", which is widely used by Arabs for a condition of general and abdominal malaise with or without jaundice.

319. In 1953 an epidemic of dengue-like disease suspectedly arrived from Tanganyika and rapidly spread over both Protectorates which are *Aedes* infested throughout their extent. Sandfly fever occurs and contributes its quota to the reports of cases of undifferentiated fevers. It is mild in type on the whole. Abyan, Shuqra and Ahwar were heavily affected in 1954, a year after a dengue epidemic. There was no clinical confusion between the reporting of the two diseases.

320. Rabies is known of, only to the better educated and appears to be absent from the Protectorate possibly due to remoteness of inhabited localities one from another. Dogs of course exist and in places pariah dogs form most undesirable packs. Wolves occur in the hinterland. No cases of human or animal rabies by record or recollection have been collected from either Protectorate, and doctors of up to 19 years' service have not heard of any.

69. Various other conditions

321. Skin fungus infection is very common more especially in the humid coastal area. Table 30 give some idea—probably minimal—of the incidence in school children. Mycetoma, usually of the foot, occurs throughout the Protectorate.

322. Subnutrition i.e., too little food of any sort may be read into the spare physique of most tribal stock and the apparent thinness of many school children. Fat persons are rare. School children—those of the Beduin Schools in Mukalla exemplify the situation, exhibit mosaic skin, dry skin, angular stomatitis and some gum bleeding, especially in winter. Their diet has been bolstered up with gift milk and food yeast and efforts have been made to procure for them garden produce and a herd of goats. They may be taken as illustrating the nature of a general subnutrition characteristic of the population as a whole. On the other hand *kwasiorakor* has been sought for with some considerable application and no undoubted case of classical type found.

323. Night-blindness occurs in certain strata, in certain areas, no pellagra or beri beri has been seen (whole-meal millet is the common tribal staple and fish, fresh, salted, dried or smoked is widely eaten), scurvy is fairly common in the more arid areas, especially in winter, rickets is sometimes seen but more common is osteo-malacia in the purdah communities of the Wadi Hadhramaut, coming to light, with cases of obstructed labour.

70. Progress made

324. The possible relationship of a cirrhosis of the liver in tribal people having relationship to infective hepatitis or protein shortage or both in early life is a matter of some academic interest. Faudry (1955) has discussed anaemia associated with enlarged liver and spleen in South Arabia. That many of the people are underfed in protective elements and on the border line of malnutrition was exemplified in 1955 when in Mukalla, the dumping on the market of much cheap polished rice caused the lower stratum to forsake their whole-meal millet and eat rice, "the noble food" (*sic*) as a staple. There resulted an epidemic of sore tongues.

325. Indolent ulcers, once frequently encountered in the local people in the villages of the Abyan area, are now mostly seen in imported labour only. Their practical disappearance from Abyan, together with much conjunctivitis would appear to be evidence of more treatment but also of more meat and milk as well as malaria control and less anaemia.

326. Asthma is a fairly common and fairly resistant complaint and to some extent the degree of its incidence appears to be related to that of *Ascaris* infection.

327. Trachoma and its complications including conjunctivitis are the major eye scourges as might be expected. Night-blindness and xerophthalmia are found also and of course cataract. The treatment of eye affections has always received special attention in the Western Protectorate, the first Protectorate Medical Officer himself having specialist interest in the subject. There is much total and partial blindness, surveys in Beihan and Dathina conducted by Dr. Croskery on behalf of the Aden Society for the Blind showing figures of 4.46 per cent and 3.45 per cent respectively of the population sampled as having the affliction some degree.

328. The standard treatment used for trachoma and conjunctivitis is Chloromycetin ointment. Teachers have been given summer courses in its administration. A bilingual leaflet is issued on the nature, prevention and treatment of blindness and the Aden Society for the Blind presented a proportion of these. The hospital in Mukalla does eye-surgery and it is hoped before long a touring ophthalmologist will be doing periodic lists in all Protectorate Hospitals and many health units.

