Annual report of the Mysore Department of Health.

ANNUAL REPORT OF THE

MYSORE STATE

DEPARTMENT OF PUBLIC HEALTH

1954

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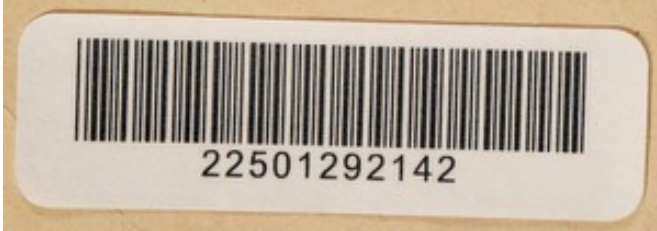

PROCEEDINGS OF THE GOVERNMENT OF MYSORE

READ—

Correspondence ending with letter No. VS. 283—55-56, dated 25th August 1955, from the Director of Public Health forwarding the Annual Report on the administration of the Public Health Department for the Calendar year 1954.

ORDER NO. M. 25401-30—P.H. 8-55-12, DATED BANGALORE, THE 15TH FEBRUARY 1956.

Recorded.

2. The state of Public Health during the year 1954 was satisfactory. This was, in considerable measure, due to the special measures undertaken in the Department as part of its development policy.

The incidence of communicable diseases like plague, small-pox and cholera was slightly higher than in the previous year and preventive measures were taken up on a larger scale to control the epidemics. Thirty-one thousand eight hundred and fifty-three, (11,371) anti-plague inoculation, 1,84,375 (9,16,284) anti-smallpox vaccinations and 5,89,097 (9,00,169) anti-cholera inoculations were done during the year.

During the year under report 126 (106) deaths from plague, 1,022 (1,140) from small-pox and 1,642 (1,300) deaths from cholera were reported giving a specific death rate of (i) 1·2 (1·0) per one lakh, (ii) 10 (12) per one lakh and (iii) 16 (14) per one lakh of population, respectively.

A total of 15,723 (12,859) deaths from malaria for the State inclusive of Bellary district were reported giving a specific death rate of 150 (136) per lakh of population. A total of 186 (175) Health Units were working during the year in the Malnad and in the malarious irrigated areas in the State including the twelve Health Units in Hiriyur, Gundlupet, Heggaddevankote, Kunigal and Thirthahalli Taluks sanctioned during the year.

3. *Vital Statistics*.—During the year, 1,74,578 (1,56,151) live births and 86,405 (73,904) deaths from all causes were reported giving a birth rate of 16·7 (16·5) per mille and a death rate of 8·3 (7·8) per mille of population. The excess of births over deaths during the year was 88,173 (82,247).

4. *Public Health Institute.*—A total of 15,654 (13,515) samples were examined in the Bacteriological Section and 2,075 (1,884) samples were analysed in the Chemical Section. A total of 429 (483) medico-legal cases with 2,086 (1,878) articles were examined in the Medico-legal section. One lakh twenty-two thousand and six hundred (65,400) doses of anti-plague vaccine, 14,29,000 (15,16,920) doses of anti-cholera vaccine and 37,182 (30,050) doses of T.A.B. vaccine were issued during the year.

5. *Vaccine Institute.*—A total quantity of vaccine lymph sufficient for 14,57,880 (13,94,950) cases was issued for general use during the year. The cost of vaccine lymph produced during the year under report worked out to 4 pies (4 pies) per case.

6. *Bureau of Epidemiology.*—The spraying of villages endemic for plague with D.D.T. as an experimental measure during the previous years was continued with good results during the year. D.D.T. spraying in all the rural areas and also urban Municipal areas endemic for malaria under the N.M.C. Programme sponsored by the Government of India brought down the incidence of plague also. The usual preventive and control measures were also undertaken in respect of plague, cholera and small-pox.

7. *Bureau of Malariology.*—The Health Unit activities in the State were quite satisfactory during the year under report. Studies in connection with the duration of residual effects against mosquito by applying D.D.T. were continued during the year in Mandya and Saklespur areas. The application of D.D T. dosage to 100 m.gms. per square foot was standardised and found economical in rural parts, the spraying being repeated once in six months. This was done systematically under the N.M C. Programme, in all the malarious tracts of the State. Malaria having broken out in a virulent form in Kolar District during the year, a special survey was conducted and it was found that the spleen index was 47 per cent and the parasite rate was 47·5 per cent Residual insecticidal spraying with D.D.T. was immediately undertaken on an intensive scale and the epidemic was brought under control. In other areas *viz.*, Chitaldrug, Arsikere and Chicknaikanahalli malaria appeared in an epidemic form and was brought under control by taking

up effective measures. During the year, a total population of 37,60,299 in 24,198 villages and 65 towns were given protection against malaria by applying indoor residual insecticides, in 11,42,915 houses as against a total of 12,35,561 houses in the area covered by spraying. With a view to extend the N.M.C. Programme to malarious tracts of Bellary and Chitaldrug Districts one more N.M.C. Unit was sanctioned during the year in addition to the five units that were already working in the State since 1953.

General.—Free distribution of skim-milk-powder under the UNICEF scheme was continued during the year. A total quantity of 1,56,000 lbs. of milk powder was distributed to the vulnerable age groups in the State. The UNICEF also supplied 52 Maternity kit bags for the use of Nurses and Midwives working in the Health Units.

Mass Rural Eye Clinic Camps by the State Ophthalmological Society were organised at Konanur and Thirthahalli in April and October 1954. A total number of 1,012 persons suffering from various eye diseases was examined and treated and 361 cases were operated.

During the year under report, the B.C.G. Mass Vaccination Scheme was continued. A total number of 6,45,366 persons was tested, of which 1,90,625 cases were positive and 2,84,586 negative. Two lakhs eighty-two thousand nine hundred and one persons were vaccinated with B.C.G.

A number of representatives of the international Organisations, *i.e.*, the W.H.O. and the Rockefeller Foundation and some Officers of the Health Ministry of the Government of India visited the State and looked into the activities of the Department in the Ramanagaram Health Training Centre and other places of importance from the point of view of Public Health.

Dr. T. Chandrasekharaiya, Director of Public Health, held charge of the Department and the work of the Department during the year was satisfactory.

R. J. REGO,

Revenue Secretary to Government.

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ANNUAL REPORT OF THE MYSORE STATE DEPARTMENT OF PUBLIC HEALTH, 1954.

Health Administration.

General.—Dr. T. Chandrasekharaiya, B.A., M.B.B.S., M.P.H., continued to be the Director of Public Health during the year. He was on tour for 126 days and visited 68 towns and 57 villages on inspection of general sanitation, vaccination, water supply, control of epidemics, malaria control programmes, selection of sites for village extension and of the work of the staff of the Health Units.

During the year, he attended the meetings of the Bangalore and Mysore City Improvement Trust Boards Standing Health Committee meetings at Mandya, Public Health Board meeting held in May 1954, Industrial and Testing Laboratory and the various other meetings held in Bangalore, Mysore and Bhadravati, Shimoga and Lakkavalli in connection with the Lakkavalli Reservoir Project.

He gave two radio talks on the following subjects at the All-India Radio, Mysore :—

(1) Health and Sanitation.

(2) B.C.G. Vaccination.

He continued to hold the following offices, as in the previous years :—

(1) Secretary to the Public Health Board.

(2) One of the Directors of the Industrial and Testing Laboratory, Ltd.

(3) Member of the Sugar Cess Fund Committee.

(4) Member, City Improvement Trust Board, Bangalore.

(5) Do Mysore.

(6) Member, Visvesvaraya Canal Area Board.

(7) Chairman, Health Standing Committee.

The Director of Public Health accompanied the Minister for Public Health to attend the Second Meeting of the Central Council of Health held at Rajkot in February 1954. He also attended the Conference of the Health Secretaries held at New Delhi, during the third week of April, and the Advisory Committee of the Indian Council of Medical Research held in Baroda during November 1954.

Dr. S. Seshagiri Rau, B.Sc., M.B.B.S., M.P.H., took charge of the office of the Deputy Director of Public Health on 7th August 1954 from Dr. A. S. Venkatachalam, who retired from service as Deputy Director of Public Health. He was also in additional charge of the Bureau of Epidemiology up to 15th October 1954, when Dr. E. Anantha Rao, B.Sc., M.B.B.S., D.P.H., took charge of the Bureau of Epidemiology as its Superintendent. Dr. S. Seshagiri Rau, Deputy Director of Public Health was appointed Liaison Officer for UNICEF SKIM MILK AND DRUGS Distribution Scheme in the State.

He was on tour for 43 days in connection with office inspections, epidemic control work, skim milk and drugs distribution in the health centres and hospitals and other institutions in the State during the year under report.

Dr. M. Shama Rao, B.SC., M.B.B.S., D.P.H., M.P.H., was posted as Personal Assistant to the Director of Public Health, in place of Dr. V. Ramakrishna, M.B.B.S., D.P.H., when the latter was deputed to U.S.A. for higher studies on a W.H.O. Fellowship. He continued to be in additional charge of the Bureau of Health Education during the year under report.

During the year under report, Government were pleased to sanction the following :—

(*a*) *Deputations.*—(1) The B.C.G. Team in Mysore with the Supervising Medical Officer as its leader, attended the All-India B.C.G. Conference held at Coimbatore during November 1954.

(2) Sri K. Krishnamurthy Rao, Assistant to the Chemical Examiner, was deputed to the Chemical Examiner's Department, Madras for receiving training in all branches of Toxicology, Food and Drug analysis, etc.

(3) Sri E. R. Sunderarajan was deputed to attend the meeting of the Indian Science Congress held at Baroda.

(4) Sri V. Ramakrishna, Personal Assistant to the Director of Public Health was deputed to U.S.A. for further studies in health education on a W.H.O. Fellowship.

(5) Sri S. Ananthaswamy, Chemical Examiner and Superintendent of Laboratories, Public Health Institute was on deputation to various Laboratories at Bombay, Calcutta, Madras etc., for a period of six months on a Travel Fellowship granted by the Rockefeller Foundation. He was also deputed to attend the New Treponema Agglutination Test for Syphilis at the V.D. Laboratory of the Government General Hospital, Madras from 24th to 27th August 1954.

(6) Sriyuts M. A. Narayana Iyengar, Medical Officer of Health, K. S. Rajanna and M. R. Venkateshaiah, Assistant Medical Officers of Health were deputed for Leprosy Training Course at the School of Tropical Medicine, Calcutta for a period of one month from 12th July 1954.

(*b*) *Appointments.*—(i) Sri D. A. Lakshmana Rao and Dr. M. C. Sulkunte were transferred from the Medical Department to the Public Health Department as Senior and Junior Leprologists respectively to the Central Leprosarium, Bangalore, which was transferred to the Public Health Department.

(ii) Sri M. K. Sri Rama was appointed as Gazetted Assistant to the Superintendent, Bureau of Vital Statistics.

(*c*) *Programmes Sanctioned.*—(i) As per Government Order No. M. 4719-44—P.H. 38-54-2, dated 4th June 1954, Government have sanctioned the starting of one more National Malaria Control Unit to cover the population of Bellary District and a portion of Chitaldrug District at a cost of Rs. 1,29,414-1/15 per annum with a non-recurring expenditure of Rs. 46,978 during the first year 1954-55.

(ii) *Extension of Health Units.*—In Government Order No. M. 14062-65—P.H. 88-54-2, dated 9th October 1954 Government sanctioned formation of 12 more Health Units in the districts of Mysore, Tumkur, Chitaldrug and Shimoga.

The following proposals have been submitted to Government and sanction of Government is awaited :—

(i) A Master Plan for the future expansion of the Health Services in Mysore State.

(ii) A combined Rural Health and Nursing Health Education Project in Mysore State.

(iii) For the revival of the Bureau of Maternity and Child Welfare in the Public Health Department.

Public Health Administration in Mysore State

The Department is organised on a system of Bureaux, each Bureau being in charge of a specified branch of health work, such as Malaria Control, Vital Statistics, Health Education, Epidemic Control, etc. The District Health Administration is under the charge of the District Health Officers.

The Health Units in the department work under the direct control and supervision of the respective District Heath Officers of the concerned districts. Each Primary Centre has a full time Assistant Medical Officer of Health, who is responsible for both curative and preventive work in his jurisdiction. A number of Primary Health Centres is grouped into a Secondary Centre, which is under the control of a Medical Officer of Health. In the area comprising the Unit, the staff attend to the following, namely, the control of epidemic diseases, Maternity and Child Welfare Services, school health, health education, environmental sanitation, and curative services.

The number of Primary Health Centres and Secondary Centres in each district are as shown below :—

District	*No. of Secondary Centres*	*No. of Primary Health Centres*
Bangalore	1	1
Tumkur	...	5
Shimoga	7	43
Chitaldrug	...	5
Hassan	4	20
Bellary	...	...
Chickmagalur	5	33
Kolar	...	...
Mandya	4	18
Mysore	2	19

In addition, there are 42 modified health units, which are provided with a reduced staff.

The number of sanctioned posts during 1954 is as follows:—

	Existing (1953)	*Sanctioned*	*Total*
Health Inspectors ...	670	34	704
Assistant Medical Officers of Health	114	17	131
Midwives ...	250	43	293
Drivers ...	53	...	53
Cleaners ...	25	4	29
Mechanics ...	8	...	8
Chemists ...	3	...	3
Public Health Nurses ...	47	...	47

Note.—Out of 131 posts of Assistant Medical Officers of Health, 79 have been filled and 52 posts remained vacant due to paucity of personnel.

National Malaria Control Programme.—The National Malaria Control Programme in the State inaugurated during November 1953 has extended protection to 50 lakhs of people now. Formerly, Malaria Control operations had provided protection to about 12 lakhs of people living in areas which were known to be moderate or highly endemic for malaria. The Government of India's assistance has enabled the Department to take up areas even now of endemicity. Two rounds of spraying as scheduled were completed and the progress of work has been satisfactory. With the merger of Bellary, a sixth unit was proposed and has been sanctioned, bringing the population protected to 6 millions.

Laboratories.—The two institutions, *viz.*, the Public Health Institute and Vaccine Institute manufacture the required quantity of plague, cholera, typhoid and small-pox vaccines for use in the State. The Public Health Institute serves as a State Public Health Laboratory, where chemical and bacteriological examination of water, sewage and analysis of food and drug articles are undertaken. Further the Chemical Examiner to Government arranges for the medico-legal examination of various articles sent to him. In order to decentralise public health laboratory work in the State, a proposal for the establishment of district laboratories in each of the districts has been submitted to Government.

Vital Statistics.—The centralised system of compilation of registered births and deaths in the State has been in force since 1939. Besides collecting and compiling Vital Statistics the Bureau of Vital Statistics issues daily and weekly epidemic bulletins. The Bureau is also in charge of issue of birth and death certificates.

During the year 1,74,578 live births and 86,405 deaths from all causes were reported, showing an excess of 88,173 births over deaths. This excess was reported in all districts and cities, indicating that the state of public health was satisfactory in all malnad and maidan areas in the State. as a result of the continued working of the Rural Health Units in the State.

Epidemic diseases were practically absent throughout the State, the reported deaths from Plague, Small-pox and Cholera being only 126, 1,022 and 1,642 as compared with the normal incidence of 7,800, 4,700 and 2,300 respectively. As a preventive measure, however, 31,853 anti-plague inoculations, 1,84,735 anti-small-pox vaccinations and 5,89,097 anti-cholera inoculations were done.

During the year 86,405 deaths were reported in 10 districts (including Bellary District) and 3 Cities and the details by causes are given below :—

Plague	...	...	126
Small pox	...	...	1,022
Cholera	...	...	1,642
Malaria	...	...	15,723
Typhoid	...	...	2,889
Other Fevers	...	...	15,486
Dysentery and Diarrhoea	...	...	8,505
Respiratory Diseases	...	...	4,267
Tuberculosis	...	...	3,032
All Other Causes	...	...	33,713

From the analysis of the figures, it has been estimated that the life expectation in Mysore is about 54. It is generally agreed that with the development of health progress all over India, there is a spurt in this figure.

International Bodies.—The UNICEF has supplied 1,56,000 lbs. of milk power for distribution among the needy children in the State. They have also supplied 52 maternity kit bags for the use of Nurses and Midwives working in the Health Units.

A combined Rural Healthand Nursing Health Education project sponsored by UNICEF/WHO is under negotiation. Under this project, it is proposed to strengthen and expand the general health services of the State by developing, through the rural health units, a comprehensive programme to include maternal and child health programmes, control of communicable disease, health education and enviornmental sanitation. An important step towards this objective will be the further development of the Ramanagaram Centre for training of health personnel and to strengthen the State Nursing Administration, with a view to provide, in conformity with the needs of an expanding health programme, technical direction in the over all Nursing Education and training programmes and the nursing services.

Training Programmes (*a*) *Out-side India.*—Three Officers, *viz.*, Dr. S. V. Rama Rao, Dr. R. J. Amrutharaj, Dr. S. V. Rama Rao of this Department, who were deputed for higher studies in U.S.A. returned during the year after successfully completing their studies. One Senior Officer Dr. V. Ramakrishna of the Department has been deputed to U.S.A. for higher studies in health education.

(*b*) *In the State.*—Facilities are provided at Ramanagaram Rural Health Training Centre for giving necessary training to the health personnel recruited for the department.

The Malaria Training Centre at Mandya has been giving intensive training to the field workers in Malaria Control work.

The Bureau of Health Education has been conducting the Health Inspectors' Training Class.

Leprosy Control.—During the year under report, the Leper Asylum (which was under the supervision of the Medical Department) was transferred to the Public Health Department for being converted into a Central Leprosarium. Proposals embodying a comprehensive programme of Leprosy Control work in the State have been submitted to Government.

Five-Year Plan.—The Original Five-Year Plan contemplated the establishment of 13 Health Units at a cost of Rs. 2·40 lakhs per year. The four health units that were sanctioned in the years 1950, 1952 and 1953 under this programme, continued to function during the current year also. The remaining nine units have not been sanctioned yet. The starting of fresh health units to cover the remaining pockets left out in the 3 Malnad Districts of Hassan, Chickmagalur and Shimoga, which was contemplated in the plan at an expenditure of 10 lakhs per year (from the second year of the plan) were also not sanctioned during the year. However, twelve health units in Hiriyur, Gundlupet, H.D.Kote, Kunigal and Thirthahalli Taluks were sanctioned in October 1954 and have just commenced their activities.

B.C.G. Vaccination Scheme, Malaria Control in Bellary District, N.M.C. Programme, Tribal Health Unit at Nisna and the Central Leprosarium at Bangalore which are considered as additional schemes coming under the First Five-Year Plan, were continued during the year.

One additional N.M.C. Unit for the Bellary area was sanctioned during June 1954 and the Unit started working from December 1954.

Community Project and N.E.S. Blocks.

Health Units in the Community Project area in Shimoga district was continued during the year. During the year, a Lady Doctor with dispensary staff consisting of a Compounder, Midwife, etc., was sanctioned and a planned programme of maternal and child welfare work is being conducted. It is proposed to provide a jeep for intensive itineration of the Lady Doctor in the Project Area.

The existing seven N.E.S. Blocks, *viz.*, Gundlupet Block, Ramanagaram Kanakapura block, Holenarasipur-Arkalgud block, Koppa-Narasimharajapura block, Harihar-Davangere block, Sidlaghatta block and Turuvekere block, were augmented by seven more blocks during the year. The additional blocks are Mudigere block, Holenarasipur-Arkalgud block, Siruguppa block, Holalkere block, Srinivaspur block, Chandrasekharapura-Hebbur block and the Malavalli block. The Malavalli block was formed by the conversion of the pilot training-*cum*-service Development Project at Malavalli. Varying number of full fledged or modified health units are functioning in the Gundlupet, Ramanagaram-Kanakapura, Holenarasipur-Arakalgud, Koppa-Narasimharajapura, Mudigere, and Malavalli blocks. The remaining blocks are not so provided by health units, and consequently health work in these blocks has been planned on a very much reduced scale.

Proposals are before Government for the formation of health units in the Sidlaghatta taluk of Kolar district and in Kanakapura taluk of the Ramanagaram-Kanakapura block in Bangalore district. Government have accepted the offer of assistance of the Government of India for the establishment of Health Units in two N.E.S. Blocks, *viz.*, Arkalgud-Holenarasipur and Ramanagaram-Kanakapura blocks at a total cost of Rs. 98,153 per annum. Health Units in these two blocks are expected to be started during 1955.

Eye Camps.—During the year under report, 2 Eye camps were conducted one at Konanur, Arkalgud taluk and the other at Thirthahalli. One thousand eight hundred and sixty-five patients were examined, advised and treated; and 488 persons were operated.

This is a special feature undertaken by this Department in collaboration with the Mysore State Ophthalmological Society, Bangalore.

Distinguished Visitors :—

February—

Mrs. L. Muirhead, World Health Organization, Field Organizer visited the M.C.H. Centres in Mandya and Mysore Districts.

Dr. K. C. K. E. Raja, Officer on Special Duty, Ministry of Health, Government of India, visited Ramanagaram Health Training Centre and appreciated the work done at the Centre.

Mr. V. K. B. Pillai, Secretary of the Ministry of Health and Dr. T. Lakshminarayana, Adviser (Health Programmes), Planning Commission, visited Ramanagaram Health Centre.

Mr. A. C. E. Morris Attikan, Estate Attikan P.O. visited Ramanagaram Health Training Centre.

Prof. P. K. Whelpton, Head of the Department for Research in Population, Problems under the Scripp's Foundation at the Miani University, Oxford, Ohio State, U.S.A. visited Ramanagaram.

March—

Members of the Royal Institute of Chemistry visited Bhadravati and Jog in the month of March 1954.

Dr. Balfour and Dr. R. K. Anderson of the Rockefeller Foundation visited Ramanagaram.

May—

Dr. D. K. Murthy, Regional Assistant Commissioner for India, visited the Hill Tribe Health Unit, Nisna, Heggaddevanakote and expressed that the progress of work is excellent.

Mr. Thereon H. Butterworth, Health Education Adviser visited the Offices of the Director of Public Health to observe Health Education activities in the State.

June—

Sri S. V. Krishnamurthy Rao, Deputy Chairman, Council of States visited Anandapuram Health Unit.

Mrs. P. Parijatham Naidu, Assistant Chief Social Welfare Section, Planning Commission, Government of India, New Delhi, visited the tribal areas in Heggaddevankote, Gundlupet and Chamarajanagar taluks.

Col. Barkat Narain Adviser (Health), Community Project Administration, Planning Commission, New Delhi, visited the Health Units in Ramanagaram and the Development of Health programmes in the State.

July—

Smt. M. Chandrasekhar, Deputy Minister for Health, Government of India, visited Ramanagaram Family Planning Centre and expressed satisfaction at the useful work done there.

Dr. J. E. B. Mc. Phail, World Health Organisation Regional Officer, New Delhi, visited Ramanagaram and expressed that Ramanagaram is a model Health Service Centre and serves as a basis for administration and training.

Dr. Taylor, Professor of Preventive Medicine, Christian College, Ludhiana, Punjab and Dr. and Mrs. Donald Rice of the Rockefeller Foundation visited Ramanagaram and Mandya Health Centres.

September—

Dr. H. Mahler, Senior Adviser, B.C.G. Scheme, World Health Organisation, visited Krishnarajanagar, Mysore District.

October—

Leonard J. Bruce Chwatt, Malariologist in charge, Malaria Service, Nigeria, West Africa visited Malaria Investigation Centre, Saklespur and expressed that the Centre is doing First Class Research work. He also visited Ramanagaram.

Mrs. Krishna Bai Nimbalkar, Special Officer, Community Project Administration, visited Ramanagaram Health Training Centre.

Mr. H. Keiser Wilson (Denmark-Copenhagen) World Health Organisation, Senior Officer, Hyderabad, visited Belur Primary Health Centre.

Details of the work done under each Section of the Department are dealt with separately in this volume.

Budget of the Department 1954-55.

The budget of the department for the year 1954-55 was Rs. 40,29,000 for the State including 7 taluks of Bellary District that were transferred to the State's jurisdiction in October 1953.

(I) CITY HEALTH ORGANISATIONS.

BANGALORE CORPORATION

SRI M. R. GOVARDHAN, M.B.B.S , D.H.B., D.H.P.,
Health Officer.