329. Emergency surgery is necessarily tackled in the five hospitals of Mukalla, Shibam, Tarim, Saiun and Makhzan, and surgery of a non-specialised routine nature in Mukalla, Shibam and Tarim. Surgeon-specialists from Aden have several times during the five years under review visited Mukalla to operate on cases of a less routine nature, but clearly to avoid growing evacuation of cases to Aden—a costly matter, the Protectorate Hospitals must fit themselves to handle more surgery. This is in fact being done. Mukalla now has two theatres and has built up a reasonable establishment of instruments and equipment, Shibam has done likewise to lesser degree and Makhzan and Saiun are slowly fitting themselves to undertake more routine surgery. Sooner or later a full-time surgeon-specialist for the Protectorate will be desirable to visit the hospitals in turn. More imminently in mind are the forthcoming surgical activities of the ophthalmologist, a practising gynaecologist and the dental surgeon.

330. The pace of progress over the five years has been slower than expected, delaying factors having been long distances and difficult communications, inadequacy in numbers and quality of certain staff categories, the multiplicity of administrations involved, the slowness in obtaining funds for development, difficulties in building in remote areas and finally insecurity, particularly in the West.

331. However, there has been much weeding, selective recruitment and training of subprofessional staff, the addition of a doctor to the Qaiti Health Service and the provision of one each for the Fahdli-Lower Yafai Health Service and the Lahej Health Service. Mission clinic work among women and children in the West has increased. A larger population has been reached by more widely trained health assistants operating from more units. Hospitals have increased all aspects of their work with improved facilities in the shape of surgery, and laboratory and X-ray work. Survey has improved our knowledge of the distribution of diseases and disease vectors. The wide and standardised use of BHC has established control of malaria and much insect vermin.

332. Two training centres associated with base hospitals and with mobile sanitation units attached have been established, one for each Protectorate.

333. Training has been systematised and there are now a handful of literate girl diplomates. There is a trained health assistant on Socotra and others in other remote areas previously uncared for. The Fahdli-Lower Yafai Health Service has been formed and controlled by a joint State Health Board. Other health boards exist for the Quaiti and Kathiri States. A decree to control medical practice and the sale of drugs has been passed by four States.

334. The Protectorate has adhered through Her Majesty's Government to the International Sanitary Regulations 1951 and has almost entirely completed its adjustments in compliance. Records and returns have been standardised as have schedules of equipment and supplies which in nature have been modernised.

335. Expenditure on health has been greatly increased by Her Majesty's Government through normal Estimates and C.D.W. funds and also by the States themselves. A Nuffield Grant has helped greatly with visual aid material. Medical transport has been increased. Previously there was none at all in the East. X-rays have been provided at Mukalla and Tarim and 40 or so health units have been equipped to a standard schedule phase. Much surgical equipment has been provided for hospitals.

336. Accommodation has been built up, a house, office and store for the Headquarters at Mukalla in the East and adaptation of buildings for the sub-headquarters in Aden in the West, considerable extensions have been carried out in the hospitals of Mukalla, Saiun and Tarim, and hospitals built at Makhzan and Shibam. New health units of standard pattern have been built at rural centres and a training hostel at Makhzan.

337. Malaria has been largely controlled and special drives have been initiated against tuberculosis and eye-diseases. One of the most significant advances has been a systematic move at closing privies in Mukalla.

338. The scheme of development is now at last beginning to show some momentum and the next five years, all going well, should see crystallisation into a service not inappropriate to local needs.

71. Projects

339. In 1956 it is planned to make a real start with the implementation of Scheme D.2716 which comprises (a) the provision of an ophthalmologist, a dental officer and a matron to the training and organising aspect, together with their related services, (b) improvements to surgical equipment and (c) extensions to Mukalla hospital in the shape of a women's and children's wing, an MCH unit, a new out-patient Department, and a training hostel, more health units, a hostel in Aden for patients from the Protectorate awaiting hospital attention or repatriation after discharge, and housing for new staff.

340. In 1957 it is hoped to arrange the start of BCG vaccination in the larger towns and help from UNICEF with the provision of a woman MCH—gynaecologist specialist, and material for MCH work, rural health expansion and training of female staff to initiate a drive in the health work among women and children—by far the most difficult aspect of health development in an area where purdah holds sway, female education is just starting, and multiple administrations in varying stages of development are involved.

PART VI BIBLIOGRAPHY

72. Health bibliography of Aden Protectorate

N.B. Certain references to neighbouring territory that seem pertinent are included, and Socotra is specially listed

GENERAL

- Aden Protectorate Health Service (1951). Annual Report.
 _____ (1952). *Ibid.*
 _____ (1953). *Ibid.*
 _____ (1954). *Ibid.*
- Beeby Thompson, A. & Partners, (1939). *Western Aden Protectorate Water Problems.*
 Eastern No. 175, Colonial Office, London: H.M.S.O.
- _____ (1939). *Eastern Aden Protectorate (Hadhramaut) Water Problems.*
 Eastern No. 176, Colonial Office, London: H.M.S.O.
- Carter, (1906) *Brit. Med. J.*, 2, 1393 (Occurrence of *Glossina tachinoides* in Protectorate).
- Croskery, S. E. (1954). Medical Report of Beihan Mission Station for 1954. Typescript.
- Ingrams, D. (1949). *A Survey of Social and Economic Conditions in the Protectorate.* Asmara: Government Printer.
- Ingrams, W. H. (1936). *A Report on the Social, Economic and Political Conditions of the Hadhramaut* No. 123, Colonial Office, London, H.M.S.O.
- Faudry, A. L. & Mazhar, M. (1951). *Trans. R. Soc. trop. Med. Hyg.*, 45, 138. (Kala-azar in the Yemen).
- Faudry, A. L. (1955). Syndrome of splenomegaly, anaemia and hepatomegaly often left-lobed, in South Arabia. *Trans. R. Soc. trop. Med. Hyg.*, 49, 387.
- Faudry, A. L. (1956). Personal communication.
- Forbes, H. O. (1903). *The Natural History of Socotra and Abdi-el-Kuri.* Bulletin Liverpool Public Museums. Liverpool: Henry Young & Sons.
- Lumsden, W. H. R. (1955). An epidemic of virus disease in Southern Province, Tanganyika Territory in 1952-53. II. General description and epidemiology. *Trans. Roy. Soc. trop. Med. Hyg.*, 49, 33.
- Petrie, P. W. R. (1939). Some experiences in South Arabia. *J. trop. Med. Hyg.*, 42, 357.
- _____ (1949). Epidemic typhus in South Western Arabia. *Am. J. trop. Med.* 29, 501.

- Petrie, P. W. R. & Seal, K. S. (1943). *Survey of the Western Aden Protectorate, 1939-40*. Middle East No. 66. London: Colonial Office.
- Phillips, D. (1904). *Brit. med. J.*, **2**, 657.
- Phipson, E. S. (1934). Medical Survey of Aden. Aden.
- Reid, H. A. (1952). Kala-azar in South Persia. *Trans. R. Soc. trop. Med., Hyg.*, **46**, 555. (Distribution in S.W. Asia).
- Robinson, M. C. (1955). An epidemic of virus disease in Southern Province, Tanganyika Territory in 1952-53. I. Clinical features. *Trans. Roy. Soc. trop. Med. Hyg.*, **49**, 28.

MALARIA AND MOSQUITOES

- Becket T. (1910). Dipteren aus sudarabien und von der Insel Socotra. *Denkschr. Acad. Wiss. Wien*, **71**, 1-30.
- Buxton, P. A. (1944). Rough Notes: Anopheles mosquitoes and malaria in Arabia. *Trans. Roy. Soc. trop. Med. Hyg.*, **38**, 205.
- De Meillon, Botha (1947). *The Anophelini of the Ethiopian Geographical Region. Publications of the South African Institute for Medical Research* No. 49, (Vol. 10.) Johannesburg.
- Evans, A. M. (1938). *Mosquitoes of the Ethiopian Region, II. Anopheline Adults and Early Stages*. London: British Museum.
- Leeson, H. G. & Theodor, O. (1948). Mosquitoes of Socotra. *Bull. Entom. Res.*, **39**, 221.
- Mattingly, P. F. (1953). The sub-genus *Stegomyia* (Diptera: Culicidae) in the Ethiopian Region (Part II). *Bull. Br. Mus. (Nat. Hist.) Entom.*, **3**, 1, 1. London: British Museum.
- Mattingly, P. F. & Knight, K. L. (1956). The mosquitoes of Arabia. *Bull. Br. Mus. (Nat. Hist.)*, **4**, 91-141, London: Brit. Mus.
- Patton, W. S. (1905). The culicid fauna of the Aden hinterland, their haunts and habits. *J. Bomb. Nat. Hist. Soc.*, **16**, 623.
- Theobald, F. V. (1903). The flies of Socotra: Culicidae In Forbes (1903), 359.