The population of the City of Bangalore according to the Census of 1951 was 7,76,170 as against 4,06,760 in the 1941 census. There has been rapid increase in the population due to continuous influx of people not only from other parts of the State but from outside as well. Due to the increase in the population, the problem of overcrowding, increase in the slums and inadequate housing specially for the poorer classes continue to remain to be solved. Water supply is inadequate considering the needs of the growing City. Until these problems are tackled vigorously the general health of the City cannot improve further and public are exposed to the risk and dangers of infectious diseases.

During the year under report, the general health of the City remained satisfactory. Sporadic cases of Cholera and Small-pox were reported. These diseases were brought under control by prompt preventive measures.

Summary of vital Statistics

1	Area of the City of Bangalore ...	...	26·7 sq. miles
2	Population according to 1951 census	...	7,76,170
3	Population according to 1941 census	...	4,06,328
4	Births registered ...	...	25,345
5	Birth Rate ...	...	30·77
6	Still births registered ...	...	1,085
7	Deaths registered ...	...	13,563
8	Death Rate ...	...	16·47
9	Infantile deaths registered	...	29,99
10	Infantile death rate ...	...	118·4
11	Maternal deaths registered	...	32

Births and Birth Rate.—The total number of live births registered during the year was 25,345 as against 26,117 last year. Of the registered births 12,862 were males and 12,483 were females. The birth rate was 30·77 as against 33·06 last year.

The number of still births registered during the year was 1,085 as against 904 last year.

The seasonal distribution of births during the year was as follows :—

Period	*Month*	*Births.*	*Total*
First Quarter ...	January 1954	2,197	
	February	1,668	
	March	1,886	5,751
Second Quarter ...	April	1,887	
	May	2,241	
	June	1,821	5,949
Third Quarter ...	July	2,182	
	August	2,134	
	September	2,475	6,791
Fourth Quarter ...	October	2,382	
	November	2,262	
	December	2,210	6,854

The highest number of births occurred in the forth quarter of the year and the lowest in the first quarter of the year. The highest number of births were registered in the month of September and the lowest in the month of February.

Deaths and Death Rate.—The total number of deaths registered during the year was 13,563 as against 15,016 last year. The death rate was 16·47, as against 19·03 for the last year. Male deaths were 6,909 and female deaths 6,654.

Prineipal Causes of Deaths

		1953	*1954*
1	Respiratory diseases	2,968	3,018
2	Diarrhœa and Dysentery	2,548	2,034
3	Old Age	1,527	1,525
4	Premature birth	1,212	1,073
5	Tuberculosis	338	344

Deaths

Period	*Month*		*Total*
First Quarter ...	January 1954	1,389	
	February	1,089	
	March	1,123	3,601
Second Quarter ...	April	1,150	
	May	1,215	
	June	1,170	3,535
Third Quarter ...	July	1,286	
	August	1,202	
	September	1,163	3,651
Fourth Quarter ...	October	974	
	November	849	
	December	953	2,776

The above statement shows that the mortality was highest in the third quarter of the year and lowest in the fourth quarter of the year. The highest mortality was in the month of January 1954 and the lowest in the month of November 1954.

Maternal Mortality.—During the year under report there were 32 maternal deaths registered.

Briths and Deaths registered Communitywise

	Community	*No. of Births*	*No. of Deaths*
1	Hindus	20,632	10,779
2	Muslims	2,784	1,803
3	Indian Christians	1,627	801
4	Europeans	19	40
5	Anglo Indians	98	67
6	Others	185	73
	Total ...	25,345	13,563

Control of Communicable Diseases—Plague.—The Corporation was free from plague as was the case in the previous year. Preventive measures were carried out throughout the year. Systematic campaign of rat destruction

was carried out. The total number of rodents destroyed was 2,914. One lakh ninety-three thousand eight hundred and ninety-seven rat burrows were cyanogassed.

Cholera.—During the year there were five attacks and one death from Cholera, as against 96 attacks and 19 deaths reported during 1953. All possible preventive measures were taken. Twelve thousand two hundred anti-cholera inoculations were done.

Small-pox.—During the year under report 53 attacks and 20 deaths were reported, as against 399 attacks and 47 deaths reported during 1953. Twenty-eight thousand five hundred and seventy-nine primary and 89,446 re-vaccinations were done during the year.

Enteric Fever.—Seventy-one deaths were reported during the year, as against 95 deaths registered in the previous year.

Tuberculosis.—Three hundred and forty-four deaths were reported during the year, as against 338 for the last year. The Corporation Tuberculosis Dispensary continued to work satisfactorily. The mortality was greater in women than men.

Anti-malaria Work.—For the purpose of malaria control the whole area of the Corporation has been divided into six zones each under a Junior Health Inspector. The directions and guidance were given by the concerned Assistant Health Officers.

The following routine measures were adopted :—

1 Spraying of all breeding places with Hexidol and Malariol.
2 Canalisation of drains and draining of stagnant pools of water.
3 Cleaning the margins of drains and other water courses.
4 Removal of rank vegetation.
5 Monthly collection of malarial statistics from hospitals.

Conservancy and Environmental Sanitation.—The following routine work was carried out :—

1 Cleaning of roads, foot-paths, lanes, etc.
2 Collection, removal and disposal of refuse and night soil.
3 Intensive cleaning.

The old method of hand removal of night soil is still prevailing in some areas, where sewers have not yet been laid. The right of removal of rubbish and night soil from the major portion of the Corporation area was auctioned as usual. Removal of rubbish and night soil by means of Corporation lorries was done as in the previous years.

Food Control.—The various food commodities offered for sale in public and private shops were watched. Unwholesome meat, fruit, vegetables, etc., were seized and destroyed.

Surprise inspections were held in most of the slum areas and neighbourhood of toddy shops, etc., to check the sale of unwholesome and unhealthy eatables. Samples of milk, butter, ghee, oil, coffee powder etc., were seized under the prevention of Food Adulteration Act and necessary action was taken.

Inspection of Hotels and Coffee Clubs.—The Health Officer, Assistant Health Officers and Health Inspectors, regularly inspected the hotels and restaurants etc., and the bye-laws in respect of these institutions were strictly enforced.

Sanitary Police:—The Sanitary Police was engaged to prevent committal of nuisance, to remove encroachment and to prevent sale of food stuffs on foot-paths, etc.

Mobile Dispensary.—This worked as per the programme chalked out every week in different slum areas of the Corporation.

Ayurvedic and Unani Dispensaries.—The Ayurvedic and Unani Dispensaries at the Civil Station area continued to work satisfactorily.

Ambulance.—The Ambulance Vans were used for removing emergency cases to hospitals on requests from the public.

Maternity and Child welfare work:—There were eight maternity homes under the control of this Department. These continued to work satisfactorily and were popular.

The following is the statement of work done in the Corporation Maternity Homes.

1	Number of pregnant ladies examined for the first time ...	12,546
2	Number of pregnant ladies re-examined	28,429
3	Number of labour cases conducted	4,957
4	Number of children examined	64,150
5	Number of clinics held	1,662
6	Number of talks given during ante-natal work ...	1,488

In the City area, ten midwives attached to L.F. Dispensaries and Maternity Homes, attended to confinements in their respective areas in the homes of the people. They conducted 865 labour cases during the year.

Maternity and Child Welfare Centre, City Area Belimutt Road Welfare Centre.—One Lady Doctor and four midwives continued to work in this Centre. They paid house visits, gave talks on maternal and child health, arranged clinics and attended to domiciliary confinements. Number of labour cases conducted 83.

Statement of work done in Venkataramiah's Centre

1	Number of children who were daily given fresh cow's milk on an average	56
2	Number of children who were given reconstituted milk daily on an average	74
3	Number of children in the creche daily on an average ...	20

Statement of work done in Vasanthanagar Milk Centre

1	Number of Children who were daily given fresh cows' milk on an average	26
2	Number of children who were given reconstituted milk daily on an average	40
3	Number of children in the creche daily on an average ...	26

Civil Area

There are six Maternity and Child Welfare Centres under the charge of a Lady Doctor with Health Visitors, Centre Midwives and Circle Midwives carried out the programme of Health Education into homes during house

visits by means of group health talks, mother craft classes, etc. The following is the statement of work done in the Centres :—

1	Number of labour cases conducted	...	...	1,134
2	Number of ante-natal cases visited	...	...	2,999
3	Number of ante-natal cases re-visited	...	...	9,776
4	Number of visits to infants	...	...	1,270
5	Number of re-visits to infants	...	...	4,699
6	Number of toddlers first visit	...	...	462
7	Number of toddlers re-visit	...	...	7,230

Milk Centres.—All the milk centres continued to work satisfactorily. Sixty-one thousand five hundred and sixty seers of milk were distributed at these centres during the year.

Markets and Slaughter House.—These were maintained properly and in sanitary condition.

MYSORE CITY

SRI A. R. SUNDARA RAO, M.B.B.S., D.P.H., M.P.H.,
Health Officer

Sri A. S. Venkatachalam, L.M.S., D.P.H., continued to be the Health Officer till 28th April 1954. Consequent on his appointment as Deputy Director of Public Health in Mysore, he handed over charge to Dr. B. S. Kuppanna, Assistant Health Officer. On 10th July 1954 Dr. A. R. Sundara Rao took charge from Sri B. S. Kuppanna and continued to be the Health Officer till the end of the year.

Dr. B. S. Kuppanna continued to be Assistant Health Officer, till 24th November 1954. Unfortunately, he died suddenly while on duty on 24th November 1954. The Assistant Health Officer's post remained vacant for the rest of the period under report,

EPIDEMICS

Plague.—The City was free from Plague during the year. Precautionary measures like systematic cyanofumigation and disinfection that were undertaken by the Health staff were greatly responsible for this. Twenty-six thousand eight hundred and seventy-five houses were cyanofumigated and 211 houses were disinfected during the year as against 31,703 houses cyanofumigated and 166 houses disinfected during the previous year.

Small-pox.—As a result of the precautionary measures undertaken by the Health Department, the City was free from Small-pox. In 1953, 11 attacks and 6 deaths from Small-pox were reported. A total number of 20,799 vaccinations were conducted during the year, of which 7,385 were primary and 13,414 were re-vaccinations as against 6,498 primary and 13,839 re-vaccinations during the previous year. The percentage of success among the primary vaccinations was 98·76 while that in respect of re-vaccinations was 31·1.

Cholera.—The City was free from Cholera during the major portion of the calendar year. As forecasted by the Director of Public Health in Mysore, Bangalore, cholera broke out at the tail end of the year *i.e.*, during the last week of December 1954. In all, 27 attacks and 5 deaths were reported from Epidemic Diseases Hospital as against 9 attacks with 3 deaths during the previous year, of which 2 attacks and 2 deaths were imported from outside the State and indigenously 25 attacks and 3 deaths occurred. Eighteen thousand four hundred and seventy-nine anti-cholera inoculations were performed. Two hundred and eleven houses were disinfected and 180 wells were chlorinated. In 1953, 4,783 cholera inoculations had been done, 166 houses had been disinfected and 230 wells had been chlorinated.

Two doctors were deputed on special duty from the Krishnarajendra Hospital and a private doctor was appointed by the Municipal Council to conduct inoculations. All the private practitioners in the City had also been requested to conduct anti-cholera inoculations in the various mohallas. The independent general practitioners co-operated freely in the mass anti-cholera inoculation work.

Typhoid.—Forty-seven attacks with 39 deaths from typhoid were reported during the year, as against 130 attacks with 12 deaths reported during the previous year. Water samples from all the infected houses were collected and tested and whenever the samples were found unsatisfactory, the Superintendent, Vani Vilas Water Works was promptly requested to remedy the defect. The sale of exposed cut-fruits and other articles of food was prevented by taking intensive drive to seize and destroy such articles, in the evenings and also during the school hours near the schools. Eight hundred and fifty-nine anti-typhoid inoculations were done during the year.

Diphtheria—The Diphtheria Immunization Scheme launched by the Municipal Council on 11th November 1953 was continued during the year. In the beginning, a Private Doctor and later two doctors deputed from Krishnarajendra Hospital were attending to anti-diphtheria immunisation work. On 20th September 1954 a local doctor, Dr. B. S. Suryanarayana Rao was appointed by the Council for this work and he was in charge of the diphtheria control operations during the remaining part of the year. The scheme became more popular and a total number of 12,202 inoculations were performed, out of which 9,123 inoculations were first shots, 2,261 second shots and 818 third shots.

One hundred and seventy-eight attacks with 27 deaths were reported during the year, as against 167 attacks and 19 deaths during the previous year. All the infected houses were disinfected and all the contacts were inoculated against diphtheria and whooping cough. Four hundred and sixty-three tubes of A. D. Serum were issued from the office as a curative to the patients of which 320 were issued free of cost as parties were reported to be poor and 143 on payment. A sum of Rs. 715 was realised by the sale of A. D. Serum tubes sold.

It was found that it was advantageous to conduct diphtheria inoculations in Schools as it was comparatively easy to complete the course by giving them second and third doses and thus immunize a large number of children against diphtheria and whooping cough. Inoculations of children under 10 years were conducted in primary and middle schools systematically and successfully with the fullest co-operation of the heads of schools and their staff and the parents of the children,

Malaria.—Twenty-seven deaths were reported from malaria during the year. The acquisition of gardens which were the breeding places of mosquitoes was actively pursued during the year. The areas bordering the gardens like Srinivasan Agrahar and Rajaram Agrahar, the black spots for mosquito menace received special attention of the anti-malaria staff. All the houses in these Agraharas were sprayed with D.D.T free of cost. Oiling of marshy places and stagnant pools with malariol and filling up of pits and trimming of marginal hedges was also undertaken by the malaria gang in an attempt to rid the City of the mosquito nuisance.

Eight thousand and four hundred gallons of malariol were utilised during the year, as against 6,586 gallons during the previous year.

D.D.T. and *Gammexane Spraying.*—A total number of 315 houses were sprayed free of cost and 164 houses at the cost of the parties as against 199 houses sprayed free of cost and 62 houses at parties cost during the previous year. A sum of Rs. 497-10-0 was realised by spraying of D.D.T. during the year.

Gammexane was also made use of for spraying and 17 houses were sprayed free of cost and 125 houses at the cost of the parties as against 12 houses and 80 houses respectively during the previous year. A sum of Rs. 299-4-0 was collected by spraying Gammexane.

Vital Statistics.

Births.—The population of Mysore City as disclosed by the Census of 1951 is 2,44,334. The number of births registered during the year was 6,878 as against 7,405 during the previous year. Out of the total number of births 6,097 were conducted in the Hospitals, 711 by Midwives attached to the dispensaries and the Gunamba Trust and 70 by other Dais and untrained persons. 89·5 per cent of labour cases received skilled attention during confinement as against 98 per cent during the previous year. The birth rate is 27·8 per cent as in the previous year.

Deaths.—The number of deaths registered during the year was 3,255 as against 3,348 registered during the previous year. The death rate was 13·32 as against 13·6 during previous year.

Maternal mortality.—The number of women that died of child birth was 38, giving a mortality of 6 31 as against 86 women that died and maternal mortality of 10·5 per cent during the previous year.

The main cause of maternal death was anaemia of pregnancy which accounted for 20 deaths as against 42 deaths during the previous year due to the same cause.

Infant mortality.—The number of infants under one year that died during the year was 286 as against 683 in the previous year yielding an infant mortality rate of 86·07 per 1,000 live-births as against 89·4 per 1,000 live-births during the last year.

The chief causes of Infant mortality were :—

(1) Pre-maturity, (2) Convulsions, (3) Respiratory Diseases, (4) Congenital debility, (5) Marasmus, (6) Diarrhoea, (7) Dysentery and (8) Jaundice.

Maternity and Child Welfare.

The Gunamba Maternity and Child Welfare Trust (the Health Officer of the City Municipality is its Joint Secretary) and its branches continued its good work during the year and received a monthly contribution of Rs. 730 from the Municipality. The trained midwives of the Trust attended to Ante-natal, Natal, and Post-natal work under the supervision of a Health Visitor and a Lady Doctor.

The following Centres received financial assistance from the Municipality during the year:—

			Rs.
1	Mallamma Milk Centre ...	...	200
2	Subramanya Milk Centre	...	200
3	Sri Meenambal Milk Centre	...	150
4	Sri Vani Vilas Milk Centre	...	120
5	Silk Factory Milk Centre	...	60
	Total	...	730

Laboratory work.—The permanent Chemist was transferred to Delhi (Government of India Service) on 18th July 1953. The post of the Laboratory Chemist remained vacant during the year for want of a suitable hand and the routine analysis of food, etc., could not be conducted.

Four hundred and forty-six water samples were examined bacteriologically and chemically during the year, of which 441 were from the taps and five from wells as against 586 samples analysed during the previous year.

General Sanitation.—High standard of general sanitation was maintained in the City throughout the year. The City's sweepings were partly transported to the Municipal Farm for the preparation of compost and partly utilised for filling up the low lying areas in the City.

Intensive cleaning work was undertaken every Saturday in a selected area, worst slums being selected for the purpose.

Visitor.—Dr. Rajendra Prasad, President of India visited the City in August 1954.

KOLAR GOLD FIELDS CITY.

Dr. K. S. Nanjundiah, M.B.B.S., D.P.H.,
Medical Officer of Health.

Dr. K. S. Nanjundiah, M.B.B.S., D.P.H., continued to be in charge of Health Section during the year.

The Government in their Order No. L.B. 9564-67—L.B. 22-54-6, dated 7th December 1954 have sanctioned one post of Public Health Nurse to Roberts pet Child Welfare Centre, attached to Kolar Gold Fields Sanitary Board, in place of the present Health Visitor.

The population in the entire area is 1,59,158 as per 1951 Census, of which 88,472 live in the Mining Area, 45,981 in the Urban Area and the rest in the villages indirectly administered by the Sanitary Board.

The state of Public Health in Kolar Gold Field Area was satisfactory during the year 1954 though there were a few mild outbreaks of Cholera, Plague and Small-pox during the period. These were brought under control by appropriate measures.

Communicable Diseases.

Plague.—Thirty-four attacks and six deaths from Plague were reported during the year as against nil during the previous year. Of these, 24 attacks with four deaths were from Kolar Gold Field Sanitary Board Area proper and 10 attacks with two deaths among persons who came from outside Kolar Gold Field Sanitary Board Area.

Anti-Plague Measures in Kolar Gold Field Sanitary Board Area.—

(*a*) Number of anti-plague inoculations done ...	4,922
(*b*) Number of houses cyanogassed ...	267
(*c*) Number of houses sprayed with Hexedol and D.D.T.	1,028
(*d*) Number of rats destroyed	17,096

Small-pox and Vaccinations.—There were six attacks and one death due to Small-pox during the year as against 30 attacks and five deaths during the previous year. Of these, five attacks with one death were from mining area and one attack with nil death were from non-mining area. All these cases were admitted into the E.D. Hospital for treatment and infected houses were disinfected. All the contacts were vaccinated.

A total number of 32,078 vaccinations were done. Out of which 5,199 were primary and 26,879 were re-vaccinations during the year under report. The success rate being 97 per cent and 43 per cent as against 97·6 per cent and 41·4 per cent respectively in the previous year.

The following is the brief summary of attacks and deaths from small-pox and vaccinations conducted from 1949 up to 1954 :—

Year	Number of		Number of Vaccinations		
	Attacks	Deaths	Primary	Re-vaccinations	Total
1949 ...	155	26	8,565	70,815	89,380
1950 ...	70	23	4,591	31,084	35,675
1951 ...	52	19	4,343	13,431	17,774
1952 ...	34	11	5,554	20,625	26,179
1953 ...	30	5	6,331	40,725	47,056
1954 ...	6	1	5,199	26,878	32,078

(Population 1,59,158)

From the above statement it could be seen that the attacks of Small-pox which is maximum, *i.e.*, 155 during the year 1949 have reduced in number in the next successive years and there were only six attacks during the year

1954. This fall may be attributed to the rise of immunity status of the population in Kolar Gold Fields area by primary vaccination of all children every year and re-vaccination of the total population once in at least five years.

Control of cholera—There were 10 attacks and seven deaths from Cholera during the year as against 27 attacks and 11 deaths in the previous year. Of these nine attacks and six deaths were from the mining area and one attack and one death from Sanitary Board Area. All these cases were admitted into the E.D. Hospital for treatment. All the infected and neighbouring houses were disinfected. Drinking water wells were chlorinated.

There was an outbreak of Cholera in the Mining Area during the latter part of the previous year (*i.e.*, September 1953 to December 1953) and the sporadic cases of cholera continued to occur in mining area in the month of January and February 1954. During the rest of the period of this year (*i.e.* March to December 1954) the area was free from Cholera.

As a preventive measure holding of one jatra during February 1954 at Peddapally was prohibited. A total of 6,531 anti-cholera inoculations were done in Kolar Gold Field Area during the year.

Typhoid.—Sixteen deaths were reported from Typhoid during the year. The houses of these patients were disinfected along with the houses of neighbouring houses and contacts were protected against Typhoid by T.A.B. inoculation.

Diarrhoea and Dysentery.—Two hundred and eighty deaths were reported under this cause during the year. The premative methods of night soil removal and disposal of this are perhaps, responsible for this high incidence. It is hoped, that with the introduction of underground sewage system the Bowel complaint will be reduced.

Rabies.—There were no deaths reported due to Hydrophobia during the year under report as against four deaths in the previous year. Five hundred and twenty-five dog bite cases were registered during the year. Two hundred and sixty-two dogs were kept under observation for rabies. A total of 266 persons were bitten both by stray and rabatic dogs and they were given anti-rabic treatment at the Health Office, Robertsonpet, Kolar Gold Field. One thousand and seventy stray dogs were destroyed during the year.

Maternity and Child Welfare.—The two Midwives continued to work during the year in addition to the Lady Health Visitor. One midwife was in charge of Andersonpet area and the other Robertsonpet area. The Lady Health Visitor was in charge of Robertsonpet Child Welfare Centre.

The statement appended below shows the work done during the year 1954 :—

(i) Number of visits paid to houses	...	8,585
(ii) Number of pregnant women seen	...	3,089
(iii) Number of labour cases conducted	...	328
(iv) Average number of babies given cows milk daily		24
(v) Average number of persons fed with skimmed milk daily.		265
(vi) Quantity of cows' milk distributed during the months of September, October and November 1954.		850 lbs.

(vii)	Number of oil baths given	614
(viii)	Number of ordinary baths given ...	764
(ix)	Number of minor treatments given to babies ...	342
(x)	Number of women attended the anti-natal clinic	227
(xi)	Quantity of skimmed milk issued ...	7,262 1/3 lbs.

Laboratory work.—Ten blood-smears were examined for " B " Anthrex at this office and all found negative and 12 dead rats were dissected and examined for B. pests of which two were found positive.

Sanitation.—There is no underground drainage in the area. It is still under correspondence with Sanitary Engineer. During the year the raw sewage from the town was being utilised by agriculturist. Compost manure was being prepared from refuse and night soil collections and sold to the public. During the year a sum of Rs. 3,380* was realised by sale of 1,677 tons of compost manure.

Introduction of hand flush out latrines in dwelling houses was continued during the year. Fifty-two hand flush out latrines in private houses was introduced.

The conservancy work of the area was maintained as usual during the year by routine inspections by the Medical Officer of Health and Health Inspectors.

The following is the brief summary of other activities of the staff:—

1	Number of visits paid to houses ...	2,418
2	Number of visits paid to hotels ...	100
3	Number of visits paid to coffee and tea shops.	395
4	Number of visits paid to mutton stalls ...	100
5	Number of visits paid to bakeries ...	140
6	Number of visits paid to ærated water factories	68
7	Number of visits paid to markets ...	117

During the above visits the major defects noticed were dealt with as hereunder:—

1	Number of Notices issued	188
2	Number of Notices complied with ...	120
3	Number of prosecutions launched ...	84
4	Number of cases ended with conviction ...	54
5	Number of cases withdrawn	5
6	Number of cases ended with acquittal ...	7
7	Number of cases pending	18

Jatras.—Holding of three jatras were permitted in this area during the year in the following places:—

(i) Robertsonpet, (ii) Pitchappally, (iii) Kammasandra. One jatre at Peddapally was stopped due to cholera infection. During the jatras, the area was kept clean and the drinking water was regularly chlorinated every day during the jatra period.

Water Supply.—As in the previous year filtered and chlorinated water was supplied to Robertsonpet, Andersonpet, Ooragaum village and Masikam blocks and mining area from Bethamangala Water Works. The fortnightly bacteriological examinations done at the Kolar Gold Field Hospital revealed that water was fit for drinking purposes. The main sources of drinking water to the villagers were from draw wells which were chlorinated as and when needed.

Health Education.—Six hundred and fifty talks were given by the Health Inspectors on the various subjects of Public Health and its importance.

Vital Statistics.

Births.—There were 6,059 confinements during the year. Out of which 5,856 were live births and 193 still (births) born. One thousand and seven hundred and ninety-three cases were conducted by the localmaternity hospital, Robertsonpet. Three thousand one hundred and thirty-four cases were conducted by the Midwives in the mining area and 328 cases were conducted by the two midwives of the Sanitary Board Area and 804 cases were conducted by other dais etc. The birth rate per mille of population was 37 as against 40·9 in the previous year 1953.

Deaths – There were 2,228 deaths during the year from all causes. Of these 1,577 occurred in the mining area and 651 in the Sanitary Board Area. Death rate of 14 per mille of population as against 15·7 in the previous year 1953 was recorded.

Classification of Deaths (according to age groups) :—

1	Under one year of age ...	...	498
2	One year and under five years ...	...	642
3	Five years and under 10 years ...	...	113
4	Ten years and under 15 years ...	...	50
5	Fifteen years and under 20 years	...	32
6	Twenty years and under 30 years	...	124
7	Thirty years and under 40 years	...	124
8	Forty years and under 50 years	...	87
9	Fifty years and under 60 years...	...	123
10	Sixty years and above ...	...	435
	Total	...	2,228

Infant Mortality.—There were 498 infant deaths under one year of age during the year giving infant mortality rate of 85 per 1,000 live births as against 96·8 in the previous year. The principal causes of infant mortality were :—

1	Debility ...	...	175
2	Convulsion ...	...	93
3	Pre-maturity ...	...	72
4	Diarrhoea ...	...	27
5	Dysentery ...	...	21
6	Other abdominal diseases ...	...	9
7	Bronco Pneumonia ...	...	35
8	Malnutrition ...	...	4
9	Other causes ...	...	62
	Total	...	498

There were 18 maternal deaths out of 5,866 live births giving maternal mortality rate of three per 1,000 live births.

(2) DISTRICT HEALTH ORGANISATIONS.

BANGALORE DISTRICT.

DR. K. RAMA RAO, B.SC., M.B.B.S., D.P.H.,
District Health Officer.

General.—Sri K. Rama Rao, B.SC., M.B.B.S., D.P.H., continued to be in charge of the District Health Organisation.

Epidemic Control work.—During the year 117 villages and five towns were affected by Cholera resulting in 194 attacks with 108 deaths. All taluks except Devanahally taluk were affected. Forty-five thousand eight hundred and seventy-two anti-cholera inoculations were conducted and 392 wells were chlorinated and 160 houses were disinfected in addition to Hexidole spraying.

Plague.—Three villages reported plague infection in Hoskote taluk with four attacks and nil death. Four hundred and ninety-five anti-plague inoculations were conducted and 55 houses were sprayed with Hexidole.

Small-pox.—Thirteen villages were affected in Kanakapura, Bangalore North, Bangalore South, Dodballapur taluks on account of small-pox with 45 attacks and nine deaths. During the year, 66,254 vaccinations were conducted out of which 35,849 were primary and 30,405,were re-vaccinations. These vaccinations were conducted mainly by the District Board staff and the Municipal Health Inspectors. Ninety-seven per cent of Primary vaccinations and 21 per cent of re-vaccinations were found to be suceessful.

Malaria Survey.—Malaria survey of six villages in Ramanagaram taluk were conducted in September 1954 and spleen rate was found to be eight per cent. Two more villages of the same taluk were surveyed in November and the spleen rate was nil.

Jatras.—Health Inspectors of this office were deputed for supervision of sanitary arrangements in 20 jatras held during the calendar year 1954 and in Ghati Subramanyaswamy jatra anti-cholera inoculations were conducted as precautionary measure.

Hand flush latrines.—Hand flush latrines were introduced in Hindustan Aircraft Sanitary Board Area and in some of the municipalities.

Inspections.—The District Health Officer visited the town municipalities for inspection of vital statistics and checking of vaccinations, etc. He also visited various villages for epidemic control work, inspection of vaccinations done by the District Board staff, supervising jatra sanitation work and selection of sites for building dwelling houses.

The public health of the district was satisfactory during the year.

HEALTH TRAINING CENTRE, RAMANAGARAM, (BANGALORE DISTRICT).

DR. S. KRISHNASWAMY RAO, M.B.B.S., D.P.H., M.P.H.,
Health Officer.

Dr. S. Krishnaswamy Rao, M.B.B.S., D.P.H., M.P.H., Health Officer, Class II, continued to be in charge of the Centre during the year.

Alterations to the Health Training Centre building started in the latter part of 1953 for locating Maternity Hospital temporarily were continued during the year and some of them were completed. Also, fresh constructions like, construction of septic ward and dead house were started during the year but progress has been slow.

As per letter No. F. 15-12—54-P, dated 13th November 1954 from the Under Secretary to the Government of India, Ministry of Health, New Delhi, to the Director General of Health Services, New Delhi, and copied to the Secretary to the Government of Mysore, Revenue Department, Bangalore, Government of India agreed that the Family Planning Centre, Ramanagaram, should be placed under the administrative charge of the Director of Public Health, Mysore, who will be assisted by the Health Officer, Health Training Centre, Ramanagaram, for supervising the work of the Centre.

During the last 25 years local health centres or units have been established in many areas of the world for comprehensive health care of the population. From these areas a considerable amount of knowledge and experience has accumulated which if properly collated and analysed would be possible to organise programmes of study on various aspects of local health on a world wide basis, in the existing health centres or units, through the collaboration of the concerned Governments and such a study would no doubt help to guide and promote the future development of Health Service in different parts of the world.

As a first step in initiating such a programme of the World Health Organisation convened a meeting of the study group in Geneva for 5 days beginning in December 1954 and in letter No. PHA-PH—8, dated 4—26th October 1954 to Dr. Krishnaswamy Rao, Health Officer, Health Training Centre, Ramanagaram, an invitation was extended to him by the Director, Public Health Administration, World Health Organisation, to participate in the discussion group. The meeting lasted for 5 days beginning December 1954 and the group suggested a programme of local health study.

In their Order No. M. 16998-96—PH., dated 23rd—24th November 1954 the Government sanctioned the deputation of the Health Officer, Ramanagaram, to attend a Conference of Rural Health Workers organised under the auspices of the World Health Organisation at Geneva. The Health Officer attended the Conference which lasted for 5 days beginning December 1954.

The opportunity was availed of by the Health Officer to read a report before the Committee of World Health experts on Rural Health on the Organisation and working of the Health Training Centre, Ramanagaram. It is a matter for gratification that the experts appreciated the method of approach and the results achieved by the Training Centre, Ramanagaram.

The question of undertaking rural health studies under the auspices of the World Health Organisation in Ramanagaram Health Training Centre area is under active consideration of the international body. To participate in an enquiry sponsored by the World Health Organisation is a fitting recognition of the quality of rural health turned out so far at Ramanagaram Health Training Centre, since its inception in 1936.

The objective of the local health study is to further the knowledge on optimal development of an effective health service for raising the health levels of the people in local communities in order to enable the Organisation to best assist Governments in developing their local health services. The approach to this goal will be through the co-ordination, encouragement and promotion of research or field investigation, with a view—

(1) to study the measurement of health and factors affecting community, family and individual health ;

(2) to elicit methods of practical application of the guiding principles enunciated above and any others that might be evolved from the study ;

(3) to work out measures for organising integrated health services ;

(4) to determine how development in health can be most effectively co-ordinated with social, cultural and economic developments ; and

(5) to discover ways of assessing the efficacy of different types of health services.

During the year under report the staff of the Centre were on duty as detailed in the following statement.

Staff on duty (in man days) during the calendar year 1954.

Serial No	Staff	No.	No. of working days	No. of days on duty	Per cent				Remarks
					1951	1952	1953	1954	
1	Health Officer ...	1	365	350	100	100	100	96	.....
2	Assistant Health Officer	1	365	360	94	88	100	97	.....
3	Senior Health Inspectors	6	2,190	1,848	92	93	87	84	5 Sr. Health Inspectors were working during the previous years.
4	Public Health Nurse ..	5	1,825	1,596	82	100	100	87	.....
5	Junior Health Inspectors	3	1,095	1,027	97	98	88	94	1 Jr. Health Inspector was working during the previous years.
6	Midwives ..	19	6,935	6,274	95	91	81	90	.....
7	Ministerial staff ...	3	1,095	1,070	95	97	90	98	2 Clerks were working during the previous year.
8	Assistant Medical Officer of Health.	1	365	365	95	100	88	100	.....
9	Compounders ...	2	730	730	...	...	90	100	.....
10	Lady Assistant Surgeon	1	365	365	...	...	100	100	Working since April 1953.
11	Lady Compounder ...	1	365	365	...	...	100	100	Do
12	Vaccinator ...	1	365	348	...	...	...	96	.....
	Total ...	44	16,060	14,698	93	94	92	91	

Financial statement of the Health Training Centre, Ramanagaram, for the year 1954.

Sl. No	Major Head	Minor Head	Sub-head	Expenditure	Total	Per cent	*Per capital*	Payment made for previous year
			I. IMPERSONAL SERVICE.	Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.
1	Establishment Charges.	A. Supervision Charges	Health Officer ...	4,467 2 0	.....	...	...	...
	Do ...	Do ...	Assistant Health Officer ...	2,230 0 0	.....	...	...	...
	Do ...	Do ...	Travelling Allowance ...	37 10 0	6,734 12 0	6·0	0 1 4	...
	Do ...	B. Ministerial Charges	Clerks ...	2,862 14 0	.....	...	...	...
	Do ...	Do ...	Menials ...	5,534 2 0	.....	...	...	111 0 0
	Do ...	Do ...	Compounders ...	881 13 0	.....	...	...	...
	Do ..	Do ...	Travelling Allowance ..	209 13 0	9,488 10 0	8 5	0 1 11	...
	Do ...	C. Executive Charges...	Health Inspectors ...	11,945 8 0	.....	...	...	...
	Do ...	Do ...	P.H. Nurses ...	912 11 0	.....	...	...	...
	Do ...	Do ...	Midwives ..	10,773 5 0	.....	...	...	1,119 0 0
	Do ...	Do ...	Vaccinator ...	943 2 0	.....	...	...	110 0 0
	Do ...	Do ...	Travelling Allowance ...	350 13 0	30,925 7 0	27 9	0 6 4	...
2	Equipment Charges	A. Drugs ...	Drugs ...	2,000 0 0	2,000 0 0	1·8	0 0 5	...
	Do ...	Do ...	Vaccines ...	2,126 14 0	2,126 14 0	1·9	0 0 6	...
	Do ...	Malaria Control ...	Cost of D.D.T. ...	16,038 0 0	.....	...	...	...
	Do ...	Do ...	Cost of petrol and other automobile requirements.	220 0 0	.....	...	...	...
	Do ...	Do ...	Establishment and wages ...	1,912 0 0	.....	...	...	...
	Do ...	Do ...	Implements ..	200 0 0	18,370 0 0	16·5	0 4 8	...
		Recurring	II. PERSONAL SERVICE					
1	Establishment Charges.	Supervision charges ...	H.U. Dispensary ...	5,429 0 0	.....	...	...	...
	Do ...	Do ...	T.A. ..	41 5 0	5,470 5 0	5·0	0 1 2	...
	Do ...	Do ...	Drugs ...	2,000 0 0	2,000 0 0	1·8	0 0 5	...
	Do ...	Do ..	Maternity Hospital ...	7,602 5 0	.....	...	...	...
	Do ...	Do ...	T A. ...	1 8 0	7,603 13 0	6·2	0 1 7	...
	Do ..	Do ...	Drugs ...	4,000 0 0	4,000 0 0	8·6	0 0 10	...

Financial statement of the Health Training Centre, Ramanagaram, for the year 1954.—*concld.*

Sl. No.	Major Head	Minor Head	Sub-head	Expenditure	Total	Per cent	*Per capita*	Payment made for previous year
			Non-recurring	Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.
	Establishment Charges.	Supervision Charges ...	Furniture ...	1,085 5 0	.....	...	...	...
	Do ...	Do ...	Instruments ...	812 6 3	.....	...	...	...
	Do ...	Do ..	Contingencies ...	158 8 0	2,056 3 0	1·9	0 0 5	...
			III. MUNICIPAL CHARGES.					
	Environmental Sanitation.	A. General Sanitation	....	13,356 0 0	.....	...	...	...
	Do ...	Water Supply ...	....	7,010 0 0	20,366 0 0	18·1	1 5 4	...
	Do ...	B. Epidemic Control ...	....	648 0 0	648 0 0	0·8	0 0 8	...
			Total ...	111,790 0 3	111,790 0 3	100·0	...	1,340 7 0

	Rs. a. p.
Per capita expenditure for Urban area	2 8 8
Per capita expenditure for Rural area	1 2 8

Note.—The expenditure incurred by the District Board for Public Health Programme for this area is not included.

Vital Statistics

One important feature to be noted is in the significant difference in crude birth, death and infant mortality rates between the rural and semi-urban population of the centre.

Three thousand two hundred and sixty-eight live births and 1,114 deaths from all causes have been recorded for the year as against 3,171 live births and 960 deaths from all causes in the year 1953. Also 377 infant deaths and 15 maternal deaths were recorded during the year as against 354 and 18 respectively for the year 1953. Birth Rate 42; Death Rate 14·3 and infant mortality rate 115·4.

Three thousand two hundred and sixty-eight live births recorded for the year 1954 gives a birth rate of 42 and 1,114 deaths, a crude death rate of 14·3. Amongst 1,114 deaths, 377 were deaths in children under one year age, giving an infant mortality rate of 115·4.

Table 1

Important Vital Statistics from the year 1950 to 1954 (both years inclusive).

		1950	1951	1952	1953	1954
1.	Mid-year population ...	69,936	71,874	73,865	75,899	77,904
2.	Live births	2,803	2,873	3,183	3,171	3,268
3.	Birth rate (crude) ...	40	40	43	42	42
4.	Deaths	944	1,132	1,028	960	1,114
5.	Death rate (crude) ...	13	16	14	13	14
6.	Infant deaths ...	372	354	393	354	377
7.	Infant death rate ...	132	123	123	112	115
8.	Maternal deaths ...	12	13	13	18	14
9.	Maternal death rate ...	3	4	4	5	4
10.	Still births ...	79	91	94	96	108
11.	Still birth rates (per cent on live births).	5	3	3	3	3

Table 2

Rates for 1954 by divisions and for agrarian and semi-urban population of Health Training Centre, Ramanagaram.

Serial No.	Division	Mid-year population	Distribution of population in per cent	Crude Birth rate	Crude Death rate	Infant death rate	Maternal death rate	Still birth rate
1	A Division including Ramanagaram Town.	22,592	29 0	41·8	11·1	76·5	8·1	5·4
	(*a*) 'A' Rural ...	7,323	9·4	46·0	14 5	119·0	3·0	3·9
	(*b*) 'A' Urban ...	15,269	19·6	39·3	9·4	51·0	9·3	6·2
2	'B' Division ...	11,374	14·6	47·3	13·9	120·8	5·4	2·4
3	'C' Do ...	15,580	20 0	39·8	15·4	116·1	3·1	1·4
4	'D' Do ..	14,802	19·0	40·4	18·2	150·5	3·1	2·8
5	'E' Do ..	13,556	17·4	41·9	14·2	136·9	1·6	3·3
	For H.T.C. Population.	77,904	100·0	41·9	14·3	115·4	4·1	3·3
	* Rural ...	62,6 5	80·4	42·5	15·5	130·1	3·3	...
	** Semi-urban ...	15,269	19·6	39·3	9·4	51·0	9·3	...

*Mainly agricultural population.
**Both agricultural and non-agricultural population in equal proportions.

Table 3 indicates firstly, that during the current year under report, the high fertility status has been maintained, even though the fertility has generally dropped below 42 since 1940 and has generally remained above 36 per 1,000. Secondly, the lowest annual rate was 36 and the highest 51, and thirdly, there is a slight suggestion of long term downward trend although it rests so heavily in the beginning and ending periods, and due caution should be exercised in giving it emphasis.

The trend in infant mortality rates as exhibited in Table 5 reveals high points in the years 1943, 1947 and 1949 and gradual decline thereafter. A comparison of these figures with those for general mortality reveals one surprising factor namely, that the percentage decline infant mortality has not been so great as that in general mortality. The fall in infant mortality has of course contributed generally to the reduction on total mortality, simply because there are so many more infants and infant deaths in the population as compared to any other age, the percentage decline has not been so great as for the rest of the population. If the years 1937 to 1941 are considered as base line, we find that the average general mortality decreased by 46·8 per cent in 1953, whereas infant mortality for the same period has declined by only 11·9 per cent. But despite its failure to drop quite as fast as general.

TABLE 3

Crude birth rates based on births collected by the Health Training Centre staff and estimated mid-year population (exponential) 1937-1954 with 3 and 5 year moving averages.

Year	Population Registration*	Reported live births†	Birth rate	3 years moving average	5 year moving average
1937 ...	49,020	2,280	46·5	...	...
1938 ...	50,378	2,580	51·2	47·4	...
1939 ..	51,775	2,611	50·2	48·7	45·9
1940 ...	53,209	2,377	44·6	43.9	44·6
1941 ...	54,684	2,321	42·4	42·3	42·3
1942 ...	56,199	2,249	40·0	40·7	40·6
1943 ...	57,777	2,292	39·7	38·6	39·0
1944 ...	59,357	2,151	36·2	37·6	38·0
1945 ...	61,002	2,253	36·9	36·8	37·7
1946 ...	62,692	2,332	37·2	37·5	35·6
1947 ...	64,429	2,477	38·4	38·8	39·8
1948 ...	66,215	2,598	39·2	41·3	40·3
1949 ...	68,050	3,135	46·4	41·8	40·8
1950 ...	69,936	2,808	40·1	42·1	41·9
1951 ...	71,874	2,873	39·9	41·1	42·3
1952 ...	73,865	3,183	43·1	41·7	41·3
1953 ...	75,899	3,171	41·8	42·3	...
1954 ...	77,904	3,268	41·9	...	...

*Mid-year estimates by exponnential methods.

†The numbers under this column are reported by the H.T.C. agency (Health Inspectors, Public Health Nurses and Midwives).

TABLE 4

Crude death rates based on deaths collected by Health Training Centre Staff and the estimated mid-year population (exponnential) 1937-54 with 3 and 5 year moving averages.

Year	Population Registration	Reported deaths	Death rate	3 years moving average	5 years moving average
1937 ...	49,020	379	19·9	...	...
1938 ...	50,378	937	18·6	18·3	...
1939 ...	51,775	848	16·4	18·6	18·6
1940 ...	53,209	1,109	20·8	18·1	17·9
1941 ...	54,684	938	17·1	18·2	18·2
1942 ...	56,199	937	16·6	17·9	18·8
1943 ...	57,777	1,165	20 1	18·7	17·8
1944 ...	59,357	1,146	19·3	18·4	17·3
1945 ...	61,002	969	15·9	16·6	17·2
1946 ...	62,692	916	14·6	15·5	16·2
1947 ...	64,429	1,041	16·1	15·2	15·4
1948 ...	66,215	995	15·0	15·6	14·9
1949 ...	68,050	1,067	15·6	14·7	15·2
1950 ...	69,936	944	13·4	14·9	14·7
1951 ...	71,874	1,132	15·7	14·3	14·2
1952 ...	73,865	1,028	13·9	14·1	14·0
1953 ...	75,899	960	12·6	13·6	...
1954 ...	77,904	1,114	14·3	...	...

TABLE 5

Infant Mortality Rate.

Year	Live births	Infant deaths	Infant death rate	3 year moving average	5 year moving average
1937 ...	2,280	319	139·9	...	...
1938 ...	2,580	339	131·3	135·4	...
1939 ...	2,311	312	135·0	132·9	131·2
1940 ...	2,377	315	132·5	128·3	126·8
1941 ...	2,321	272	117·3	122·6	128·9
1942 ...	2,249	266	118·0	125·7	128·0
1943 ...	2,292	325	141·7	130·1	125·0
1944 ...	2,151	280	130·6	130·0	123·7
1945 ...	2,253	265	117·6	119·6	127·3
1946 ...	2,332	258	110·6	121·4	124·9
1947 ...	2,477	337	136·0	125·0	127·2
1948 ...	2,598	387	129·7	135·9	130·1
1949 ...	3,133	445	142·0	134·7	132·7
1950 ...	2,808	372	132·4	132·5	130·1
1951 ...	2,873	354	123·2	126·3	126·5
1952 ...	3,183	393	123·4	119·4	121·2
1953 ...	3,171	354	111·9	116·9	...
1954 ...	3,268	377	115·4	...	...

mortality, infant mortality has none or less reduced considerably. Post-natal infant mortality experience, doubtless shows a greater percentage decline than that for all infant mortality because neo-natal mortality is known to be relatively more prone to change in social conditions.

Further inspection of table 2 reveals that, as in previous years, the highest birth rate is in 'B' division (rural) and the lowest in Ramanagaram Town. The difference in rural and semi-urban infant mortality rates of 'A' Division has been quite significant. Comparatively B, D and E Divisions have experienced higher mortality of infants.

Fifteen cases of maternal deaths have been reported during the year under report which is less by 3 than the previous year. The steady mounting in the incidence of deaths of mothers from maternal and associated causes of pregnancy noticed in the previous year seem to have reversed and the year has recorded a maternal mortality rate of 4·1 per 1,000 labour cases. The maternal mortality incidence has been particularly high in A and B Divisions. The maternal mortality incidence for the semi-urban population has been the highest (9·3 per 1,000 deliveries).

33·9 per cent of all deaths during the year has occurred amongst children under one year of age as against 36·8 per cent during the year 1953. The mortality experience in children below 10 years has been slightly higher during the year as compared with the previous year, refer to table 6.

From the table No. 7 it can be seen that 53·3 per cent of all deaths that occurred during the year were amongst males and 46·7 per cent amongst females. The most noticeable feature in the aforesaid table is the higher incidence of mortality amongst females in the age group 15–44 most probably for the reason, that apart from all other causes, the risks associated with the maternity status of the mothers in the age group have been largely responsible for this.

TABLE 6

Distribution of deaths by age (cumulative percentage) from the year 1950 to 1954.

Age group	1950	1951	1952	1953	1954
0—1 ...	39·4	31·3	38·4	36·8	33·9
1—9 ...	51·6	47·8	52·2	54·0	56·0
10—19 ...	56·1	56·6	55·6	60·5	59·5
20—49 ...	70·8	72·6	71·7	71·3	74·3
50 and above ...	100·0	100·0	100·0	100·0	100·0

TABLE 7

Distribution of deaths for certain age groups by sex (per cent of total deaths) for the year 1954.

Age group	Males	Females	Total
0—1	19·8	14·1	33·9
1—9	10·7	11·4	22·1
10—14	0·8	0·7	1·5
15—44	6·6	7·5	14·1
45—59	4·1	3·9	8·0
60 and above	11·3	9·1	20·4
Total	53·3	46·7	100·0

TABLE 8

Annual distribution of deaths from broad cases for five years from 1950

Sl. No.	Main cause of death	(Per cent of total deaths)				
		1950	1951	1952	1953	1954
1	Small-pox ...	0·5	0·3	...	...	...
2	Typhoid ...	0·7	0·3	0·1	1·0	0·2
3	Cholera ..	0·01	7·0	...	2·0	1·6
4	Plague ...	...	0·7	...	...	...
5	Malaria ...	1·6	1·0	1·0	1·0	0·1
6	Pneumonia ...	7·7	5·4	6·0	6·0	3·7
7	Gastro enteritis...	10·9	10·2	6·0	9·0	10·1
8	Other causes ...	78·59	75·1	87·0	81·0	84·3

Table 18 furnishes principal causes of deaths for 5 years from 1950-54 and as in previous years the most important causes of death is gastro-enteritis and pneumonia comes only next in order. Deaths from cholera were less during the year in comparision with incidence in the previous years.

79·5 per cent of deaths under gastro-enteritis were in children below 10 years. 13·4 per cent of deaths under gastro-enteritis were in infants. 51·2 per cent of deaths from pneumonia were in infants and 61·0 per cent of deaths under this cause were in children below 10 years. Hence pneumonia and gastro-enteritis are greatly responsible for high mortality both in infants and in children under 10 years.

Infant Mortality.—Three hundred and seventy-seven infant deaths have been reported by the staff of this Centre for the year 1954 for 3268 live births. 58·3 per cent of these infant deaths are amongst male births (*vide* table 9.)