QAT

- Bally, P. R. O. (1945). Catha edulis. *East Afr. Med. J.* **22**, 2.
- Beitter, (1901). Etude chimique et pharmacologique du *Catha edulis*. *Archiv. der Pharmazie*, **239**, 17.
- Britton, E. B. (1939). The use of Qat. *J.R. Geogr. Soc.*, **93**.
- British Pharmaceutical Codex (1934). p. 1043.
- Brucke, F. T. (1941). Ein "neues" Genuss- und Heilmittel? *Munch. med. Wschr.*, **88**, 544.

- Carothers, J. C. (1945). Miraa as a cause of insanity. *East Afr. med. J.*, **22**, 4.
- Cauvet, F. (1890). *Le catha edulis*. Thesis, Lyons.
- Chevalier, J. (1911). Etude pharmacodynamique du catha edulis Forsk. *Bull. Soc. pharm.* **18**, 264
- _____ (1911). Le Catha edulis; pharmacologie et pharmacodynamie. *Bull. gen. Ther.*, Paris, 161.
- Collin, E. (1893). Le Catha edulis. *J. Pharm. Chim.*, Paris, 5 ser., **28**, 337.
- Dezani, S. (1918). Ricerche farmacog-nostiche sulla "Catha edulis." *Arch. Chim. Farmacog.*, **7**, 161.
- Dispensatory of the United States of America (1943). 23rd. ed., 1308.
- East African Medical Journal (1945). The Need for the control of Khat. *East Afr. med. J.*, **22**, 9.
- Egasse, E. (1889). Le Catha edulis *Bull. gen. Ther.*, Paris, 117, 168.
- Heisch, R. B. (1945). A case of poisoning by *Catha Edulis*. *East Afr. med. J.*, **22**, 7.
- Imgrams, D. (1949). *Op. cit.*, 107.
- Leloup, C. A. (1890). Le catha edulis. Thesis, Paris, Abstract: *Bull. gen. Ther.*, Paris, **119**, 216.
- Martindale. (1941). *The Extract Pharmacopeia* 22nd, Ed., London, **1**, 325.
- Mc Walter, J. C. (1913). A note on Catha edulis. *Med. Pr.*, **95**, 96.
- Mustard, M. J. (1952). Ascorbic acid content of some miscellaneous tropical and sub-tropical plants and plant products. *Food Res.*, **17**, 31.
- Owen, F. J. (1910). Catha edulis. *J. Soc. Chem. Ind.*, London, **29**, 1091.
- Petrie, P. W. R. & Seal, K. S. (1943). *Op. cit.* 110.
- Popenoe, P. (1916). Catha edulis: a narcotic of the Southern Arabs. *Science*, **43**, 438.
- Scott, H. (1942). *In the High Yemen*. 95, 131, 148. London: John Murray.
- Shennan, T. (1897). Catha edulis. *Rep. Lab. R. Coll. Phys. Edinb.*, **6**, 259.
- Stockman, R. (1912). The active principles of Catha edulis. *Pharmacol. J.* 4 ser., **35**, 676.
- _____ (1912). Stimulant-narcotics with a special account of Catha edulis. *Ibid.* 685.
- _____ (1912-13). The pharmacological action of Catha edulis and its alkaloids. *J. Pharmacol.*, **4**, 251.
- Tanret, G. (1913). Le Katt (*Catha edulis*). *Pr. med.*, **41**, 452.

- Trimingham, J. S. (1952). *Islam in Ethiopia*, 228, 259, 262, London: Oxford University Press.
- Thorpe, J. F. & Whitley, M. A. (1938). *Thorpe's Dictionary of Applied Chemistry*, 4th Edition., 2., 439, London.
- Vandamme, A. F. (1913). Contribution a l'etude du, "Catha edulis" (Forsk.). Thesis, Lille.
- Wolfes, (1930). Sur la presence de d-nor-iso-ephedrine dans le catha edulis. *Arch. der Pharm.*, 268, 81.