TABLE 9

Infant Mortality Rate by Sex

Sex	No. of live births	No. of infant deaths in 1954	Per cent of total infant deaths	Infant mortality rates for				
				1950	1951	1952	1953	1954
Male ...	1,698	219	58·3	139	126	138	111	135
Female ...	1,570	158	41·7	126	121	109	112	100
Total ...	3,268	377	100·0	132	123	123	112	115

TABLE 10

Infant deaths in Midwives and Dhai (untrained) delivered cases with infant mortality rate.

Live Births	Infant deaths amongst				Total	Infant mortality rate		
	Midwife delivered cases		Dhai delivered cases			Midwife delivered cases	Untrained Dhai delivered cases	For all deliveries
	No.	Per cent	No.	Per cent				
3,268	132	35	245	65	377	82·0	147·7	115·4

Infant deaths amongst midwife delivered cases form 36 per cent of total infant deaths giving an infant mortality rate of 84·5 per 1,000 live births as against 145·3 in untrained Dhai delivered cases. As in previous years, during the last quarter of the year under report, the incidence of mortality of infants is highest (31·9 per cent).

Neo-natal mortality.—Two hundred and ninety-two deaths of infants or 77·5 per cent deaths of infants are in the neo-natal period as against 72 per cent in the year 1953. Amongst these 204 or 55 per cent died before completing the first week of life and the rest 23 per cent in the subsequent three weeks.

After the first month of age, 85 infants died and a smaller proportion of deaths of infants occurred after the third month of life of infant.

Infant deaths in pregnancies with plural deliveries.—Of 3,434 deliveries that occurred in the centre during the year, 38 are twin deliveries and no triplets or quadruplets born during the year. Sixty-one of these deliveries were live births, 11 still births. Thirty-one of these live born (51 per cent) died in infancy.

Distribution of twin births amongst registered and unregistered prenatals

Midwife			Untrained Dhais			Total		
Registered	Unregistered	Total	Registered	Unregistered	Total	Registered	Unregistered	Grand Total
15	2	17	17	2	19	32	4	36

Infant deaths amongst plural births in the H.T.C.

Infant deaths amongst plural births	No. of mothers who lost		Total No. of mothers who lost children
	One child only	Two children	
31	6	14	20

Broad causes of infant deaths amongst plural births

Age at death	Causes of death					
	Prematurity	Immaturity	Abscess	Sceptic rash	Bronchitis	Total
24 hours ...	3	7	...	...	...	10
One week ...	6	9	...	...	...	15
One month ...	...	2	1	1	...	4
One year ...	...	2	...	...	...	2
Total ...	9	20	1	1	...	31

Birth Order vs. *Infant mortality*.—On classification of infant death according to birth order, it is seen that more than 58 per cent of infant deaths were in mothers of first three parities.

Birth order and infant mortality rate for the year 1954

Birth order	Live births	Infant deaths	Infant mortality rate
1—3	1,675	215	128·4
4—6	1,050	103	98·1
7—9	430	45	104·6
10 and above	113	14	123·9
Total	3,268	377	115·4

Broad causes of infant mortality.—Table 11 presents the broad causes of infant mortality correlated with the age of infant at death.

TABLE 11

Distribution of infant mortality by age and broad causes of death.

Sl. No.	Cause of death	Age at death (numbers)					Mortality rate (per cent of total infant mortality)		
		24 hours	One week	One month	One year	Total	Neo-natal group	Post-natal group	Both groups
1	Prematurity ...	41	51	10	1	103	27·1	0·3	27·4
2	Immaturity ...	9	29	19	3	60	15·1	0·8	15·9
3	Broncho Pneumonia ...	1	11	14	27	53	6·9	7·1	14·0
4	Septic rash ...	4	10	12	2	28	6·9	0·6	7·5
5	Abdominal distention ...	1	8	13	8	30	5·8	2·1	7·9
6	Gastro enteritis ..	...	...	...	15	15	...	4·0	4·0
7	Asphyxia ...	6	3	1	...	10	2·6	...	2·6
8	Conginatal malformities	1	1	...	...	2	0·6	..	0·6
9	Others ...	7	21	19	29	76	12·5	7·6	20·1
	Total ...	70	134	88	85	377	77·5	22·5	100·0
	Per cent of total infant deaths.	18·5	35·6	23·4	22·5	100·0	77·5	22·5	100·0

From a study of table 11 it is seen that in the neo-natal period prematurity accounts for 27·1 per cent of deaths and immaturity for 15·1 per cent of deaths. Broncho pneumonia and septic rash being causes of mortality only next in the order of importance.

In 85 or 22·5 per cent of infant deaths that occurred in the post-natal period, brancho pneumonia (7·1 per cent) formed the most important cause of death, with gastro enteritis (4·0 per cent) as only next in order of importance.

Twenty-nine or 17·8 per cent of deaths from prematurity and immaturity were amongst plural deliveries.

A comparative study of the cumulative percentage of mortality in infants of various age groups for the year with the preceding four years does not generally show any significant variation in the experience though the year 1952 shows a deviation in that, the mortality in the group below 24 hours after birth, was very low. A correlation of the parity of mothers with infant deaths indicates that the mortality incidence of infant born to mothers in the first two pregnancies is very high and of all the infant deaths 20·1 per cent were in mothers in 1st parity and 17·7 per cent in mothers of second parity.

The proportion of mortality in infants born to mothers of first two parities was slightly low during the year as compared with the experience of previous year.

Prematurity and immaturity as cause of infant mortality.—It is already seen from a reference to table 11 that prematurity and immaturity together account for 43·3 per cent of infant mortality. By taking into account the age of infant at the time of death as furnished in Col. 5 of table 12, the highest mortality of premature is in the 24 hours age group and mortality decreases progressively as the infant grows in age.

Table 12

Infant mortality for prematurity and immaturity

Age of infant at the time of death	No. of infant deaths	Infant deaths due to		Incidence to total infant deaths in respective age groups (per cent)		Incidence to total infant deaths (per cent)	
		Prematurity *	Immaturity †	Prematurity	Immaturity	Prematurity	Immaturity
24 hours	70	41	9	59	13	11	2
One week	134	51	29	38	22	14	8
One month	88	10	10	11	22	5	5
One year	85	1	3	1	4	0·3	1
Total	377	103	60	1	16	27	16

* Prematurity – Birth before 36 weeks of gestation.
† Immaturity—Birth between 36 and 40 weeks but birth weight less than 6 lbs.

Infant deaths due to septic rash or Kambara

Particulars	Years				
	1950	1951	1952	1953	1954
Total infant deaths	372	354	393	351	377
Infant deaths due to septic rash or Kambara	27	25	34	26	28
Percentage of incidence	7·3	7·0	8·6	9·6	7·4

As in previous years the midwives continued to record the birth weight of all the infants where deliveries were assited by them and they have registered birth weights for a total of 1609 new born children. Table 13 and 14 furnish the frequency distribution of birth rates of these infants by sex and by divisions. The mode in both sexes is in the 6 lbs. birth weight group. The mean birth weight for both sexes is at 6·5 lbs. and individually for male and female children, it is 6·5 lbs. and 6·3 lbs. respectively. A comparison with the previous years recorded weights shows a tendency for progressive increase in average birth weight of infants year after year and this is probably moving parallel with the generally improving food situation in the area.

Tables 13 and 14

Sex	Weight in pounds																Total
	2	2½	3	3½	4	4½	5	5½	8	6½	7	7½	8	8½	9	9½	10	
Male ..	...	2	4	3	10	18	34	58	190	196	149	58	67	24	8	4	...	835
Female ...	1	1	8	4	11	14	36	43	215	182	119	61	49	16	10	4	...	774

Table 15

Distribution of children according to the birth weight in pounds

Both sexes	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	6	8½	9	9½	10	Total
	1	3	12	7	21	32	70	101	405	378	268	119	116	50	18	8	...	1609

Birth weight in the new born for 1950 to 1954.

Particulars	Years				
	1950	1951	1952	1953	1954
1. Total deliveries for which birth weights were recorded	1270	1416	1229	1459	1609
2. Average birth weight in pounds of—					
(*a*) Male Children ...	...	...	6·3	6·5	6·5
(*b*) Female Children ...	...	...	6·1	6·3	6·4
Both sexes ...	6·0	6·3	6·2	6·4	6·5

Maternal Mortality.—During the year under report, a total of 15 maternal deaths from primary and associated causes were registered by the Health Training Centre staff and all these maternal deaths were investigated by the Public Health Nurses of the respective divisions.

Distribution of maternal deaths by causes.

Particulars	Years		
	1952	1953	1954
I. Maternal Causes—			
1. Deaths during full time pregnancy-primary ...	1	1	...
2. Deaths from abortions and miscarriages ...	...	1	1
3. Deaths during labour complicated by hæmorrhage—			
(*a*) Before the birth of placenta ...	...	1	...
(*b*) After the birth of placenta ...	1	3	...
4. Deaths during puerparium—			
(*a*) P. Sepsis	2	4	1
(*b*) Sudden death	...	...	5
(*c*) Cerebral thrombosis	...	1	...
II. Associated causes—			
1. Deaths due to diarrhœa	1	4	...
2. Deaths due to anæmia	8	2	6
3. Deaths during pregnancy	...	1	...
4. Deaths due to pneumonia	...	...	1
5. Deaths due to cholera	...	...	1
Total ...	13	18	15

Incidence of maternal and infant mortality in labour cases conducted by midwives and untrained Dhais.

Particulars	1950		1951		1952		1953		1954	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
1. No. of labour cases (live births) conducted by Midwives ...	1309	46·6	1326	46·6	1229	39·9	1459	46·0	16 9	49·0
2. No. of labour cases (live births) conducted by Untrained Dhais.	1459	53·4	1547	54·0	1954	61·0	1712	54·0	1659	51·0
Total Live Births ...	2808	...	2873	...	3183	...	3171	...	3268	...
RATES.										
3. Infant mortality rate amongst cases conducted by Midwives.	140	106·9	118	81·4	93	75·6	119	82·0	132	82·0
4. Infant mortality rate amongst cases conducted by untrained Dhais	232	154·7	236	152·5	300	153·5	235	136·0	245	147·7
5. Infant mortality rate ...	372	132·4	354	123·0	393	123·4	354	112·0	377	115·4
6. Maternal mortality amongst: Cases conducted by Midwives.	1	0·4	1	0·8	5	3·8	4	3·0	5	3·0
Cases conducted by untrained Dhais	8	2·7	6	3·8	8	3·9	14	8·0	10	5·7
7. Total maternal mortality rate ...	9	3·1	7	2·4	13	3·9	18	5·0	15	4·4
8. Maternal mortality: (*a*) For maternal causes only.	...	...	5	2	4	1	11	3	7	2
(*b*) For associated causes ...	...	...	3	3	9	3	7	2	8	2

Classification of maternal mortality by causes is furnished in table. On a broad consideration it can be seen that 47 per cent of maternal deaths are due to maternal causes and 53 per cent to associated causes. Deaths during labour complicated by hæmorrhage and purperal sepsis together account for 13 per cent of deaths under maternal causes. Anæmia forms the most important cause of the maternal deaths under associated causes.

Twenty-six per cent of maternal deaths are in the first two parties. Thirty-three per cent of maternal deaths are in deliveries conducted by trained midwife and the maternal mortality rate for the midwife delivered cases is 3 against 6 for Dhai delivered cases.

Abortions and miscarriages.—The incidence of abortions and miscarriages registered during the year and their rates have been furnished below.

Registered Cases.

Abortions	...	...	13
Miscarriages	...	...	25
Molar pregnancy	...	...	...

Unregistered Cases.

Abortions	...	...	12
Miscarriages	...	...	8
Molar pregnancy	...	...	2

The following table also gives details of comparative rates for abortions and miscarriages per 1000 deliveries for a 5-year period starting with the year 1950. A total of 25 abortions and 33 miscarriages are registered for 1954 giving a rate of 7·3 for abortions and 9·9 for miscarriages. It is to be stated, however, that it is extremely difficult to trace all the abortions and miscarriages that take place in the area and these rates hence cannot be considered complete picture of the incidence.

Abortion and miscarriage rates for 1950-54.

Year	Total deliveries	Abortions		Miscarriages		Remarks
		No.	Rate per 1000 deliveries	No.	Rate per 1000 deliveries	
1950 ...	2930	32	10·9	11	3·6	
1951 ...	3024	26	8·6	34	11·3	
1952 ...	3316	11	3.3	28	8·7	
1953 ...	3338	29	8·7	42	12·3	
1954 ...	3434	25	7·3	33	9·9	

Still births and still birth rates for H.T.C. area between 1950 and 1954.

Year	Live births	Still births	Still birth rate
1950 ...	2808	79	2·8
1951 ...	2875	79	3·1
1952 ...	3183	94	2·9
1953 ...	3171	96	3·0
1954 ...	3268	106	3·3

Still births.—The table gives details regarding the incidence of still births and table below gives a comparative incidence of still births for the preceding four-year period.

Distribution of still births and still birth rates (per cent of live births) for the year 1954.

Live births	Still births	Still birth rate
3268	106	3·3

Other rates.

	Years				
	1950	1951	1952	1953	1954*
1. Crude birth rate	40·1	39·9	43·1	41·8	41·9
2. General fertility rate	192	193	218	210	224
3. Specific fertility rate—					
Age groups—15—19 years ...	171	135	143	183	177
,, 20—24 ,, ...	254	281	362	325	312
,, 25—29 ,, ...	233	282	284	343	305
,, 30—34 ,, ...	202	180	218	190	240
,, 35—39 ,, ...	183	141	150	146	187
,, 40—44 ,, ...	46	21	37	38	31
4. Total fertility rate	5445	5200	5970	6125	6260
5. Gross reproduction rate ...	2·8	2·6	2·9	2·9	3·02

*The female population as it stood in the year 1950 is used as the denomination for all the years.

Though there appears to be an apparent increase in the general fertility, total fertility and gross reproduction rate from the year 1950 onwards, it is not to be considered so since the population denomination used for calculation of these rates is as it stood in the year 1950.

Maternity and Child Welfare.

Prenatal registration.—The Public Health Nurses have registered a total of 3642 prenatals during the calendar year 1954 against a total of 3941 registered for the preceding year. A slight fall in the total number registered during the year is due to the absence of the Public Health Nurses in D division for greater part of the year. The details of the registration has been furnished in table 16. One thousand, two hundred and ten of the ante-natals who were at the beginning of the year were those that were registered during the year 1953 and whose pregnancy had not terminated on or before the last day of the year 1953. This number together with the number 3642 prenatals registered during the year gave a total of 4852 prenatals on the registers of Public Health Nurses for the year 1954. Three thousand, one hundred and eighteen of these prenatals were delivered at their homes in the Unit area and 97 of these were taken to maternity hospitals at Ramanagaram and Channapatna for delivery. Three hundred and eighty-eight of the prenatals on the register, left for places outside the jurisdiction of the Health Training Centre, most probably to the parent's house for confinement, against 495 for the previous year. The number amongst the registered that remained over still in prenatal stage during the year was 1249.

Table 16.

Prenatal registration.

No. of prenatals at the beginning of the year	Prenatals registered during the year	Total	No. of prenatals delivered amongst registered in their homes	Prenatals delivered at hospitals		Prenatals left for places outside the area	Total	No. of prenatals at the end of the year
				Rmgm.	Others			
1210	3642	4852	3118	72	25	388	3603	1249

Distribution of prenatals by months of pregnancy at the time of prenatal registration by the Public Health Nurse.

	Months								Total
	2nd	3rd	4th	5th	6th	7th	8th	9th	
	212	686	731	671	511	282	194	355	3642
Per cent	5·8	19.2	20·0	18·4	13·6	7·7	5·0	10·3	100·0
Trimester Totals ..	898	...	...	1913	...	...	831	...	3642
Per cent ..	25	...	...	52	...	...	23	...	100

Annual distribution of prenatals registered by trimesters for the five-year period between the years 1950 and 1954.

Year	Trimester		
	I	II	III
	(Per cent of total registration)		
1950 ...	25	49	26
1951 ...	18	56	26
1952 ...	14	58	28
1953 ...	14	55	31
1954 ...	25	52	23

The distribution of prenatals by the months of pregnancy at which they were registered is furnished above. The number of prenatals registered during the second month numbered 212 giving 6 per cent of the total registration for the year as against 1·8 per cent for the year 1953. The maximum numbers registered were in the fourth month of pregnancy and they formed 20·8 per cent of the total registrations for the year as against 20·7 per cent who were registered in the fifth month of pregnancy during the previous year. A study of the annual distribution of prenatals registered by trimesters for the five-year period between the years 1950 and 1954 reveals that the registration of prenatals in first trimester accounts for 25 per cent of the total prenatals registered against 14 per cent in the previous two years. In general the efficiency of prenatal registration considerably improved during the year. On analysis of the causes for the numbers registered in the third trimester, it is seen that 75 per cent of these cases have been the prenatals coming from outside the Centre area to their parents' houses in the Centre villages for confinement. In 25 per cent of the late registered cases the antenatals refused to notify the staff, information of pregnancy in the earlier months. It would be interesting to analyse this information further by parity to study whether the attitude of mothers reporting pregnancy earlier has any bearing on the order of pregnancy in them. The analysis will be attempted.

Causes for late registration of prenatals.

Month of pregnancy at the time of registration	Permanent residence outside H.T.C. area	Information refused at earliest stages	Missed Notice by the staff	Other causes	Total
VII ...	181	62	33	6	282
VIII ...	141	27	22	4	194
IX ...	304	21	27	3	355
Total ...	626	110	82	13	831
Percentages for :					
1950 ...	62·3	19·2	18·2	0·3	100
1951 ...	55·8	24·9	16·6	2·7	100
1952 ...	56·4	18·3	22·9	2·3	100
1953 ...	73·9	15·4	8·4	2·3	100
1954 ...	75·3	13·2	9·9	1·6	100

The parity of mothers registered during the year ranged from 1 to 14 and one primi-para was below 15 years of age. Twenty per cent of the registrations were in primi-para and they formed the largest bulk of the prenatals. Fifty-three per cent of the registrations were in the first three parities and next 32 per cent in IV-VI (four to six) parity. Fifteen per cent of mothers registered were below 20 years and the next 61 per cent below 20—30 years' age. The pregnant mothers after 30 years formed 24 per cent showing an increase of 6 per cent over the preceding year's experience.

Comparative statement of causes for the late registration of prenatals for the three-year period 1952, 1953 and 1954.

Year	Permanent residence outside the H.T.C. area		Information of pregnancy refused at earlier stages		Missed notice by the staff		Other causes, if any		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
1952 ...	605	56	196	18	246	23	25	2	1072	100
1953 ...	911	76	190	15	104	8	29	2	1234	100
1954 ...	626	75	110	13	82	10	13	2	831	100

Distribution of prenatals by parity in percentages (H.T.C. area).

Para	No. registered during the years			Percentage on totals for the years		
	1952	1953	1954	1952	1953	1954
I—III	2135	2184	1923	57	56	53
IV—VI	1130	1223	1165	29	31	32
VII—XI	455	427	452	12	11	12
X and above ...	73	107	102	2	2	3
Total ...	3793	3941	3642	100	100	100

The distribution of prenatals registered by age at pregnancy in percentages.

Year	Age group			
	Below 19	20—29	30—39	40 and above
1950 ...	12	60	25	3
1951 ...	17	56	25	2
1952 ...	12	65	22	1
1953 ...	15	67	17	1
1954 ...	15	61	23	1

Abnormalities suffered in the previous pregnancies by antenatals registered during the year under report.—One hundred and seventy-five of the antenatals that were registered during the year gave history of having suffered from some abnormal conditions during one or several of the pregnancies they already had.

Abnormalities observed either at the time of registration or during the progress of pregnancy amongst the registered antenatals was 144 for the year and in the order of importance the causes of abnormalities are anæmia, premature delivery, miscarriages, abortions, hyperemesis of gravidarum and ante-partum of hæmorrhages.

Prenatal care.—Public Health Nurses have paid 3181 first visits and 6816 revisits giving thus 3 visits on an average to each of the prenatals. The midwives have given 25,809 visits to prenatals giving an average of 7 visits to each of the prenatals. Together, the Public Health nurses and midwives have examined 4236 urine samples of antenatals for presence of albumin as against 2761 samples in 1953.

Prenatal and post-natal care of Public Health Nurses for the year 1954.

Home visits	Prenatal visits		P.P. visits		Health Talks		Urine Examinations
	New	Old	Midwife	Dhai	No.	Attendance	
32,021	3411	6816	1355	974	3062	6018	576

Postnatal care.—The Public Health Nurses and Midwives together have paid 7018 post-partum visits to mothers delivered by midwives and 2886 visits to mothers delivered by dhais giving 4·6 visits to each of midwives delivered cases and 1·6 visits to each of Dhai delivered cases.

Deliveries.—Three thousand, four hundred and thirty-four deliveries have been conducted in the Centre during the year, of which 94 per cent were amongst the registered ante-natals.

Total deliveries conducted in Health Training Centre area (inclusive of abortions, miscarriages and still births)

Year	Midwife cases	Untrained Dhai cases	Total	Percentage of cases done by T.M.
1950	1,346	1,541	2,887	47
1951	1,379	1,585	2,964	47
1952	1,293	2,027	3,320	39
1953	1,534	1,804	3,338	46
1954	1,693	1,741	3,434	49

A study of the above table shows that 49 per cent of the deliveries in the area were conducted by midwives against 46 per cent in the year 1953 and in terms of actual numbers, 1,693 mothers are delivered which is the highest number for these 18 years period of working of the Centre.

Three thousand three hundred and seventy-four deliveries out of 3,434 total deliveries that occurred were after 28 weeks of pregnancy, *i.e.*, 98 per cent of all deliveries were in the viable period. Of 3,434 deliveries 106 were still births. One thousand six hundred and nine live-births were midwifes delivered mothers and 1,659 live-births were amongst untrained dhai delivered mothers.

Causes for missing mothers in labour by trained midwives.—Out of 1,741 deliveries missed by the midwives 27·7 per cent were reported to be due to want of assistance in the family in sending for the midwife in time. In most of these cases, really, it was the callousness of the elderly ladies in the house partly and laziness of the male members mostly to go and fetch the services of midwife in time that was responsible for losing the cases for untrained dhais.

The distance factor was responsible for missing 11 per cent of cases by midwives as against 19 per cent in 1953. This is due to the fact that posts of four more midwives under National Malaria Control Programme, as an extra midwife is posted to each of the divisions and each of the divisions has now been sub-divided into three areas and one central village in each of these areas is chosen for the headquarters of the Midwife. Hence, now no village is farther than three miles to the headquarters of the midwife and each midwife has a population between 4,000 and 5000.

Causes for missing midwife services by prenatals at the time of labour.

Distance being too far	Lack of assistance to call	Misjudgment of time between call and labour	Due to rush of cases	Absence of staff due to field work	Absence of staff due to leave	Old customs	Due to inclement weather	Due to labour in late night hours	Other causes	Total
198	484	365	2	108	37	246	51	251	37	1741
Per cent— 11·4	27·7	20·8	0·1	6·2	2·1	14·2	3·0	12·3	2·2	100·0

The analysis of age of mothers at labour as furnished below shows that amongst mothers who delivered during the year none were below 15 years of age. Five of the mothers were above 45 years of age. The maximum number who delivered were in 20—24 year age group (31 per cent), 71 per

cent of the live births were in 15—29 year aged mothers, against 77 per cent in 1953. For every 1,000 female children born during the year 1,082 male children were born.

Classification of live births by sex of child born and age of mothers at labour.

Sex of child	Age of mother at labour in years								Total
	Below 15	15—19	20—24	25—29	30—34	35—39	40—44	45 and above	
Males ..	...	209	527	470	266	194	28	4	1,698
Females ...	..	212	475	424	252	175	33	1	1,570
Total ...	...	4 1	1,002	894	518	367	61	5	3,268

Abnormal deliveries.—Eighty-four mothers with abnormalities during pregnancy or at the time of labour were attended to, by the maternity staff and they were safely delivered. Of these, 49 were delivered at their homes and 35 at the Maternity Hospital.

During the year, 150 mothers were delivered in hospitals. Of these, 115 had normal deliveries and 35 abnormal deliveries. Two mothers had molar pregnancies and of the rest, 148 mothers delivered 112 live births, 22 still births, 9 miscarriages and 11 abortions were reported. Amongst 112 live born children, 7 infants died.

Abnormal deliveries attended by the Maternity Staff of the Health Training Centre, Ramanagaram.

	Particulars	*Total*
1	Abnormal presentation—	
	(*a*) Face	4
	(*b*) Breach	16
	(*c*) Transverse	...
	(*d*) Shoulder	...
2	Multiple pregnancy—	
	Twins	36
3	Molar pregnancy—	
	Vesicular mole	2
4	Tonic contraction uterus	...
5	Sluggish uterus	...
6	Ante-partum Hæmorrhage—	
	Placenta previca	1
7	Hydramnias of pregnancy	2
8	Delayed labour—	
	(*a*) 2nd stage	20
	(*b*) 3rd stage	...
9	Delay of delivery of placenta—	
	(*a*) Adherent placenta	1
	(*b*) Retained placenta	...
10	Post-partum hæmorrhage	2
11	Toxeamias of pregnancy—	
	Eclampsia	...
12	Puerperal sepsis	...
13	Instrumental delivery	...
	Total ...	84

Clinics, Communicable Diseases and their Control and Laboratory Work.—Weekly clinics were held in each of the divisions. In addition, on Mondays and Fridays, prenatal and infant clinics are conducted, respectively in Ramanagaram Town at the Maternity Hospital.

The Clinic attendance of ante-natals this year, particularly at Ramanagaram headquarters is very encouraging. One thousand, five hundred and fifteen antenatals have attended the clinic this year as against 713 in 1953. This is partly due to the Maternity hospital which began to function in the later half of the year 1952.

Attacks and deaths from Cholera by divisions and villages.

Division	Village	Population	Attacks	Deaths	Indigenous	Imported	Death rate per 1,000 population
A ...	Ramanagaram ...	25,269	29	13	29	...	...
B ...	Achalu ...	295	2	1	2	...	...
	Gowdaiyanadoddi...	317	3	2	3	...	...
	Bannikuppe ...	1,298	2	2	2	...	...
	Total ...	17,179	36	18	36	...	..

A total of 19,729 anti-cholera inoculations have been done during the year under report.

Small-pox.—Except for one case of small-pox imported from Sasahalli of Channapatna Taluk to Hodikehosahalli of 'C' Division during February 1954, the area was completely free from small-pox. This is largely due to the concerted and continued efforts of the past five years mass vaccination campaign. All the children are protected by primary vaccination before they complete the first year of age.

Vaccination.—Under the mass vaccination programme, each of the divisions is sub-divided into three zones, each zone approximately having a third of the population of the division and intensive revaccination drive is carried out in one zone every year, thus completing the division in three years. The mass vaccination campaign started as per this plan in the year 1953, was continued in all the divisions during the year 1954 and the 2nd zone in each of the divisions is fully covered during the year by house to house visit at intervals and during each visits as many inmates as available are protected.

Twenty-six thousand fourteen primary and revaccinations are done during the year and the progress recorded for the year is the highest for these 18-year period. Of these vaccinations 4,750 were primary and 21,264 revaccinations.

Since revaccination campaign is confined to a third of each division and as the progress recorded in this area covered is 83 per cent of the total populations to the protected, there is necessarily a limitation set on the maximum numbers that could be done. The mass vaccinations were mostly done by the Senior Health Inspectors.

Vaccination progress in Health Training Centre area from the year 1950 to 1954.

Year	Live births	Primary vaccinations	Per cent of live births protected	Revaccinations	Total vaccinations done	Mid-year population	Per cent of population protected*
1950 ...	2,808	2,815	100	15,568	18,383	69,936	56
1951 ...	2,873	3,622	126	11,684	15,306	71,800	69
1952 ...	3,183	3,921	123	5,874	9,795	73,865	62
1953 ...	3,171	3,970	125	18,932	22,902	75,899	108
1954 ...	3,268	4,750	145	21,264	26,014	77,904	119

* Calculated on the basis of five-year aggregate protection numbers to the mid-year population of the year, on the assumption that the maximum level of active immunity would be for five-years after protection.

Inoculations and anti-smallpox vaccinations in Health Training Centre area from 1950 to 1954.

Year	Inoculations against			Anti-smallpox vaccinations			Success rate in per cent	
	Plague	Cholera	Typhoid	Primary vaccinations	Revaccinations	Total	Primary vaccinations	Revaccinations
1950 ...	1,255	1,138	227	2,815	15,386	18,183	94	42
1951 ...	5,016	24,958	23	3,622	11,684	15,306	88	40
1952 ...	...	5,347	10	3,921	5,874	9,795	87	35
1953 ...	238	12,512	789	3,970	18,932	22,902	94	39
1954 ...	...	19,729	298	4,750	21,264	26,014	89	17

Unprotected children registration in the villages of Health Training Centre area.

.....	Number at the beginning of the year	Registered during the year		Total	Number protected during the year	Number left the places outside the area	Number remaining U.P.C at the end of the year		
		Births	Imported				Below 6 months	Above 6 months	Total
	1,171	2,656	1,442	5,269	2,927	983	916	443	1,359
U.P.C. at the end of December 1954 in Ramanagaram Town							191	56	247
Total	1,171	2,656	1,442	5,269	2,927	983	1,107	499	1,606

The midwives who were trained in the vaccination work continued to conduct primary vaccinations, thus supplementing the progress in this direction to that of Heath Inspector and also revaccinations of women whom they could.

A survey of the U.P.C. in Ramanagaram Town was taken up in the month of December and the unprotected status has been determined and the total number of unprotected children for the Centre area has been furnished in the above statement.

Out of 5,269 children registered for the villages, 2,927 were protected and 983 left the area to outside places before protection. It would be

interesting to note that the number who were born outside and come into the area (1,442) were more than the number who were (983) born in the area and left before protection to places outside Health Training Centre area.

The inoculations and anti-smallpox vaccinations in Health Training Centre area from 1950 to 1954 gives the success rate for vaccinations and it could be seen that these rates for both primary and revaccinations are lower when compared with the previous year's rates.

As preventive and control measures 19,729 inoculations were made against Cholera in and around the villages from where infection was reported.

Typhoid.—There were 46 attacks and 2 deaths from typhoid as against 71 attacks and 6 deaths in 1953. The incidence was reported only from A and C divisions. The other divisions reported their area to be free from typhoid. Two hundred and ninety-eight inoculations of contacts against Typhoid were made.

Whooping cough.—Ninety-seven attacks of whooping cough with nil deaths were reported during the year under report. B and A divisions reported the highest numbers, 41 and 32, respectively for the year.

Chickenpox.—One hundred and seventy-four chickenpox cases were reported during the year as against 65 attacks and one death for the previous year. There were no deaths under this cause during the year.

Measles.—One hundred and nine attacks and 5 deaths under this cause were reported for the Centre. The reporting in C and D and E divisions were not good.

Lobar and Broncho pneumonia.—Under this cause 120 attacks and 41 deaths have been reported for the year as against 112 attacks and 60 deaths in the year 1955. The cases that came to the notice of the undersigned and the Assistant Health Officer and the Officers in-charge of the Hospitals were treated with anti-biotics.

Tuberculosis.—Forty-two open cases were detected with 37 deaths under this cause and nothing is yet being done for protecting the people with B.C.G. The necessity for B.C.G. campaign in this area cannot be over-emphasised and it is hoped that this programme would be taken up in the coming year at least without further delay.

It is to be stressed that reporting of this disease is yet far from being satisfactory and the cases detected are those that have come either to the Clinic or to the Hospital voluntarily. If regular investigation by mass Chest radiography is undertaken, certain many more cases of earliest stages of infection will be detected.

Diarrhoea and Dysentery.—Five hundred and ninety-seven attacks and 112 deaths are reported under this cause and the incidence is fairly high in B and D Divisions particularly. Since wells form the source for drinking water mostly, intensive chlorination of drinking wells were undertaken as a preventive and control measure. The acute cases which came to the notice of the Centre staff were treated with sulphagonadine tablets.

Leprosy.—Three new cases and 3 deaths were registered during the year for D division.

Broad classification of diseases that were treated at the Village Clinics. Male Dispensary, Maternity Hospital and H.T.C. Office —Details of attendance at the village Clinics, Male Dispensary, Maternity Hospital and Health Training Centre Office against various diseases that were treated is furnished in the table below* and a total of 1,29,344 new and old admissions have been treated during the year as against 1,01,560 in the previous year.

The village Clinics are also getting more popular and 14,719 new admissions were treated which means 1,906 more than that of the previous year.

Respiratory diseases predominated during the year and next to this; in order of importance were gastroenteritis, other fevers, other digestive disease and anæmias.

When compared with the statistics of the year 1953, it is seen that the attendance for Malaria has come down from 4 to 3·2 per cent during the year while that for Anæmia has increased from 3 per cent to 5·2 per cent. From year to year the attendance for treatment for anæmia is increasing progressively since past 4 years and this is confirmed by the gradual increase in the incidence of hookworm infestation as revealed by the surveys conducted in 1952, 1953 and 1954.

*Diseases treated in the Health Training Centre, Dispensaries and the Village Clinics during the year 1954.

Sl. No.	Disease	At the male dispensary, Ramanagaram	At the Maternity Section and HTC Office	In village Clinics	Total	Per cent of total cases treated
1	Malaria	946	2,522	656	4,124	3·2
2	Other fevers	5,549	2,795	1,603	9,947	7·7
3	Pneumonia	1,580	3,430	59	5,069	4·0
4	Other respiratory diseases ...	3,668	3,440	2,311	9,419	7·3
5	Diarrhœa	2,212	2,562	1,015	7,819	6·0
6	Dysentery	3,878	1,285	262	5,425	4·2
7	Other digestive diseases ...	3,177	3,008	1,063	7,248	5·6
8	Worms	1,027	961	752	2,740	2·1
9	Anaemia	1,142	4,143	1,416	6,701	5·2
10	Ulsers	2,707	2,718	1,251	6,676	5·1
11	Other skin diseases ...	3,674	321	883	4,878	3·7
12	All other diseases ...	23,042	32,308	3,948	59,298	45·9
	Total ...	54,632	59,993	14,719	1,29,344	100·0

Details of laboratory examinations done during the year under report is given in a table. A total number of 652 blood samples were sent to Public Health Institute for W.R. examinations, out of which 626 samples were from the ante-natals who were registered during the year. 13·2 per cent of the samples of the ante-natals proved positive for W.R.

Another table giving the details of the examinations of the blood samples collected and sent for W.R. examination with results is also given below. A detailed analysis of this study and report on the same will be submitted in due course.

Table showing the Laboratory Examinations.

Serial No.	Nature of examination	Positive	Negative	IX	Broken	Haemolised	Not clear	Total
1	Blood samples for W.R. sent to Public Health Institute.	83	513	9	13	33	1	652
2	Motion samples for ova examined at Health Training Centre Office.	242	86	...	...	...	...	328
3	Motions and vomits for cholera vibrios sent to Public Health Institute.	4	20	...	...	...	...	24
4	Rat smears sent to Public Health Institute ...	...	2	...	...	...	...	2
5	Rat smears examined at the Health Training Centre.	..	3	...	...	...	...	3
6	Sputum smears sent to Public Health Institute	1	3	...	...	...	...	4
7	Sputum smears examined at the Health Training Centre.	...	1	...	...	...	...	1
8	Differential counts of blood sent to Public Health Institute.	...	...	...	...	...	...	1
9	Smears for G.G. sent to Public Health Institute.	...	4	...	...	...	...	4
10	Blood for Widal Weil-felix sent to Public Health Institute.	22	11	1	...	...	...	34
11	Blood for M.P. sent to Public Health Institute	3	28	...	...	...	...	31
12	Others	..	4	...	...	...	...	4
13	Urine samples examined at the Centre :— Normal ... 896 / Abnormal ... 104 ...	...	...	...	...	...	...	1,000

Results of W.R. Examinations for 1954.

Area	Positive	Negative	...	Broken	Haemolised	Not clear	Total	Positive rate (%)
PRENATALS								
Ramanagaram Town ...	13	124	4	1	9	...	151	9·5
Villages	63	369	4	12	22	...	470	14·6
Total ...	76	493	8	13	31	...	621	13.2
OTHERS								
Ramanagaram Town ...	5	13	1	...	1	...	20	27·7
Villages	2	7	...	...	1	1	11	22·7
Total ...	7	20	1	...	2	1	31	25·8
Grand Total ...	83	513	9	13	33	1	652	13·9

Sanitary Improvements.—A total of 65 hand flush pit latrines were introduced during the year in various villages as against 69 in the year 1953.

As in previous year the Village Panchayets contributed the cost for half a bag of cement and two soil pipes and the labour involved for putting a 3′×3′ pit and the burnt stone slabs required for covering the pit were provided by the party possessing the latrine and the casting was done by the servants of the division who were trained in this work at the headquarters. In terms of actual money spent for material including stone slabs it works out to Rs. 10 only of which half the cost was met by the Panchayets.

The table below gives details of other sanitary improvements that were carried out during the years 1953 and 1954 :—

Sl. No.	Item of improvement	1953	1954
1	Manure and other insanitary pits closed ...	21	2
2	Dilapidated structures removed	3	2
3	Roads formed (in running yards)	150	500
4	Roads repaired do	445	2,673
5	Drains formed do	692	500
6	Drains repaired do	1,289	6,850
7	Drains cleaned do	707	970
8	Rank vegetation cleared in cart loads ...	157	74
9	Construction of hand flush pit latrines ...	69	65
10	Formation of soak pits	5	12
11	Number of houses white washed	179	392
12	Introduction of windows	179	274
13	Improvements to cattle sheds	41	35
14	Cleaning of back yards	78	115
15	Number of houses plastered	83	69

Milk distribution.—The skimmed and whole milk powder supplied by the UNICEF was distributed throughout the year under report. A total number of six sub centres were opened in this Centre and 87,899 individuals received the constituted milk for which 4,311 lbs. of milk powder has been spent.

Milk distribution in H.T.C. area 1954.

No. of centres of distribution	Children below 1 year	Children 1 to 14 years	Expectant or nursing mothers	Total	Milk powder spent in lbs.
6	7,672	73,115	7,112	87,899	4,311

Table showing the details of D.D.T. spraying in the H.T.C. area by divisions for the year 1954.

Division	No. of villages sprayed	Population as per spraying census	Houses sprayed		Houses not sprayed			
			No.	Per cent	Silk worm rearing		Locked	
					No.	Per cent	No.	Per cent
1	2	3	4	5	6	7	8	9
A ...	23	7,133	1,212	88·3	65	4·7	75	5·4
B ...	38	12,246	1,684	68·5	602	24·4	106	4·3
C ...	27	13,692	1,713	61·2	823	29·7	131	4·6
D ...	17	12,422	2,070	74·2	513	18·3	120	4·3
E ...	19	1,162	1,940	77·0	458	18·1	88	3·5
Total ...	124	57,155	8,619	72·2	2,461	20·6	520	4·3

Division	Houses not sprayed				D.D.T. used		Population protected	
	Refused		Total		In lbs.	Average lbs. per house	No.	Per cent
	No.	Per cent	No.	Per cent				
	10	11	12	13	14	15	16	17
A ...	22	1·6	162	11·7	617	0·5	6,352	89
B ...	70	2·8	778	31·5	883	0·5	7,981	65
C ...	126	4·5	1,080	38·8	786	0·5	8,254	60
D ...	90	3·2	723	25·8	1,144	0·5	9,109	73
E ...	36	1·4	582	23·0	1,322	0·6	8,696	75
Total ...	344	2·9	3,325	27·8	4,752	0·55	40,392	70

National Malaria Control Programme.—The malaria spraying squad stationed at Ramanagaram, during the year under report, have sprayed 8,619 houses in 124 villages of the Health Training Centre giving a coverage of 72·2 per cent of the houses of the area and giving protection for a population of 40,392 against malaria.

The table below gives further details of the malaria control operations with insecticidal house spraying for the year under report :—

Spleen Survey Statistics.

	Month and year	Total villages	Population	Total examined	Results		Spleen rate	A.E.S.	Remarks
					Negative	Positive			
Ramanagaram Channapatna Taluk 'E' Division	April 1950	23	12,777	1,462	1,388	81	5 5	2·1	
	October 1950	23	12,777	1,432	1,381	51	3·56	2·1	
	October 1951	23	12,777	1,434	1,415	19	1·3	2·0	
	April 1952	23	12,777	1,391	1,375	16	1·2	2·0	
	October 1953	23	12,777	1,343	1,335	8	0·6	0·25	
	April 1954	23	12,777	1,426	1,420	6	0·42	1·0	
	October 1954	23	12,777	1,409	1,408	1	0 07	1·0	
Ramanagaram Taluk villages	April 1954	10	2,355	363	360	3	0·82	2·3	(1)
	October and November 1954	10	18,429	768	767	1	0·13	2·0	(2)

(1) One spleen P5 at Thibbegowdanadoddi—imported case.

(2) One spleen P2 in Ramanagaram town—imported case.

Training Programme.—Table given below gives the details regarding the personnel trained in this Centre for the year 1954. All the divisional peons have been trained in casting the pans of the hand flush out pit latrines and they will assist the divisional Health Inspectors in carrying out this programme in the villages of this Centre.

Personnel trained in H.T.C. Ramanagaram in 1954.

Sl. No.	Cadre	No. trained
1	Health Probationers	6
2	Assistant Medical Officers of Health	5
3	Health Inspectors (Special training)	2
4	Public Health Nurse	1
5	Midwives	2
6	Medical students of University Diploma on study tour ...	30
7	Medical students of University Degree in Medicine on Study tour	30
8	Executive Officers of Municipalities	12
9	Village level workers of Community Project Scheme ...	123
10	Peons of Health Training Centre	4
	Total ...	215

Visitors

1	15-1-1954 ...	Mr. A. E. Moris ...	Attikan Estate
2	16-1-1954 ...	Mr. William H. Cary Jr. Boston Mass ...	Ludhiana, Punjab
3	16-1-1954 ...	Mrs. Darothi C. Carry	Do
4	16-1-1954 ...	John B. Wyon ...	Do
5	14-2-1954 ...	V. K. B. Pillay ...	The New Secretary to the Ministry of Health, New Delhi.
6	14-2-1954 ...	Dr. K. C. K. E. Raja	Officer on Special Duty to the Ministry of Health, New Delhi.
7	...	John Robbins Scripps	Howard Newspapers, Washington D.C.
8	19-3-1954 ...	Dr. M. C. Balfour ...	Rockefeller Foundation, Delhi
9	19-3-1954 ...	Dr. R. K. Anderson...	Rockefeller Foundation, Bangalore
10	2-5-1954 ...	Mr. & Mrs. Julian Huxley ...	31, Pond Street, London N.W. 3
11	12-4-1954 ...	Mr. & Mrs. P. K. Whelpton.	
12	14-4-1954 ...	Mr. H. E. Kardel ...	Extension Advisor, T.C.M.
13	16-4-1954 ...	Dr. T. S. Adisubrahmanyam ...	Director of Public Health, Madras
14	15-5-1954 ...	Dr. Lingsein ...	Malariologist, Shawn Street, Burma.
15	2.6-1954 ...	Dr. V. P. Margalik ...	Dean Medical College, Lucknow
16	2-6-1954 ...	Dr. G. L. Sharma ...	Dean Medical College and Hospital, Nagpur.
17	2-6-1954 ...	Dr. T. Lakshminarayan ...	Planning Commission, New Delhi

18	2-6-1954	...	Dr. K. C. K. E. Raja	
19	5-6-1954	...	Dr. Barkat Narain ...	Advisor (Health), Community Project Administration, Planning Commission, New Delhi.
20	10-6-1954	...	Mr. Robert Newton Clerk.	Chief Advisor in Public Health Engineering, W.H.O. Geneva.
21	27-6-1954	...	Dr. J. E. B. Mcphail	W. H. O. Regional Office, New Delhi.
22	2-7-1954	...	Mrs. M. Chandrasekaran.	Deputy Minister of Health, Government of India, New Delhi.
23	12-8-1954	...	Dr. Carl E. Taylor...	Department of Preventive Medicine, X'viare Medical College, Ludhiana, Punjab.
24	12-8-1954	...	Dr. & Mrs. Donald T. Rice.	Damoh, Madhya Pradesh
25	12-8-1954	...	Dr. Cecil E. Cutting	Surgeon, Mission Hospital, Chikballapur.
26	4-10-1954	...	Mrs. Krishna Bai Nimbkar.	Community Projects Administration, Planning Commission, New Delhi.
27	12-10-1954	..	Dr. Leenard J. Bruce Chwatt.	Senior Malariologist, Government of Nigeria, Br. West Africa.

CHITALDRUG DISTRICT.

SRI N. V. PUTTA BHATTA, M.B.B.S,, D.Ph.,

District Health Officer.

As per Government Order No. M. 14062-65—P.H. 88-54-2, dated 9th October 1954, three additional Health Units were sanctioned in Hiriyur Taluk at Maradihalli, Vanivilaspur and Dharmapura and the Local Fund Dispensaries in these places were converted into Health Units and taken over to the control of Public Health Department on 1st December 1954 and the Public Health activities were put into operation immediately.

Vital Statistics.—Seven hundred and sixty-one births and 184 deaths have been reported out of which 304 births and 68 deaths have been detected by the Health staff and recorded in the respective village registers. The reporting of vital events is not prompt, complete and sometimes inaccurate. This is due to the fact that the Patels have not realised that reporting of births and deaths is one of the responsible duties entrusted to them.

Epidemics.

Plague.—This district was free from epidemic of plague throughout the year.

Cholera.—There was heavy incidence of cholera epidemic affecting the entire district. The epidemic first started in Holalkere Taluk and then spread to other taluks. The statement showing details of attacks, deaths and preventive measures adopted is given below.

Statement showing the details of attacks, deaths and preventive measures adopted against Cholera in Chitaldrug District.

Sl. No.	Name of Taluk	No. of villages infected	Cholera		No. of inoculations conducted	No. of wells chlorinated	No. of houses disinfected
			Attacks	Deaths			
1	Hiriyur ...	22	189	81	36,765	22	111
2	Challakere ...	28	111	91	21,423	60	172
3	Molakalmuru ...	5	56	25	2,874	23	14
4	Harihara ...	8	108	26	30,521	78	80
5	Davangere ...	2	12	3	1,783	23	33
6	Hosadurga ...	6	76	42	8,043	...	...
7	Chitaldrug ...	12	72	49	16,166	13	37
8	Jagalur ...	6	63	27	13,215	9	40
9	Holalkere ...	1	4	1	320	...	...
	Total ...	90	691	345	1,31,110	228	487

Small-pox.—During the year ten villages were infected resulting in 334 attacks and 51 deaths. Mass vaccination campaign was conducted in the infected as well as the neighbouring villages and the epidemic was brought under control. The vaccination work could not be organised intensively and more effectively as the Junior Health Inspectors were withdrawn from the District Board and four District Board Vaccinators could not cope up with the work. Hence, the posting of Junior Health Inspectors to the District Board is absolutely necessary to protect a good percentage of the villages in this District and minimise the incidence of small-pox epidemic to an appreciable extent. A statement showing the details of epidemic and control measures taken is furnished below.

Statement showing the vaccinations conducted in Chitaldrug District during the year 1954.

Vaccinations done	Total vaccinations				Primary vaccinations		
	Total	Unknown	Unsuccessful	Successful	Total	Unknown	Unsuccessful
1	2	3	4	5	6	7	8
1. Health Units ...	10,592	3,338	3,826	3,428	1,926	36	108
2. District Board ...	25,326	2,978	7,549	14,799	11,691	309	320
3. Municipality ...	14,171	3,109	3,517	7,545	6,777	564	58
4. District Health Office ...	637	637	...	...	605	605	...
5. Cyanogos staff ...	10,616	10,616	...	...	2,455	2,455	...
Total ...	61,342	20,678	14,892	25,772	23,454	3,969	486

Vaccinations done	Primary vaccinations				Re-vaccinations			
	Successful							
	Under 1 year of age	1 to 6 years of age	Above 6 years of age	All ages	Total	Unknown	Unsuccessful	Successful
	9	10	11	12	13	14	15	16
1. Health Units ...	864	918	...	1,782	8,666	3,302	3,718	1,646
2. District Board ...	5,262	3,699	2,101	11,062	13,635	2,669	7,226	3,737
3. Municipality ...	3,302	2,157	696	6,155	7,394	2,545	3,459	1,390
4. District Health Office.	...	...	...	...	32	32	...	...
5. Cyanogas staff ...	...	...	...	...	8,161	8,161	...	...
Total ...	9,428	6,774	2,797	18,999	37,888	16,709	14,406	6,773

Propaganda and Construction of Hand Flush latrines.—Propaganda was intensively carried out by the cyanogas staff during their visits to villages. Thirty-nine hand-flush latrines were constructed during the year. Arrangements were made for casting of pans and 'P' Traps at this office and supplied to the non-unit villages on requisition.