SCHISTOSOMIASIS

- Ayad, N. (1956). Bilharziasis survey in British Somaliland, Eritrea, Ethiopia, Somalia, the Sudan and Yemen. *Bull. Wld. Hlth. Org.*, 14., 1-117.
- Bequaert, J. C., (1952). Personal communication.
(1956). Personal communication.
- Haythornthwaite, B. F. (1935). Bilharziasis in South Arabia, in Petrie & Seal (1943), 153.
- Kuntz, R. E. (1952). *Schistosoma mansoni* and *S. haematobium* in the Yemen, Southwest Arabia: with a report of an annual factor in the epidemiology of *Schistosomiasis mansoni*. *J. Parasitology*, 38, 24.
- Petrie, P. W. R. & Seal, K. S. (1943). *Op. cit.*, 84.
- Scott, H. (1942). *Op. cit.*, 138-9.

OPHIOLOGY

- Anderson, J. (1896). *A Contribution to the Herpetology of Arabia*. London: R. H. Porter.
- Boulenger, G. A. (1899). Descriptions of new species of reptiles collected by Dr. H. O. Forbes and Mr. W. R. Ogilvie-Grant in the islands of Abd-el-Kuri and Socotra. *Bull. Liv. Mus.*, 2., 4-7.
- (1903). The reptiles of Socotra. In Forbes (1903), 191.
- Forbes, H. O. (1903). *Op. cit.*, 191.
- Gunther, A. (1881). Descriptions of the Amphisbaeniens and Ophidiens collected by Prof. I. Bayley Balfour in the Islands of Socotra. *Proc. Zool. Soc. Lond.*, 40., 461-463.
- Parker, H. W. (1941). *British Museum (Nat. Hist.) Expedition to S.W. Arabia 1937-8. 1. Reptiles and Amphibians*. 3-6. London: British Museum.
- (1949). The Snakes of Somaliland and the Socotra Islands. *Zoolog. Verhand. Uit. d.h. Rijksm. v. nat. hist. t. Leiden. No. 6*, 107., Leiden: Brill.

- Steindachner, F. (1903). Batrachier und Reptilien des Sudarabien und Socotra. *S. B. Akad. wiss. Wien*, 112., 7-14.
- Wall, F. (1906). A new snake (*Melanolaps mephersoni*) from the Aden hinterland. *J. Bomb. Nat. Hist. Soc.*, 17, 27.

SOCOTRA

- Becker, Th. (1910). *Op. cit.*, 1-30.
- Boulenger, G. A. (1899). *Op. cit.*, 4-7.
- Boulenger, G. A. (1903). *Op. cit.*, 191.
- Corkill, N. L. (1956). Health Adviser's Notes on a visit to Socotra in February and March 1956. Typescript. Prot. Health Service, Mukalla.
- Dames, M. L. (1918). *The Book of Duarte Barbosa*. 59-63. London: Hakluyt Society.
- Ellis, J. N. (1953). *Extract from Notes on Socotra*, typescript, Mukalla Residency.
- Forbes, H. O. (1903). *Op. cit.*,
(1881). *Op. cit.*, 461-463.
- Leeson, H. S. & Theodor, O. (1948). *Op. cit.*, 221.
- Mattingley, P. F. (1954). Personal communication. Typescript. Protectorate Health Service Headquarters, Mukalla.
- Parker, H. W. (1949). *Op. cit.*, 105.
- Pocock, R. I. (1903). Arachinda. In Forbes (1903), 182.
- Popov, G. (1954). Health notes on Socotra. Personal communication. Protectorate Health Service Headquarters, Mukalla.
- Schoff, W. (1912). *Periplus of the Erythraean Sea*. New York, quoted by Forbes (1903), 91.
- Spencer-Cooke, C. (1944). Intelligence Report on Socotra Island quoted by Snell (1954).
- Snell, I. E. (1954). Report on Socotra island. Typescript. Mukalla Residency.
- Steindachner, F. (1903). *Op. cit.*, 7-14.



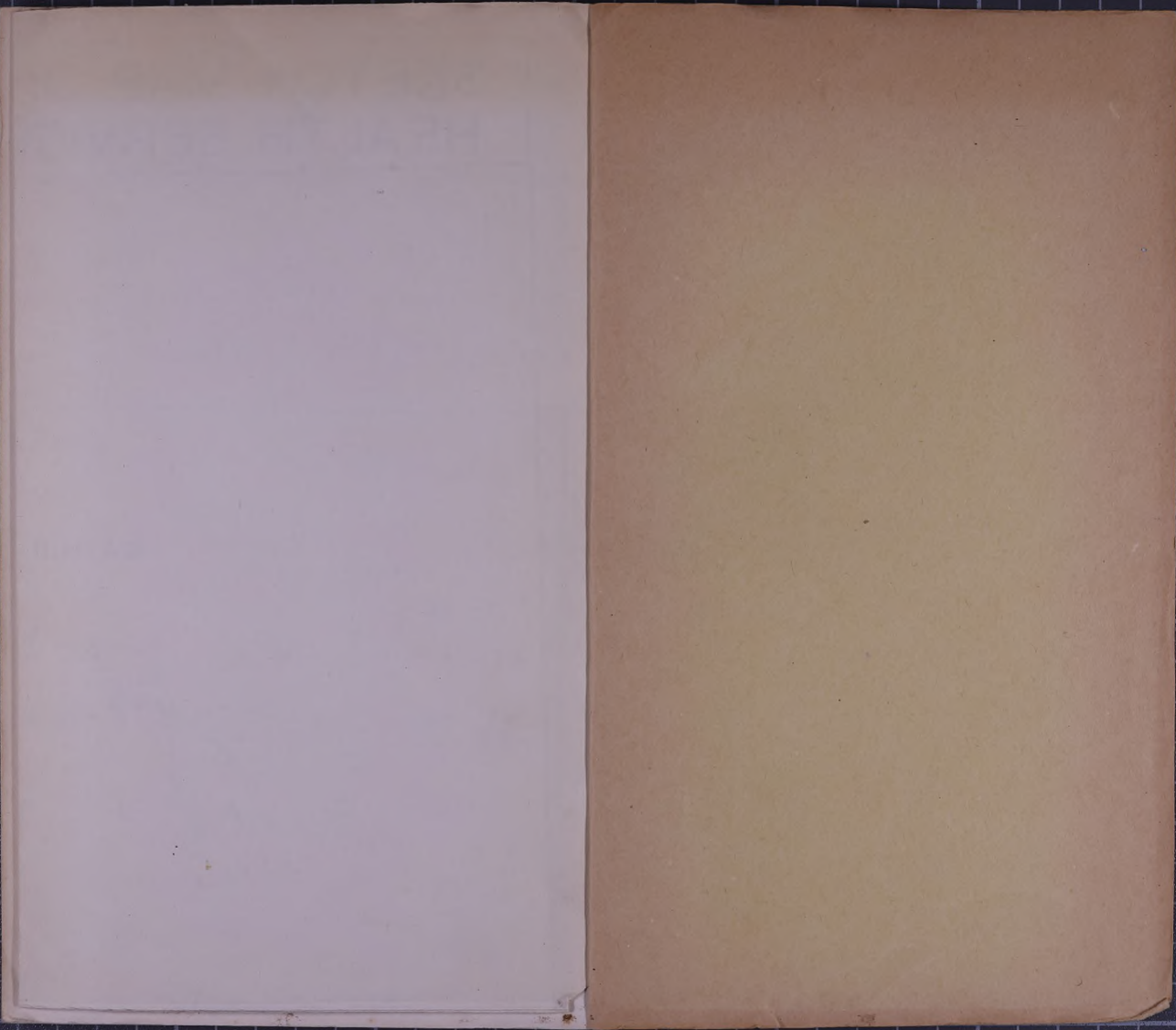
SKETCH MAP OF ADEN PROTECTORATE SHOWING HEALTH SERVICES.

SCALE 1:2,000,000

LEGEND

- BASE HOSPITAL & TRAINING CENTRE.
- HOSPITAL PROJECTED
- HOSPITAL
- HEALTH UNIT
- HEALTH UNIT PROJECTED
- INTERNATIONAL BORDER
- INTER STATE BOUNDARIES
- WADI
- TRACKS





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