Guinea-worm Control work.—Control of guinea worm infection in the villages by biological measures was continued under the administrative and technical supervision of the District Health Officer. The Senior Health Inspector in charge of the guinea worm control unit toured for 90 days and visited 90 villages and has examied 77 step-wells for the density of cyclops. The villages, *viz.*, Didige in Jagalur taluk and Malebennur in Harihar taluk, had original infection, as they are bordering villages to Dharwar and Bellary Districts. Recommendations have been sent for conversion of stepwells into draw wells in these villages. There was imported infection in two villages in Davanagere and Molakalmuru taluks.

Special Activities.—Hetrazan tablets were tried as an experimental measure for guinea worm cases and Ficus Begalensis root infusion treatment was given to the infected persons in Kallappanahally and Huchangidurga and progress achieved was recorded.

The Health Inspector attached to guinea worm control Unit attended the Health Exhibition at Mysore and Tumkur and fitted up a Guinea Worm Section. The exhibitions were successful as thousands of people were educated regarding how guinea worm disease is caused and how it could be prevented with the co-operation of the public.

Malaria Control Work.—D. D. T. spraying was taken up in Vani Vilas Sagar area as an anti-malaria measure. During April 1954 only 53 villages in Hiriyur taluk were sprayed and during the second round 229 villages in six taluks *viz.*, Hiriyur, Challakere, Molakalmur, Jagalur, Davangere and Chitaldrug with a population of 146, 543 were sprayed. The requests of the public to include more villages under the National Malaria Control programme are being technically examined.

Round	*No. of houses sprayed*	*DDT spent*	
I	8,263	3,230 lbs.	} 75 per cent
II	32,235	17,908 lbs.	} wettable powder.

Spleen survey was conducted twice during the year under report in the Health Unit areas.

	Spleen rate.
April 1954	2·93
October 1954	2·5

Blood smears were taken for malaria parasite by the Malaria Inspectors of National Malaria Control Programme and sent to the Bureau of Malariology, Bangalore for examination. Distribution of anti-malaria drugs in Chitaldrug District was taken up, by the National Malaria Unit staff under the supervision of the District Health Officer and the Medical Officer of Health, National Malaria Control Programme, as there was an epidemic of malaria throughout the district as already forecasted by the Department.

No. of villages	449
No. of patients treated	10,550
Total number of tablets distributed ...	38,766

Maternity and Child Welfare Work.—A total number of 437 labour cases were conducted by the midwives of the Health Unit area and 2,820 ante-natal and 2,793 post-natal visits were given. The Nursing Supervisor visited the district and paid visits to the Health Unit area.

Site Inspections.—A total of 44 villages were visited for selection of sites for village extension and allotting sites for A. K. colonies and a statement furnished below will indicate particulars.

Sites for village extension	26
Sites for A. K. colonies	15
Sites for burial grounds	3

Milk Distribution.—Milk distribution was done in the following places of Chitaldrug District and 74,511 children including 7,575 expectant mothers were fed with 2,332 lbs. of milk powder.

1. Mustur.
2. Dharmapura.
3. Laxmisagar.
4. Malebennur.
5. Hebbal.
6. Hariabbe.
7. Molakalmur.
8. Bharmasagar.
9. Hiriyur.
10. Ranganathapur.
11. Davangere.
12. Kelagote—Chitaldrug town.

HASSAN DISTRICT

DR. S. V. RAJA RAO, M.B., B.S., D.PH., M.PH.,
District Health Officer.

Dr. A. R. Sunder Rao continued to be in charge till 30th June 1954 when he handed over charge to Dr. C. P. Kannan Menon. Dr. S. V. Raja Rao assumed charge on 15th October 1954 from Dr. Kannan Menon and remained till the end of the year.

The population of Hassan District according to the 1951 Census is 7,15,135 of which 3,63,049 are males and the rest 3,52,086 are females. When compared with the 1941 census there has been an increase of population by 13·9 per cent. Eighty-eight per cent of the population live in rural areas and the rest in Urban areas. There are 11 towns in the District with Town Municipalities.

The following table indicates the age distribution of the population in the District.

TABLE II

Age Distribution of the Population in Hassan District.

Age Groups		*Males*	*Females*
0 years	...	972	1,960
1 to 4 years	...	3,659	3,733
5 to 14 years	...	9,164	9,356
15 to 24 years	...	6,806	6,360
25 to 44 years	...	10,376	10,314
45 to 64 years	...	5,006	4,178
65 and over	...	20,532	28,943

1. *Health Units.*—There are 19 full fledged Health Units and 11 Pocket areas in the District. The work in the Primary Centres are supervised by 4 Secondary Centres namely, Alur, Belur, Sakalespur and Arakalgud. Of these four Secondary Centres only three are under the administrative control of the District Health Officer, the one at Saklespur being under the control of the Malariologist, Malaria Investigation Centre, later on designated as Field Investigation Centre.

TABLE III

The statement showing the Secondary Centres with the area and population covered by them.

Sl. No.	Name of the Sec. Centre	No. of Primary centres	No. of Pocket areas	No. of villages	Population	Area in sq. miles
1	Alur	4	2	213	31,631	158
2	Belur	7	2	337	52,350	388·8
3	Sakalespur	7	...	263	38,750	270
4	Arakalgud	...	7	300	83,809	262
5	Srinivaspur (Primay Centre) ...	1	...	49	15,299	18
	Total ...	19	11	1,162	2,21,839	1096·8

2. *Municipalities.*—Hassan and Arasikere Municipalities are provided with two Health Inspectors (One Senior and One Junior) Holenarasipur and Sakalespur are provided with one Senior Health Inspector at each Municipality, whilst in the rest of the Municipalities a Junior Health Inspector is provided. The routine Health work in the Municipal area is looked after by the Health Inspectors and technical assistance and guidance is given by the District Health Officer in these areas.

3. *District Board.*—The area that is not covered by the Health Unit or Municipality is covered by the District Board staff. There are 3 Senior Health Inspectors, 7 Junior Health Inspectors and 4 Vaccinators in the District.

The Health Units cover only about 1/3rd the population of the District and the rest of the population is covered by the District Board and the Municipalities.

4. *Malaria Investigation Centre, Sakalespur.*—The activities of this Unit are supervised by the Malariologist. Only Health Unit activities of this area are included in this report.

5. *National Malaria Control Work.*—This scheme was inaugurated in November 1953. The Malaria Control work in the District was under the administrative control of the District Health Officer, Mysore and Chikmagalur. Belur, Sakalespur, Alur, Channarayapatna and Hassan Taluks are under the control of Chikmagalur Unit, and Holenarasipur and Arakalgud taluks are under the Mysore Unit. Arasikere taluk was not included under the scheme as it was considered as being non-malarious area. However, during the year under report as an epidemic of malaria broke out in Arasikere taluk, D. D. T. spraying was undertaken as a special measure to control the epidemic. Five Doctors and 6 Health Inspectors were specially posted to do a rapid splenometric and parasitological survey with a view to get an idea as to the magnitude of the problem. Along with this Survey work, intensive distribution of anti-malarial drugs was also undertaken to give immediate relief to the afflicted. The survey and the distribution of the drugs took 25 days (1st to 25th June). All the houses in the taluk were sprayed by 11 squads consisting of 120 pumps with D. D. T. using 56 mgms. per sq. ft. The spraying work was commenced on 19th June and completed on 25th June 1954 taking only 5½ days to complete the entire taluk including Arasikere and Banavar towns.

Hand-flush latrine work.—During the year under report, 81 hand flush latrines were introduced in the Health Unit area of which 60 were done in Belur Secondary Centre alone. In the Municipal area and District Board area, 23 and 3 hand flush latrines respectively were introduced. Most of these were introduced by the District Health Office staff.

Soakpits.—Sixty-nine soak pits were introduced in the Health Unit area and 41 in the Municipal area.

To encourage the introduction of hand flush latrines, all the materials needed for the construction of the latrines are now manufactured and stocked in the District Health Office.

TABLE IV.

Details showing the Attacks and Deaths due to Small-pox and the vaccinations done.

Sl. No.	Area	Attacks	Deaths	Primary	Re.	Total
1	Health Unit area	21	2	13,983	39,202	53,185
2	District Board area	98	15	19,140	19,067	38,207
3	Municipal area	2	...	3,076	7,990	11,066
	Total ...	121	17	36,199	66,259	1,02,458

COMMUNICABLE DISEASES AND THEIR CONTROL.

(*a*) *Plague.*—As a result of D. D. T. spraying, as a routine in this District under the National Malaria Control Programme, this disease has been brought under control, during the year under report. Except reports of rat falls, there were no cases of human plague. Rat Falls had been reported from over 20 villages, mostly from Arasikere taluk and a few from Hassan and Arakalgud Taluks. In four instances, the dead rats were available for examination and on all occasions, it was observed that the death of the rat was not due to plague. In all the villages where the investigation was done, it was observed that there have been no increase in the rat flea population.

(*b*) *Small-pox.*—It was reported in 20 villages in the District. There were 121 attacks and 17 deaths.

As could be made out by the above statement, the majority of the attacks are in the non-Health Unit District Board area. The attacks are less in the Health Unit area and is due to periodical vaccinations done by the Health staff.

(*c*) *Cholera.*—It was reported from 25 villages in the District. There were 97 attrcks and 47 deaths in the villages during the year under report. Further spread of infection was promptly checked by taking up precautionary measures such as anti-cholera inoculations, chlorination of all drinking water sources, Gammexane spraying of houses and manure heaps, and proper advice to the people regarding disposal of excreta of the patients etc. In all 1,13,941 anti-cholera inoculations were done in the District during the year under report.

Gastro enteritis.—This is still a Major problem in this District. In some of the villages, where the drinking water wells are not provided. It is observed that the mortality due to Gastro enteritis disease was fairly high.

II. MALARIA AND ITS CONTROL.

D. D. T. spraying was done during the year under report only once in the month of October and November 1954, instead of two rounds for want of D. D. T. But in Heath Unit area, two rounds of D. D. T. spraying was done. During operation 75 per cent D. D. T. wettable powder was used and the dose was 100 mgm per sq. foot. It is better that D. D. T. spraying is extended to Arasikere Taluk also in view of the past experience of Malaria epidemic in this taluk.

Mosquito collections were done as a routine by the Insect Collector in the selected villages, namely, Channapatna, Gavenahalli, Katihalli

Bittaganahalli and Sankalapura. These collections were examined by the Junior Entomologist.

TABLE V

Showing the result of Mosquito Collections in the selected villages close to Hassan during the year 1954.

Name of the Species	January	February	Mareh	April	May	June	July	August	September	October	November	December
A. annularis ...	14	24	19	46	26	...	2	12	141	200	304	17
A. aconitus ...	...	...	...	...	...	...	...	...	...	3	...	3
A. barbirostris ...	...	...	...	...	...	...	...	...	2	...	...	...
A. hyrcanus ...	...	...	...	2	3	...	1	2	4	5	4	9
A. fluviatilis ...	...	...	1	2	...	...	1	4	2	...	14	...
A. culicifacies ...	1	17	18	4	...	...	3	9	14	6	14	7
A. pallidus ...	...	1	4	...	...	...	...	...	6	36	6	12
A. jamesii ...	...	...	...	...	...	...	...	...	6	...	5	...
A. tesselatuss ...	...	...	...	...	...	...	2	1	...	2	14	2
A. subpictus ...	...	5	16	34	16	...	9	22	23	27	18	1
A. vagus ...	...	...	2	8	3	...	...	18	12	13	8	4
A. stephensi ...	...	...	...	...	...	...	...	...	2	...	...	...
A. esplendidus ...	...	...	...	...	...	...	...	1	2	...	...	...
Total ...	15	47	60	96	48	...	18	69	214	292	357	55

Blood smears sent from the various Primary Health Units in the District were examined by the Junior Entomologist. Out of 401 slides examined only 5 were found to be positive for Malarial parasite.

TABLE VI

Showing the Blood smears examined from various Primary Health Units during the year 1954.

Sl. No.	Name of Primary Health Centres	Infant Smears		Clinical Malaria		Fever Cases	
		Examined	No. found positive	Examined	No. found positive	Examined	No. found positive
1	Alur	...	...	...	...	8	...
2	Rayerkoppal	...	...	...	...	...	...
3	K. H. Kote	...	...	...	...	16	...
4	Ponnathapura	...	...	...	...	...	...
5	Belur	27	...	...	...	16	...
6	Halebid	2	...	...	...	8	...
7	Kesgode	5	...	...	...	37	...
8	Hagare	6	...	...	...	13	...
9	Areballi	9	...	...	...	25	...
10	Gendehalli	...	...	...	...	24	...
11	N. M. C. (Hassan)	138	...	...	...	1	1
12	Jayachamarajapura	...	...	...	...	4	2
13	Boralu	50	...	...	...	...	...
14	Dt. Health Office	...	...	...	...	2	2
	Total ...	237	...	...	...	164	5

Two of the 5 cases were chronic malaria cases who had relapse and the other 3 smears were from Arasikere taluk taken during epidemic of Malaria.

As a result of periodical D. D. T. spraying, in all the Taluks in the District, except Arasikere Taluk, Malaria was brought under control. According to the reports received, 3,565 Malaria cases have been treated in the Health Unit Dispensaries, L. F. Dispensaries and District Board Dispensaries have treated 79,379 and 13,813 patients respectively. The large number of malaria cases reported from the L. F. Dispensaries and the District Board Dispensaries was probably due to an epidemic of malaria, which broke out in Arasikere taluk and where the D. D. T. spraying was not done and due to the difference in diagnosis of cases.

In April and October, Spleen survey showed the spleen rate not more than 2 per cent and the average enlarged spleen ranging from 1·1 to 1·9.

III. Materniy and Childwelfare and School Health Service.

Each Health unit is provided with three Midwives and the Maternity and Child Welfare work was attended to by this staff. Each Secondary Centre is provided with two Public Health Nurses to supervise the work of the Midwives but actually one Public Health Nurse was working (Belur Secondary Centre) in the whole District.

Nine thousand thirty-seven pre-natals were registered during the year under report. On an average each pre-natal was given 4·3 visits. The Midwives conducted 1,877 deliveries and 1,941 were delivered by Dhais. Thus it is seen only 48 per cent of the deliveries were conducted by the Midwives. Each Midwife and Dhai delivered case was given on an average 3·1 and 1·5 post-natal visits. There were 184 Infant Deaths among Dhai delivered cases and 122 infant deaths among Midwife delivered cases, maternal deaths among the dhai conducted cases being 11 whereas in trained midwife delivered case, it was 8. The Midwives have visited 892 clinics and they have examined 8,474 urine samples.

School Health Work.—Except Health talks given to the school children by the visiting health staff, no other work is turned out during the year under report.

Milk Distribution.—This was done in seven Centres and 47,862 feeds were given during the year under report.

IV. Vital Statistics.

Vital Statistics.—The question of obtaining accurate records of Births, Deaths and other vital events is not yet solved in this country. Their importance is not appreciated although rules and regulations have been framed. To ensure better collections of Vital Statistics in the Health Unit area, the Health Inspectors have been entrusted with the work of investigation and checking of the Patels Registers as a routine monthly activity. As a result of this, it is observed that there is better registration of births, and deaths by the Patels where the Health Inspectors have been checking, when compared to Non-Health Unit areas.

TABLE VII.

Showing the vital events in the various areas of the District.

Particulars	Population	Births		Deaths		Infant deaths		Maternal deaths	
		1953	1954	1953	1954	1953	1954	1953	1954
1. Health Unit Area	1,17,712	2,817	4,572	710	1,502	243	512	11	29
2. Pocket area ...	1,04,127	...	1,868	...	558	...	132	...	18
3. Municipal area ...	84,966	...	1,973	...	541	...	99	...	10

Births.—There were 4,572 births in the full-fledged Health Units as compared with 4,030 in the previous year. The births in the pocket area was 1,868 and in the Municipal area was 1,973. The birth rate in the Health Unit area, pocket area and the Municipalities are 38·8, 17·9 and 20·8 respectively. The birth rate in the pocket area is low due to the defective collection.

Deaths.—There were 1,502 deaths as compared to 1,179 during the previous year. In the Pocket area and the Municipality the deaths recorded were 558 and 541 respectively. The crude death rate in the Health Unit area, Pocket area and Municipality were 12·8, 5·3 and 6·3 respectively. There was better reporting in Health Unit areas which accounts for higher rates than in the Pocket and municipal areas where reporting is defective.

Infant Deaths.—There were 512 infant deaths during the year under report as against 402 in the previous year. In the Pocket Area and the Municipality there were 132 and 99 respectively. The Infant Mortality rate in the three areas are 112, 70·6 and 50 respectively. Obviously the collection of the Statistics in the Pocket area and the Municipal area are defective.

Maternal Deaths.—There were 29 Maternal deaths in the Health Unit area as against 11 during the previous year. There were 18 Maternal Deaths in Pocket Area and 10 in the Municipalities. The Maternal Death Rates in the three areas were 6·2, 9·7 and 5·1 respectively.

Thus it may be seen that the Vital Statistics collection is still defective in the Pocket area and the Municipal area and needs improvement. There is scope for improvement in the Health Unit area also.

The District Health Officer was on tour on 120 days during the year and visited 139 villages. All the Municipalities were visited by the District Health Officer.

Health Education.—This was carried out by all the members of the Health staff during their routine visits to the villages. The Propaganda van of the Department did propaganda on various health subjects at Ramanathapura and Hassan jatras.

Curative work.—There are 18 Health Unit Dispensaries in the District. Twenty-five Dispensaries are under the control of the Medical Department and 27 Ayurvedic Dispensaries under the control of the District Board. On an average there is 1 dispensary for every 10,000 population. To most of the villagers medical aid is available within a distance of five miles.

TABLE VIII.

Showing the number of patients treated in the various Dispensaries in the District during 1954.

Sl. No.	Type of Dispensary and number	Total number of new patients treated	Average number of new patients treated per Dispensary.
1	Health Unit Dispensary 18 ...	1,58,223	8790·1
2	L. F. Dispensaries 25 ...	44,683	1787·3
3	Ayurvedic and Unani Dispensaries 27 ...	1,38,640	5134·1

Special works, jatras, fairs and festivals.—Sanitary arrangements were made in Ramanathapura and Hassan jatras. There are fairly big jatras in the State and due to cattle show, people come not only from the various parts of this State, but also from outside the State. Trench latrines were introduced for the people during the jatras. Special precautionary measures were taken to prevent fly nuisance. The other measures like, providing water supply (protected), sweeping of streets, looking after the general sanitation of the Hotels was also enforced in the jatra grounds.

Visitors.—Sir Mirza M. Ismail and Mr. Bruce Chavatt, Senior Malariologist, Nigeria, British West Africa visited Belur Secondary Centre and Dr. B. Ananthaswamy Rao, Deputy Director, Malaria Institute of India, Delhi visited the District Health Office, Hassan.

CHICKMAGALUR DISTRICT

DR. S. D. NARAYANA GOWDA, M.B.B.S., D.P.H., D.I.H.,

District Health Officer

History of Public Health Services in the District.—A District Health Officer was posted to the District for the first time in the year 1945, prior to which the District Medical Officer was also in additional charge of the District Health activities. With a view to giving relief to the people of malnad from Malaria and other preventable diseases and also giving an integrated preventive and curative service, the Government in their order No. Fl. 12489-532—P.H. 172-41-1, dated 27th May 1942, sanctioned the conversion of the dispensaries at Koppa, Narasimharajapura and Hariharpura in this District into Health Units. With the establishment of these Health Units, a nucleous of an organisation was established to give both preventive and curative services to the people. These 3 Health Units were

administered by a separate Medical Officer of Health, stationed at Shimoga till they were taken over by the District Health Officer, Chickmagalur on 28th June 1945.

Having recognised the urgent necessity for further measures of improvement of Public Health of Malnad districts on account of the decline of population due to malaria, hookworm, pneumonia, heavy maternal and infant deaths and reduced number of births, the Government sanctioned 11 more Health Units in their Order No. M. 10677-83—P.H. 6-44-6, dated 1st April 1946 for this District.

The next stage of development was the establishment of 17 more Health Units as per Government Order No. M. 12951-92—P.H. 167-46-12, dated 2nd February 1949, sanctioning 81 Health units for the 3 Malnad Districts. For proper administration of the Health Unit activities, 6 Secondary Centres were also sanctioned, *viz.*, at Chickmagalur, Mudigere, Tarikere, Balehonnur, Koppa and Kalasa.

Government in their Order No. M. 20030-43—P.H. 88-52-6, dated 29th December 1952, have sanctioned 15 more modified Health Units under "44. Health Units Scheme". Out of these Health Units 12 Health Units are functioning. In all there are 44 Health Units working in this District. Out of 12 Health Units formed under "44. Health Units Scheme", Begur has been converted into a full-fledged Health Unit in Government Order No. 6628-30—P.H. 52-54-2, dated 24th June 1954.

Government in their Order No. M. 3377-81—P.H. 43-53-2, dated 28th May 1953, have abolished Kalasa Secondary Centre and the Health Units of Kalasa Secondary Centre have been attached to the Mudigere Secondary Centre. Thus there are only 5 Secondary Centres working at present in this District.

Government in their Order No. M. 10018-34—P.H. 119-52-17, dated 10th October 1953, have sanctioned the National Malaria Control programme, which has been sponsored by the Government of India to effectively control Malaria throughout India. Now, D.D.T. spraying and other Anti-Malaria activities have been extended to the entire Chickmagalur District, except Chickmagalur Town and the activities are carried on under the administrative control of the Chickmagalur Unit of the National Malaria Control Programme.

Administration.—Dr. S. D. Narayana Gowda, who took charge of the office on 12th August 1951 has continued to be the District Health Officer during the year under report. The District Health Officer toured for 171 days camping 114 days outside during the year 1954. He visited 169 villages and has inspected all the Health Units more than twice during the year. He also inspected all the Municipalities in the District.

Non-Health Unit Area.—The rural parts of the District, except the area covered by the Health Units is directly under the District Board for purposes of Public Health Administration. This area extends over almost the entire Kadur Taluk and a small part of Tarikere Taluk. There is one Senior Health Inspector and 4 Vaccinators in charge of this non-Health Unit area.

Health Unit area.—There are 44 Primary and 5 Secondary Health Centres covering the entire malnad part of the District.

A Maternity and Child Health Services.

Reference—Statement Part D. *Appendix*)

Out of the ten Public Health Nurses sanctioned to the District, only one was posted in July 1952 to Mudigere Secondary Centre and is still continuing there. Out of the sanctioned 110 midwives, only 68 midwives were actually working in the District during the year. Therefore, it was possible to render services to roughly half the Health Unit population, even though the other villagers are continuously urging for extending these services to them also. The services rendered by the widwives are:—

1. Pre-natal service,
2. Post-natal service, and
3. Infant care.

Pre-natal Service.—The Health Unit midwives had 10,089 pre-natals on their registers during the year. To these pre-natals 10,089 first and 46,523 re-visits were given during the year, as against 9,945 first and 37,409 re-visits during the previous year. Thus, each pre-natal received 5·6 visits by the midwives as against 4·7 visits during the previous year. Sixteen thousand and five hundred urine samples were collected and examined during these visits. On an average, each midwife had on her register 148 pre-natals and gave 832 pre-natal visits to the above cases during the year.

Deliveries.—There have been altogether 6,583 deliveries in the Health Unit area allotted to the Midwives during the year. Of these, the midwives conducted 3,472 deliveries and the dhais 3,111 deliveries, as against 2,918 and 2,750 respectively during the previous year. Thus 52·7 per cent of the deliveries have been conducted by the midwives during the year in their areas.

On an average each midwife conducted 51 deliveries during the year as against 53 during the previous year. This fall is due to the posting of 9 new midwives in the later part of 1954 to the District and also to taking up new areas for midwifery services.

Post-natal Services.—The midwives gave post-natal visits to the midwife conducted cases and 3,980 post-natal visits to dhai conducted cases during the year, as against 8,446 and 4,543 visits respectively during the previous year. On an average 2·6 visits to each of the midwife cases and 1·2 visits to each of the dhai cases were given, as against 2·8 and 1·6 respectively during the previous year. On an average each midwife gave 193 post-natal visits during the year, as against 236 during the previous year.

The midwives visited 2,82,796 houses during the year, as against 2,30,800 during the previous year. During these visits they gave 69,169 talks to an audience of 2,29,165. They also investigated 640 infant deaths and 50 maternal deaths. Of these, 215 infant deaths and 15 maternal deaths were among the midwife conducted cases and the rest the dhai conducted ones. The infant mortality rate was 61·9 and the maternal mortality rate was 4·3 in the midwife conducted cases, whereas the infant mortality rate was 136·6 and maternal mortality rate is 11·2 in the dhai conducted cases. The infant mortality rate was 71·6 and maternal mortality rate was 8·9 in the midwife conducted cases and the infant mortality rate was 132·7 and maternal mortality rate was 13·8 in the dhai conducted cases during the previous year.

Statement showing the activities of the midwives.

Sl. No.	Year	Number of midwives working	Average per midwife for the year			
			Number of pre-natals on the roll	Number of pre-natal visits	Number of deliveries conducted	Number of post-natal visits
1	1954 ...	68	148	832	51	193
2	1953 ...	55	180	860	53	236

Activities of the Public Health Nurse.—A Public Health Nurse was posted to Mudigere Secondary Centre during July 1952. During the year she visited 3,754 houses. She paid 1,010 pre-natal visits, 97 post-natal visits, 1,386 infant visits and 2,049 pre-school visits. She has attended 41 maternity and child welfare clinics. In addition, she supervised and checked the work of the midwives in her area (*vide* Part D Statement—Annexure).

School Health Service.—There are 599 Primary, 57 Middle, 42 New Type Middle and 13 High Schools in Chickmagalur district. In the Health Unit area of the District, the School Health Services was organised on three main lines, *viz.*, School Medical Inspection, environmental sanitation of Schools and Health Education in Schools.

School Medical Inspection was limited only to the pupils of the Schools at the Headquarters of the Primary Health Units. The follow up of pupils after medical examination was unsatisfactory. The Executive Officials of the Department visited the schools during their itinerary as a routine to advise the teachers on environmental sanitation and to give Health talks to the pupils and teachers.

Communicable Diseases and their Control.

(*Reference—Statement Part B. I & II*).

Prompt and energetic measures were taken to control the infection soon after the reports were received. The reporting of infection by Patels and co-operation of the public for preventive campaigns continued to be unsatisfactory in the Non-Health Unit area though public co-operation was improving.

(i) *Plague.*—Rat deaths were reported from 9 villages of the Health Unit area and 5 villages of Non-health Unit area and a town during the year. The dead rats were dissected and examined for Plague infection. In 7 places, the dead rats proved positive for P. Pestis infection. There were no human attacks in any of the 15 places. Except for routine D.D.T. spraying for Malaria control, no cyano-fumigation, anti-plague inoculations or D.D.T. spraying were done in any of the villages. As a preventive measure, the entire Chickmagalur Town was got sprayed with Hexidole at the cost of the Municipality.

Statement showing the incidence of Plague in the District and the control measures adopted during the year 1954.

Sl. No.	Particulars of area infected	Year	No. of places infected	Attacks	Deaths	No. of inoculations	No. of cyano-fumigation	No. of houses sprayed
1	Municipalities ...	1954	1	...	...	3	...	The infected houses and their surroundings were sprayed with D.D.T.
		1953	...	...	...	...	...	
2	Health Unit area ...	1954	9	...	...	39	...	
		1953	2	...	...	..	...	
3	Non-Health Unit area.	1954	5	...	...	...	...	
		1953	...	...	...	...	...	
	Total ...	1954	15	...	...	42	...	
		1953	2	...	...	...	...	

(ii) *Cholera.*—There were two out-breaks of Cholera in the District during the year. The first out-break occurred during the months of January and February 1954 and continues till the end of April 1954 in Tarikere, Chickmagalur, Koppa and Kadur Taluks. Forty-three villages and two towns were infected.

The second out-break started during July 1954 in Tarikere, Kadur and Chickmagalur Taluks. The second out-break was more virulent and extensive than the first. Five towns and 24 villages and a number of labour camps in Bhadra Reservoir Project area, Lakkavalli were infected.

Six hundred and eighty-three attacks and 338 deaths took place during the year, as against 87 attacks and 55 deaths during the previous year.

Both the out-breaks were brought under complete control by prompt and energetic control measures except in Bhadra Reservoir Project area, where the environmental conditions and frequent shifting of labour camp from place to place did not lend themselves for prompt and effective control measures. The reporting of infection was unsatisfactory in the Non-Health Unit area.

One lakh thirty-two thousand three hundred and twenty anti-cholera inoculations were done in the infected area in addition to the daily chlorination of drinking water sources, general cleaning of villages and towns, D.D.T. spraying to control fly nuisance, adoption of strict sanitary measures in food and drink, catering establishments and Health Education of the public in Cholera preventive measures. The Revenue Department extended its full co-operation in bringing the infection under control. Preventive measures were also undertaken in a number of villages which were nearby the infected villages.

Statement showing the incidence of Cholera in the District and the control measures adopted in the year 1954 as compared with those of 1953.

Sl. No.	Particulars of infected areas	Year	No. of places infected	No. of attacks	No. of deaths	No. of anti-cholera inoculations	Wells chlorinated	Sprayed with D.D.T.
1	Municipalities ...	1954	7	74	47	23,308	All drinking water sources in the infected areas were chlorinated daily till infection subsided.	Houses and other buildings in the infected areas were sprayed.
		1953	1	12	8	8,225		
2	Health Unit area ...	1954	45	277	149	44,458		
	Labour camps of Bhadra Reservoir Project.	1954	...	247	91	47,801		
	Health Unit area ...	1953	7	31	17	6,740		
3	Non-Health Unit area.	1954	22	85	51	15,753		
		1953	12	44	30	5,711		
	Total ...	1954	74	688	338	1,32,320		
		1153	20	87	55	20,676		

Small-pox.—Sporadic cases of Small-pox from all over the District were reported during the year. There were in all 20 attacks with 2 deaths of which 9 attacks with 1 death were in the Health Unit area, 1 attack and 1 death in the non-Health Unit area and 10 attacks with nil deaths in the Municipalities. During the previous year, there were 230 attacks and 35 deaths in the District. Most of the Small-pox cases reported from the Health Unit area were imported cases. The very small number of cases in the non-Health Unit area was due to defective reporting by the patels. Nineteen thousand three hundred and eighty-nine Primary and 61,260 re-vaccinations were done in the District. Intensive vaccination drive was taken up in the neighbourhood of infected localities. The percentage of success of primary vaccinations during the year was 93·9 in the Health Unit area, 95·5 in the Non-Health Unit area and 95·7 in the Municipalities.

At the end of the year, there were 3,122 children below 6 months and 2,614 children above 6 months of age in the Health Unit area who were not vaccinated; thus leaving on our records 2·7 per cent of the population primarily unprotected.

Statement showing the incidence of Small-pox in the District and the control measures adopted in the year 1954.

Sl. No.	Particulars of area infected	Year	No. of places infected	Attacks	Deaths	Vaccinations			Percentage successful	
						Primary	Re	Total	Primary	Re
1	Municipalities ...	1954	2	10	...	2,523	15,775	18,298	95·7	29·9
		1953	3	22	7	2,212	4,104	6,316	95·4	25·8
2	Health Unit area ...	1954	9	9	1	12,186	33,993	46,179	93·9	28·2
		1953	22	67	9	13,477	30,136	43,613	93·6	30·1
3	Non-Health Unit area.	1954	1	1	1	4,680	11,492	16,172	95·5	12·5
		1953	13	141	19	5,487	12,956	18,443	96·9	19·4
	Total ...	1954	12	20	2	19,389	61,260	80,649	94·7	25·4
		1953	31	230	35	21,176	47,196	68,372	95·2	26·4

(iv) *Malaria.*—Malaria which was the chief Public Health Problem of the District has been very much controlled by the vigorous anti-malaria operations undertaken during the last five years. There were 13,346 cases of Malaria with only one death during the year, as compared to 17,277 cases with 7 deaths during the previous year. The percentage of malaria cases to the total cases treated in the various Health Units was 3·3 as compared to 5·9 during the previous year. The specific morbidity rate for malaria in the Health Unit area is 64·3 for the year, as compared to 71·7 during the previous year. The specific mortality rate for malaria is 0·4 during this year, as compared to 3·4 during the previous year.

It could be seen from the figures that there was a steady decrease in the morbidity and mortality due to Malaria since 1949 when DDT spraying was started in all the Health Units in the District. The same progressive trend is maintained this year also.

Anti-malaria Measures.—The D.D.T. spraying operation, which was hitherto done by the staff of the Primary Health Units was taken over by the Chikmagalur Unit of the National Malaria Control Programme from November 1953.

Before the transfer took place, the D.D.T. spraying activities were limited to only the Health Unit areas of Chikmagalur District. After the introduction of the National Malaria Control programme, the entire district except a few towns has been taken up for D.D.T. spraying. During the April, May and June 1954 round of D.D.T. spraying only the Health Unit areas were taken up due to the non-availability of the required quantity of D.D.T. materials. During the October, November and December 1954 round of D.D.T. spraying, the entire District except Chikmagalur, Birur and Kadur Towns was sprayed.

During the first round of D.D.T. spraying in the year, 3,006 main and dakla villages and 6 towns containing 75,251 houses are sprayed.

During the second round of D.D.T. spraying in the year 3,140 main and dakla villages and 5 towns containing 91,005 houses were sprayed.

During the first round of D.D.T. spraying 2,512½ gallons of Emulsion Concentrate equivalent to 11·722 lbs. of 75 per cent D.D.T. Wettable powder and 29,687½ lbs. of 75 per cent D.D.T. wettable powder have been spent.

During the second round of D.D T. spraying 45,652 lbs. of 75 per cent D.D.T. wettable powder were used.

During the year 5,226 blood smears were taken and examined for the malaria parasite from malaria cases, fever cases and infants.

During the non-spraying season, the staff of the Chikmagalur Unit of the National Malaria Control Programme were engaged in entomological work and infant blood smears taking.

The total expenditure incurred for D.D.T spraying in the District excluding the cost of D.D.T. material is Rs. 47,325-0-0. The *per capita* cost worked out to Re. 0-2-0 and the cost of spraying each house has worked out to Re. 0-9-2.

The spleen surveys were conducted during April and October 1954 in all the Primary Health Units where there were permanent Assistant Medical Officers of Health as in the previous years. In addition, during this year

sample spleen surveys were done in each of the Health Units where there were no permanent Assistant Medical Officers of Health, to assess the effect of Anti-malaria activities. The spleen rate for the District is 1·7 during this year as compared to 3·1 during the previous year. The average enlarged spleen is 1·3 as against 1·3 during the previous year. The average spleen for the year is 0·02 as compared to 0·04 during the previous year. Thus, it could be seen that there is a gradual and steady decline in the enlarged spleens of the area since the last five years due to intensive Anti-malaria campaigns. From the figures it could also be seen that there is a gradual shift to splenic enlargements from the higher to the lower enlargement groups over the last five years. The spleen rates, the average enlarged spleen and the average spleen are rather still high in Balehonnur.

Statement of Spleen Survey.

Sl. No.	Year	Total No. of Children examined	Total No. of children positive	Spleen rate	Average enlarged spleen	Average spleen
1	1954 April ...	27,556	559	2·02	1·3	0·027
	1954 October ...	27,866	4 4	1·4	1·2	0·016
	For the year ...	55,422	963	1·7	1·3	0·02
2	1953 April ...	26,476	868	3·7	1·45	0·05365
	1953 October ...	27,780	721	2·6	1·3	0·0338
	For the year ...	54,256	1,619	3·1	1·3	0·04

(v) *Dysentery and other bowel infections.* – There were 13,199 cases of dysentery with 111 deaths during the year, as against 17,042 cases with 127 deaths during the previous year. Worm infections, specially round worm and hook-worm are common in the area. Diarrhoea is another common condition in the District.

In addition to the prompt treatment of cases, general cleaning of villages and introduction of Hand-flush latrines were vigorously pursued during the year to control bowel infections. Regular chlorination of water sources in the Health Unit area was done.

Statement showing the incidence of bowel diseases in the Health Unit Area of the District and the preventive measures adopted.

Sl. No.	Year	Total cases treated	No.	Percentage of total cases treated	No.	Percentage of total cases treated	No.	Percentage of total cases treated	Started	Completed	No. of wells chlorinated
1	1954 ..	3,28,868	26,379	8·0	13,199	4·0	5,903	1·7	693	534	6,858
2	1953 ...	4,37,137	22,438	7·9	17,042	6·05	5,074	1·7	341	216	1,961

(vii) The other communicable diseases as Pneumonia, Pulmonary Tuberculosis, Typhoid, etc., were equally prevalent during this year as in the previous year. The patients were given prompt and effective treatment at the various Health Unit Dispensaries. Wherever necessary and possible, preventive measures to check their spread were undertaken.

General Sanitation.—During this year 693 flush-out latrines were started out of which 534 were completed, as against 341 and 216 respectively during the previous year. All out of efforts are being made to continue this Campaign with greater vigour.

	1954	*1953*
Hand flush-out latrines (including the pocket areas) ...	534	216
No. of Soakpits introduced	84	219
No. of windows introduced	1,117	715
No. of cattle sheds improved	888	772
No. of back yards cleaned	2,816	3,370
No. of kitchen gardens introduced	496	628
No. of cart loads of rank vegetation removed ...	2,077	1,646
No. of manure and other pits filled	199	193
No. of houses mud-plastered	352	266
No. of houses white-washed	1,452	1,519
No. of houses in which roofing and flooring improved ...	267	249
No. of dilapidated structures removed ...	74	44
Roads in running yards formed	5,202	11,990
Roads in running yards repaired	20,996	22,379
Drains in running yards formed	12,204	16,203
Drains in running yards repaired	5,863	14,279

Food, Sanitation and Adulteration.—The Assistant Medical Officers of Health, Medical Officers of Health and the District Health Officer have constantly inspected the food and drink catering establishments in their respective jurisdictions and have sent detailed notes of insanitary conditions existing in the above establishments to the licensing authorities, *viz.*, the Amildars and the Presidents of the Municipalities for taking action. It is very rare to find any of the licensing authorities insisting on defects being rectified. Due to this, the proprietors of the above establishments view the inspections of this Departmental Officers lightheartedly and the unhygienic conditions continue.

The Food Adulteration Act is applicable to most of the Municipal area in the District. Some of the Municipalities do not even know, whether the Act is in force in their area or not. Food Adulteration is very common in the District, specially of milk, butter, ghee, coffee, etc. The Municipalities are not making any effort to control this evil even though they are requested any number of times to take stringent action in this regard by this office.

Health Education.—This important activity was continued as in the previous years. The various members of the staff have utilised every opportunity to meet small groups of persons in the villages during their itineration and talk to them about various health subjects; sometimes giving practical demonstrations as chlorination, vaccination, D.D.T. spraying, etc. During this year, the staff of the Health Units gave 1,07,941 talks on Health matters to 4,79,614 persons. The result of this continuous education is evident in the greater amount of Health consciousness among people of the Health Unit area and their greater co-operation with the Departmental staff as compared with the people of the non-Health Unit area.

Statement showing the number of Health talks given and the number of people that attended in the years 1954 and 1953.

Year	*No. of Health talks*	*People*
1954 ...	1,07,941	4,79,614
1953 ...	85,119	3,98,237

Curative Services :—(Reference—Statement A. IV—Appendix).—These services were rendered mainly from the 32 Health Unit dispensaries in the District and to a limited extent from the two clinic centres in every Primary Health Unit. Patients were also given suitable advice and treatment by the Assistant Medical Officers of Health, when they were on itineration in the villages. Five lakhs two-thousand four hundred and ninety patients were treated for various diseases in the Health Units during the year as compared with 4,37,137 during the previous year.

Statement showing the curative services done during 1954 and 1953.

Year	Dispensary			Clinics			Villages			Grand Total		
	New	Old	Total	New	Old	Total	New	Old	Total	New	Old	Total
1954 ...	3,19,948	1,72,062	4,92,010	7,761	1,403	9,164	1,159	157	1,316	3,28,868	1,73,622	5,02,490
1953 ...	2,75,257	1,51,713	4,26,970	6,694	1,547	8,241	1,807	119	1,916	2,83,758	1,53,379	4,37,137

Laboratory Service.—(Reference—Statement A. V—Appendix).—During the year under report, 12,465 Pathological specimens have been examined in the District as compared to 8,418 during the previous year.

The following statement shows the laboratory investigations done in the various Health Units in the District to confirm the clinical diagnosis :—

Serial Number	.....	1954			1953		
		Examined			Examined		
		Locally	Public Health Institute	Total	Locally	Public Health Institute	Total
1	Blood smears for M.P. ...	492**	3,611	4,103	780	999	1,779
2	Blood for Wasserman reaction.	...	167	167	...	168	168
3	Blood for Weifelix reaction	...	50	50	...	161	161
4	Urine for Sugar and Albumin.	7,395	21	7,416	5,599	...	5,599
5	Motion examined for worms.	171*	10 5	186	267	2 (2 brompt test)	291
6	Smears for Urethera for G. C infection.	26 ...	5 2 (brompt test)	31 2	18	5 80 (Infant blood smears)	103 ...
7	Smear for T.B. ...	27	8	35	29	13	42
8	Other Pathological specimens examined.	175 15 (differential counts)	285	475	119 45(Ho%)	110 2 (Pyrexia)	275
	Total ...	8,301	4,164	12,465	6,876	1,542	8,418

*Motion sample for suspected Cholera patients.
**Includes the number sent to the Public Health Institute, Bangalore and Malaria Investigation Centre, Saklespur.

It could be seen from the above statement that the Assistant Medical Officers of Health are utilising Laboratory services more and more evey year.

Vital Statistics.—Statement of comparative figures of crude birth rate, crude death rate, infant mortality rate, maternal mortality rate and still birth rate in the Health Unit area and Municipal area during 1954 and 1953 :—

Year	Area	Crude birth rate	Crude death rate	Infant mortality rate	Maternal mortality rate	Still birth rate
1954 ...	Health Unit ...	39·7	13·6	124·5	8·8	3·2
	Municipal ...	38·7	8·6	26·7	4·1	2·9
	Total ...	39·5	12·0	101·1	7·7	3·1
1953 ...	Health Unit ...	41·03	15·4	133·4	11·9	3·1
	Municipal ...	51·7	11·2	32·2	2·2	4·5
	Total ...	43·2	14·3	104·6	9·1	3·5

Births.—There were 10,752 births during the year with a crude birth rate of 39·5 as against 11·788 births with a crude birth rate of 43·2 during the previous year. There were 8,177 births in the Health Unit area with a crude birth rate of 39·7, as against 8,448 births with a crude birth rate of 41·03 during the previous year. There were 2,575 births with a crude birth rate of 38·7 in the Municipal areas, as against 3,340 births with a crude birth rate of 51·7 during the previous year.

Deaths.—There were 3,382 deaths giving a crude death rate of 12·0 during the year, as against 3,921 deaths with a crude death of 14·3 during the previous year. There were 2,810 deaths in the Health Unit area with a crude death rate of 13·6 as against 3,171 deaths with a crude rate of 14·3 during the previous year. There were 2,810 deaths in the Health Unit area with a crude death rate of 13·6, as against 3,171 deaths with a crude death rate of 15·4 during the previous year. There were 572 deaths with a crude death rate of 8·6 in the Municipal area, as against 750 deaths with a crude death rate of 11·2 during the previous year.

Infant Mortality.—There were 1,087 infant deaths with an infant mortality rate of 101·1 during the year, as against 1,234 infant deaths with an infant mortality rate of 104·6 during the previous year. There were 1,018 infant deaths in the Health Unit area with an infant mortality rate of 124·5 as against 1,127 infant deaths with an infant mortality rate of 133·4 during the previous year. Whereas, in the Municipalities there were 68 infant deaths with an infant mortality rate of 26·7 this year, as against 107 infant deaths with an infant mortality rate of 32·2 during the previous year.

Maternal Mortality.—There were 86 maternal deaths with a maternal mortality rate of 7·7 during the year, as against 112 maternal deaths with a maternal mortality rate of 9·1 during the previous year. There were 75 maternal deaths in the Health Unit area with a maternal mortality rate of 8·8, as against 104 maternal deaths with a maternal mortality rate of 11·9 during the previous year. In the Municipalities the number of maternal deaths were 11 with a maternal mortality rate of 4·1 this year, as against 8 maternal deaths with a maternal mortality rate of 2·2 during the previous year.

Still Births.—There were 349 still births giving a still birth rate of 3·1 during the year, as against 432 still births with a still birth rate of 3·5 during the previous year. There were 272 still births in the Health Unit area with

a still birth rate of 3·2 this year, as against 272 still births with a still birth rate of 3·1 during the previous year. Whereas in the Municipalities there were 77 still births with a still birth rate of 2·9 during this year as against 160 still births with a still birth rate of 4·5 during the previous year.

Special Activities.—During the year under report, Three Assistant Medical Officers of Health, One Senior Health Inspector and Six Junior Health Inspectors were deputed to Mandya for training in Malaria.

Four Junior Health Inspectors have been deputed to Public Health Institute, Bangalore for undergoing training as Laboratory Technicians.

One Assistant Medical Officer of Health was deputed to a short refresher course at Mysore.

Two Health Probationers were given training in Primary and Secondary Health Centres in this District.

Nine midwives after appointment were given field training in different Secondary Centres.

Budget allotment and Expenditure for calendar year 1954.

Budget grant and expenditure under " B District charges " for 1954.

Items	Budget grant	Expenditure
	Rs. a. p.	Rs. a. p.
1. Salaries and Establishment ...	2,39,010 0 0	2,98,060 3 0*
2. F.T.A. and T.A.	37,500 0 0	32,705 3 0**
3. Contingencies and Postal charges...	16,500 0 0	13,082 7 6
4. Van expenditure	3,000 0 0	1,514 1 9
5. Drugs	3,000 0 0	1,276 13 6
6. Works fund	3,000 0 0	10 0 6
Total ...	3,02,010 0 0	3,28,633 0 3

*(Includes salary and D.A. of Gazetted Officers and Pay and Allowance of all Staff.)

**(Includes T.A. and F.T.A. of Gazetted Officers and also other Staff.)

Budget grant and expenditure in connection with epidemic charges.

Items	Budget grant	Expenditure
	Rs. a. p.	Rs. a. p.
Plague and other epidemic charges—	Lumpsum grant made to the State	
1. Salary to Establishment ...	Do	1,752 12 0*
2. T.A. to Establishment ...	500 0 0	463 0 0
3. Contingencies	450 0 0	63 2 3
Total ...	950 0 0	2,278 14 3
Grand Total ...	3,02,960 0 0	3,30,911 14 6

*(Including D.A.)

Out of an expenditure of Rs. 3,30,911-14-6, the following items relating to the salary of Gazetted Officers, High Price Allowance and Dearness Allowance of other staff which were not provided in the Budget grant have to be deducted.

		Rs.	a.	p.
1.	Salary of Gazetted Officers	17,572	3	0
2.	High Price Allowance to the Gazetted Officers	1,800	0	0
3.	D. A. to the other staff	83,681	13	0
	Total ...	1,03,054	0	0

Thus, out of the Budget allotment of Rs. 3,02,010-0-0, only Rs. 2,26,857-14-6 has been spent leaving a savings of Rs. 76,102-1-6.

This savings is mainly due to the fact, that some of the vacant posts of staff were not filled up during the year.

According to the expenditure statement the *per capita* expenditure on Public Health in the District is Rs. 1-4-11 during the year, as against Rs. 2-2-11 during the previous year. This expenditure does not include the cost of Anti-malaria operations.

Diseases	Number of patients treated at								
	Dispensary			Clinics			Villages		
	New	Old	Total	New	O'd	Total	New	Old	Total
1. Malaria ...	12,738	8,623	21,361	500	110	610	108	10	118
2. Other fevers ...	20,671	14,789	35,460	593	80	673	292	16	308
3. Pneumonia ..	2,309	2,182	4,491	139	8	147	14	5	19
4. Other respiratory diseases.	83,376	45,939	1,29,315	2,028	326	2,354	178	36	214
5. Diarrhoea ...	25,564	13,664	39,228	651	85	739	161	3	164
6. Dysentery ...	12,811	6,825	19,636	293	53	346	95	12	107
7. Other digestive diseases.	31,109	15,292	46,401	774	109	883	12	...	12
8. Worms ...	5,753	183	5,936	146	2	148	4	...	4
9. Anaemia ...	8,321	8,443	16,764	344	218	562	33	48	81
10. Ulcers ...	18,057	9,478	27,535	329	... 80	409	37	...	37
11. Other skin diseases ..	13,559	5,605	19,164	333	84	417	116	6	122
12. All other diseases ..	85,680	41,039	1,26,719	1,628	248	1,876	105	21	130
Total ...	3,19,948	1,72,062	4,92,010	7,761	1,403	9,164	1,159	157	1,316
Male ...	1,98,618	1,05,547	3,04,165	4,460	791	5,251	707	93	800
Female ...	1,21,330	66,515	1,87,845	3,301	612	3,913	452	64	516
Operations done ...	2,420	...	...	...	...	...	...	...	...

Statement of Laboratory work for the year 1954.

Specimens	Number examined at his office	No. sent to Public Health Institute	Total
1. Blood for—			
(*a*) M.P. Picture, etc. ...	492	3,611	4,103
(*b*) W.R.	...	167	167
(*c*) Widal, and Weil-Felix ...	...	50	50
(*d*) Brompt Test	...	2	2
2. Urine for sugar or albumin, etc.	7,395	21	7,416
3. Motion for Ova of worms, etc. ...	171	10 *	186
		5	
4. Smear for G.C.	26	5	31
5. Smear for T.B.	27	8	35
6. Other Pathological specimens ...	175 (15 differential counts).	285	475

* Motion sample of suspected Cholera patients.

Statement of Communicable Diseases for 1954.

Incidence of	1954		1953	
	A	D	A	D
Plague	...	...	...	...
Small-pox	17	2	213	31
Cholera	668	334	87	55
Malaria	13,346	1	17,277	7
Other fevers	21,556	364	18,067	388
Dysentery	13,199	111	17,042	127
Pneumonia	2,462	47	1,758	60
Pulmonary T. B.	11	8	28	23
Leprosy	...	...	...	...
Typhoid	96	7	29	4

Statement of preventive measures undertaken against Communicable diseases for the year 1954.

	1954	*1953*
Inoculations—		
Plague	42	...
Cholera	1,31,652	20,676
Typhoid	1,265	463
Vaccination against Small-pox—		
Primary	19,389	21,216
Re—	61,260	47,558
Villages Cyanofumigated	...	...
Population	...	...
No. of houses fumigated	44	...
No. of burrows fumigated	572	...
No. of rats seen killed	1	...
No. of houses disinfected	74	...
Chlorination of wells—		
Potable	6,703	1,936
Brackish	155	25
General Cleansing of wells	1,078	519
Places declared infected	10	4
Shandies, Jatras, Cinemas, etc., stopped ...	10	...

Statement of Sanitary Improvements done for the year 1954.

	1954	*1953*
1. Number of Latrines—		
(*a*) Started	693	341
(*b*) Completed	492	216
(*c*) Repaired	17	22
2. Number of Soak Pits—		
(*a*) Started	62	109
(*b*) Completed	84	219
(*c*) Repaired	32	116
3. Number of Windows Introduced–		
(*a*) Big	244	178
(*b*) Medium	629	412
(*c*) Small	244	125
4. Cattle sheds improved	888	772
5. Backyards cleaned	2,816	3,370
6. Kitchen gardens introduced	496	628
7. No. of cartloads of rank vegetation removed ...	2,077½	1,646¼
8. Manure and other pits introduced—		
(*a*) Number	199½	193
(*b*) Cubic capacity	11,501	18,668
9. Mud plastering of houses	352	266
10. White washing of houses	1,452	1,519
11. Improvement of flooring and roofing ...	267	249
12. Dilapidated Structures Removed—		
(*a*) Number	74	44
(*b*) Cubic capacity	5,742	4,266
13. Roads in running yards—		
(*a*) Formed	5,202	11,990
(*b*) Repaired	20,866	22,379
14. Drainages in running yards—		
(*a*) Formed	12,204	16,203
(*b*) Repaired	5,863	14,279
(*c*) Cleaned	5,268	19,780

Statement of Midwife's work for the year 1954.

	1954	*1953*
1. No. of Houses visited	2,82,796	2,30,800
2. No. of Pre-natals—		
(*a*) Total Registered	10,089	9,945
(*b*) First Visit	10,389	9,945
(*c*) Re-visit	46,523	37,409
3. Deliveries Conducted—		
(*a*) Dai	3,111	2,750
(*b*) Midwife :—		
(i) Registered	3,052	2,422
(ii) Unregistered	420	496
4. No. of Post-natal Visit to cases of:—		
(*a*) Midwife	9,139	8,446
(*b*) Dai	3,980	4,543
5. Health Talks—		
(*a*) No. of Talks given	69,169	53,227
(*b*) Attendance	2,29,165	1,63,695
6. No. of clinics visited	1,605	1,392
7. Urine samples brought and examined ...	16,500	12,615
8. No. of Infant deaths in case of—		
(*a*) Midwife	215	209
(*b*) Dai	425	365
(*c*) Total	640	574
9. No. of Maternal deaths in cases of:—		
(*a*) Midwife	15	26
(*b*) Dai	35	38
(*c*) Total	50	64

Statement of Spleen Examinations done for the year 1954.

Chikmagalur District.

Secondary Centres	...	5
Primary Units	...	32
Villages	...	1,659
Population	...	2,05,856

April and October 1954.

	1954	*1953*
Total examined	55,422	54,256
Total positive spleen	963	1,689
Enlarged spleens—		
(N)	54,459	52,567
(1)	698	1,092
(2)	238	538
(3)	21	55
(4)	6	3
(5)	...	1
(6)	...	...
Spleen Rate	1·7	3·1
A.E.S.	1·3	1·3
A.S.	0·02	0·04

KOLAR DISTRICT.

DR. M. RAMA RAO, M.B.B.S., D.P.H.,
District Health Officer.

Dr. T. L. Puttaswamy, M.B.B.S., D.P.H., took charge of the office of the District Health Officer, Kolar on 7th September 1954 from Dr. M. Rama Rao, M.B.B.S., D.P.H., who was transferred to Mandya District, Mandya.

Pick-up Van Establishment.—The pick-up van of Chikmagalur District Health Office was transferred to this District *vide* Memo No. B.E.A. 975-9, dated 26th July 1954 and approved by Government in their Order No. M. 17873-75—P.H. 106-54-2, dated 13th December 1954. One Driver and Cleaner are working in the van in this office from 16th August 1954.

Mobile Dispensary Van.—The Mobile Dispensary Van of the Medical Department sanctioned to this office continued to be under the charge of this office till 29th July 1954 on which date it was returned to the Medical Department as per instructions of the Director of Public Health. No Assistant Surgeon was posted to the van during the year, but a compounder deputed by the District Medical Officer, worked for 6 months in this office. One driver and one cleaner and one peon were deputed by the Department. The compounder and peon were taken in the van whenever the District Health Officer went on tour for dispensing medicines to the needy. Necessary drugs were supplied by the Medical Department in addition to several tablets and patent medicines supplied by Bureau of Epidemiology and Bureau of Malariology. Medicines were purchased at a cost of Rs. 2,691-11-6 during the year under report out of the Departmental budget for use in this District. These medicines were of immense use to the villagers and came in very handy for treating patients in the villages in the mobile dispensary.

Vital Statistics.—

Total No. of Births	...	13,221
Total No. of Deaths	...	9,346
Total Maternal Deaths	...	85
Total Infant Deaths	...	1,223
Birth Rate	...	14·0
Death Rate	...	9·2
Maternal Mortality rate	...	6·2
Infant Mortality rate	...	92·5

CONTROL OF COMMUNICABLE DISEASES.

Plague.—During the year Plague prevailed in 121 villages resulting in 249 attacks, 94 deaths as compared with 31 attacks and 18 deaths during the previous year.

The incidence of plague was heavy in the district during the year as can be seen from the following figures :—

Year		*Attacks*	*Deaths*
1946	...	512	320
1947	...	330	157
1948	...	370	147
1949	...	64	23
1950	...	40	21
1951	...	47	15
1952	...	64	31
1953	...	31	18
1954	...	249	94

Spraying by Gammexane p. 520, is being done as one of the Plague preventive measures, immediately on the receipt of information of rat falls in an area. The results have been encouraging.

From the investigation made it is found that plague infection is not being reported from the villages sprayed with gammexane or from the villages sprayed under N.M.C. Programme. Heavy incidence of Plague was reported from Malur, Mulbagal and Srinivasapur taluks. It was considered necessary to spray all the villages in these taluks and the Special Officer, District Board was requested to arrange for providing funds. As no funds have been made available it has been proposed to include all the villages infected with plague and round about areas for spraying under N. M. C. Programme.

Smallpox.—Smallpox prevailed in 16 villages of the District during the year causing 108 attacks and 41 deaths as compared with 229 attacks and 52 deaths during the previous year.

During the year in all 1,11,564 vaccinations were done of which 31,827 were primary and 79,737 were re-vaccinations. The incidence of smallpox infection from 1949 to 1954 are furnished below :—

Year		*Attacks*	*Deaths*
1949	...	429	81
1950	...	502	90
1951	...	360	63
1952	...	330	70
1953	...	229	52
1954	...	108	41

The Special Officer, District Board was requested to sanction Rs. 4,000 for vaccination work for incurring expenditure relating to Travelling Allowance of staff to be deputed and petrol and incidental charges of the van. Mass vaccinations work will be taken after the amount sanctioned.

Cholera.—The incidence of Cholera was very low in the District during the year under report. The epidemic prevailed only in 7 villages in the district. The statement showing the details of incidence of cholera cases, talukwar and control measures taken is given below :—

Statement showing the details of Cholera Epidemic, and Control Measures taken during the year 1954.

Taluk	No. of villages infected with cholera	No. of villages not infected but preventive measures taken.	Date of outbreak	Last date of attacks	Attacks	Deaths	No. of anti-cholera inoculations done.	No. of wells chlorinated	No. of houses disinfected	No. of houses sprayed with G-Xane	S.G. tablets spent
1 Kolar ...	2	...	4-1-54	13-1-54	7	5	180	3	6	...	...
2 Bangarpet ...	...	...	...	...	...	...	...	...	...	...	...
3 Malur ...	1	...	24-4-54	27-4-54	3	3	186	14	3	...	...
4 Mulbagal ...	...	...	...	...	...	...	...	...	...	...	...
5 Srinivaspur ...	2	5	29-12-53	8-1-54	9	5	360	24	12	...	60
6 Chintamani ...	...	...	...	...	...	...	...	...	...	...	...
7 Sidlaghatta ...	...	...	...	...	...	...	...	...	...	...	...
8 Chickballapur...	...	...	...	...	...	...	...	...	...	...	...
9 Goribidnur ...	2	...	19-12-53 to 14-7-54.	19-12-53 to 16-7-54.	8	7	1,656	22	14	...	30
10 Bagepalli ...	...	...	...	...	...	...	...	...	...	...	...
11 Gudibanda ...	...	...	...	...	...	...	...	...	...	...	...
Total ...	7	5	...	...	27	20	2,282	63	35	...	90

The incidence of Cholera in the district for the last 6 years is given in the following statement :—

Year		*Attacks*	*Deaths*
1949	...	4	3
1950	...	163	101
1951	...	139	77
1952	...	544	284
1953	...	1,163	562
1954	...	27	20

Malaria Control.—Kolar District is generally considered free from malaria. But a study of incidence of malaria in the district reveals that the fairly large number of malaria cases are treated in the Dispensaries. From the experience it is seen that there was severe epidemic of malaria in the district following years of heavy rain-fall. There was such epidemic during 1944. Except drug treatment, no other large scale measures seem to have been undertaken during that epidemic with the result that the incidence of malaria continued during the subsequent years.

The Department forecasted an epidemic of malaria in October 1953 and requested the local bodies to make necessary provision in the budget to take control measures. The malaria epidemic started mildly in November 1953 and reached its peak by April 1954.

The District Board, Kolar sanctioned a sum of Rs. 5,000 in first instance and 38 badly affected villages of Bagepalli and Gudibanda taluks, comprising a population of 13,102 were sprayed during January and February 1954. The above amount was spent for the purchase of D.D.T. and for meeting labour charges. The anti-malarial drugs were freely distributed by the staff of the Department.

During February 1954, malaria cases were reported from several villages of Sidlaghatta and Chintamani taluks. A sum of Rs. 1,400 was provided by the N.E.S. Scheme, Sidlaghatta for the purchase of D.D.T. Thirty villages in Sidlaghatta Taluk comprising the population of 3,500 were sprayed with D.D.T during March 1954. Nine badly affected in Chintamani taluk comprising a population of 1,323 were sprayed during April 1954 out of the funds provided by the District Board. The labour charges were met by the concerned village panchayet.

During March 1954 the epidemic extended to other part of Bagepalli, Gudibanda, Chintamani and Sidlaghatta taluks and several villages in Chikballapur, Goribidnur and Srinivasapur taluks. There was a rapid increase in malaria cases in the Dispensary in the affected areas for example, the malaria cases in Chintamani Hospital increased from 661 in October 1953 to 1,361 in March 1954 and 2,220 in April 1954.

To meet the emergency, the District Board was again requested to place a sum of Rs. 5,000 at the disposal of this Officer, to take control measures and the District Board accordingly sanctioned a further sum of Rs. 5,000 for malaria control work. As this amount was also found inadequate for undertaking spraying work in all the affected villages, an estimate was submitted to the Director of Public Health for Rs. 52,500 for undertaking spraying work and requesting to post special staff for undertaking preventive and curative measures.

The Director of Public Health addressed the Malaria Institute of India, Delhi for the supply of 10 tons of 75% D.D.T. wettable powder and arranged for obtaining the same by sending lorries to Madras Government. The District Board were kind enough to sanction Rs. 15,000 out of the funds of the District Board, Kolar seven N.M.C. sub-units were drafted to this district for spraying work in the badly affected areas of Bagepalli, Gudibanda, Chintamani, Chikballapur, Sidlaghatta and Srinivasapur taluks. The whole area was divided into two divisions and each division was placed under the charge of a Health Officer. The Superintendent, Bureau of Malariology and the District Health Officer, Kolar supervised the control measures.

Spraying work was commenced in Bagepalli and Gudibanda taluks on 26th April 1954 by N.M.C. staff of Bangalore and continued till 13th May 1954. The other six N.M.C. sub-units squad commenced work on 7th May 1954 and completed spraying by 14th May 1954 during the period 26th April 1954 to 14th May 1954, 708 villages comprising a population of 1,53,809 were sprayed, spending 1,431 lbs. of D.D.T. 50% wettable powder

and 6,248 lbs. of D.D.T. 75% wettable powder. A statement showing the details of spraying is given below :—

Period	Taluk	No. of villages sprayed	Population protected	No. of houses				D.D.T. Wettable powder spent	
				Existing	Sprayed	Locked	Refused	50%	75%
31-1-54 to 10-2-54	Bagepalli ...	33	10,907	3,002	2,884	110	8	948	...
11-2-54 ...	Chintamani ...	1	1,000	289	265	24	...	140	...
2-2-54 to 3-2-54	Gudibanda ...	4	1,495	464	448	14	2	177	...
	Total ...	38	19,402	3,755	3,597	148	10	1,295	...
30-3-54 to 11-4-54	Sidlaghatta ...	30	5,500	1,455	1,407	41	7	478	...
12-4-54 to 15-4-54	Chintamani ...	9	1,323	392	385	7	...	133	...
	Total ..	39	6,823	1,847	1,792	48	7	611	...
6-5-54 ...	Gudibanda	4	1,488	349	333	15	1	108	...
8-5-54 to 13-5-54	Do ...	94	20,396	5,055	4,938	112	15	...	1,097
7-5-54 to 14-5-54	Chickballapur...	122	18,604	4,887	4,509	245	133	...	849
8-5-54 to 14-5-54	Chintamani ...	87	24,401	5,651	5,394	233	24	...	1,250
7-5-54 to 10-5-54	Sidlaghatta ...	45	9,892	1,837	1,793	17	22	...	503
7-5-54 to 11-5-54	Srinivasapur ...	81	18,789	3,951	3,769	123	59	...	610
12-5-54 ...	Goribidnur ..	11	3,065	613	583	...	18	..	86
26-4-54 to 12-4-54	Bagepalli ...	264	57,181	13,604	12,941	2	111	1,323	1,858
	Total ...	706	1,53,809	35,957	34,270	1,304	383	1,431	6,243
	Grand Total ...	785	1,74,034	41,559	39,659	1,500	400	3,307	6,243

Apart from the cost of D.D.T. supplied by Government of India an expenditure amounting to Rs. 14,708-7-0 was incurred by the District Board, Kolar towards the cost of D.D.T., labour charges, petrol and incidental charges of the vehicle, Rs. 1,392-15-3 was paid by N.E.S. scheme, Sidlaghatta towards the cost of D.D.T. and Rs. 200 and Rs. 100 were paid as donations by Gudibanda and Bagepalli Municipalities towards the cost of spraying.

Simultaneously with D.D.T. spraying antimalaria drug about 1,70,000 tablets were distributed to the sick through the Health Inspector in charge of spraying and District Board Health Inspectors, through the Assistant Surgeons of the Dispensaries and through the Revenue authorities. The Mobile Dispensary vans of this office and Chintamani Hospital were exclusively used for distribution of medicines.

The malaria epidemic was quickly brought under control and the attendance of malaria cases in the dispensaries fell down shortly.

There has been no malaria in the hyper-endemic areas of Bangarpet, Malur and Mulbagal taluks which were sprayed in November and December 1953 under N.M.C. programme.

The opportunity was availed of to study the anopheline fauna of the area and to incriminate the vector, A culicifices was found to be the Vector.

D.D.T. spraying was done in 319 villages of Bangarpet, Mulbagal, and Malur taluks by the staff of N.M.C. Unit, Bangalore during October and November 1954. The details of spraying are as follows :—

No. of villages.	*Population covered.*	*No. of houses sprayed.*	*Quantity of D.D.T. spent.*
319	66,764	18,962	11,005 lbs.

Diarrhoea and Dysentery.—In addition to high incidence of malaria cases in the District there was prevalence of diseases of digestive system *viz.*, Diarrhoea and dysentery in the District during the year under report.

A statement showing the total cases treated, No. of malaria cases and No. of diarrhoea and dysentery cases treated in the Dispensaries of the District is given below :—

Total patients treated	8,99,956
No of Diarrhoea and Dysentery cases treated ...	67,413
Do percentage	7·4
No. of Malaria cases treated	1,52,803
Do percentage	16·9

Water Supply.– In all the towns in the district (except K.G.F.) there is no satisfactory system of protected water supply. The worst in this regard is Chintamani Municipality. Water from bore-wells is insufficient, tank water is being supplied in the same pipes (in which bore-well water is supplied) without "*any treatment*" the result has been that the morbidity in the town is probably unparallelled anywherelse in the State. The out-patient attendance is probably the highest in the State, the daily average being about 600.

In Srinivaspur, Sidlaghatta, Gudibanda, Bagepalli and Manchenahalli Municipalities there is no provision for protected water supply at all. As protected water supply is one of main responsibilities of every municipality, action will have to be taken for giving adequate supplies of potable water to the residents in the towns. Even in rural areas necessary measures will have to be taken for supply of safe drinking water to the people. It is gratifying to note that arrangements are ahead for improving the water supply to Kolar, Bangarpet, Chikballapur, Chintamani and Goribidnur and Malur.

Ankylostomiasis.—When the multiphase health survey was done motion samples were examined for ova. From the results it is observed that there is plenty of Hookworm infection in the district. The results of motion examination were as under :—

Taluk	*Per cent of positive for Hook worm ova.*
Mulbagal	65·0
Malur	62·0
Bagepalli	45·0
Srinivaspur	43·8
Goribidnur	32·9

Promiscous defacation, absence of latrines, absence of safe methods of disposal of night-soil and the people not being used to wear any foot wear are the main causes for this high percentage of incidence of the disease.

Hand flush latrines are being popularised and so far 27 hand flush latrines have been introduced in the district.

Mass Hookworm treatment will have to be undertaken in some of the heavily infected areas.

Necessary measures will have to be taken to prevent soil pollution and health propaganda in this direction is being carried on.

Leprosy.—Leprosy cases were detected in the following places and curative measures were adopted :—

1. Hosur, Goribidnur Taluk
2. Mudigere, Goribidnur Taluk
3. Idagur, Goribidnur Taluk
4. Katanakal, Goribidnur Taluk
5. Manchenahalli, Goribidnur Taluk
6. Chickballapur Town
7. Sadli, Sidlaghatta Taluk
8. Billur, Bagepalli Taluk
9. Yedur, Srinivaspur Taluk

B.C.G. Vaccinations.—One B.C.G. vaccination team was working in this district continuously from 4th May 1954. They tested the persons and gave B.C.G. vaccination in Kolar, Bangarpet, Malur Towns in K.G.F. Civil and Mining area and in the villages of Bangarpet, Kolar, Malur and Mulbagal taluks during the year under report.

Food Adulteration Act.—The implementation of the Food Adulteration Act was defective. Though the food adulteration Act is in force from 1944 in eight of the municipalities of the district, and in spite of repeated requests by the District Health Officer and by the Deputy Commissioner, Kolar not even one case was launched.

Laboratory Work.—During the year the following items of laboratory work were done ; for want of necessary equipment (especially want of microscope) much work could not be done. At present during emergency aid of the District Hospital is sought for microscopic work.

Nature of specimen	No. examined at office	No. sent to Public Health Institute	Total
1. Smears for B pestis ...	2	...	2
2. Motion for cholera vibrics ...	...	3	3

Sanitation of Fairs and Festivals.—During the year under report 25 fairs were held and necessary sanitary arrangements were organised by the District Health Office. In most of the jatras the amount set apart for sanitary arrangements was found to be inadequate and the Deputy Commissioner, Kolar and the District Board, Kolar were good enough to sanction extra allotment as requested by the District Health Office. As such necessary arrangements were done fairly satisfactorily. Special precautionary measures were taken in respect of eating houses and eatables.

Site Selection.—The District Health Officer, Kolar inspected sites in 17 villages as requested by the Revenue authorities and gave suitable opinion.

School Health Work.—The District Health Officer and District Board Health Inspectors visited 397 schools during their itineration and gave health talks on various health subjects.

General Sanitation Work.—The District Health Officer, Kolar and District Board Health Inspectors visited 1,647 villages during the year and the details thereof are given below :—

Statement showing the details of health work done by the District Board Health Inspectors during the year 1954.

No. of villages visited	1,647
No. of Vaccinations done both Primary and Re-vaccinations	96,052
No. of Vaccinations checked	14,710
No. of wells chlorinated	2,159
No. of subjects talked in schools with attendance ...	397
	12,215
No. of villages where general cleaning was undertaken ...	265
No. of villages attended intensively in general cleaning ...	193
No. of latrines introduced	19
No. of windows introduced	82
No. of soak-pits introduced	83
No. of cattle sheds improved	1,619
No. of back-yards cleaned	2,328
No. of kitchen gardens introduced	186
No. of cart-loads of rank vegetation removed ...	392
No. of manure and other pits filled up	829
No. of houses white-washed	3,642
No. of dilapidated structures removed	76
Road formed in running yards	170
No. of villages where Births and Deaths registered checked	286
Improvement of flooring and roofing	39
No. of jatras attended	31

Hand Flush Latrines.—During the year 19 hand flush latrines were introduced as against 16 in the previous year.

Health Propaganda.—During the itineration of the District Health Officer, Kolar and the District Board Health Inspectors health talks were given on various subjects in all the villages visited.

Conferences.—During the year one conference of all the Health Inspectors and Vaccinators of the district was held at the office of the

District Health Officer, Kolar. During the meetings the work done by the Health Inspectors was reviewed by the Health Officer, and the plan of work to be turned out, the registers and charts to be maintained by them was explained.

Milk Distribution.—During the year under report, 1,128 lbs. of milk powder was issued by this office to several milk distribution centres. Six milk centres *viz.*, two centres by E.T.C.M. Hospital, Kolar, one centre at Gospel Mission Dispensary, Budikota and one centre at Government Middle School, Vemagal and one centre at Government Middle School, Sivarapatna and one centre at Kasturba Kendra, Gangasandra were running during the year under report. Eight thousand, four hundred and twenty-three infants below one year, 27,240 children below 14 years and 4,621 Nursing and expectant mothers were given milk during the year.

As per the request of the Secretary of Modi's eye camp, Kolar 150 lbs. of milk powder was issued to Modi's eye camp, Kolar, during December 1954 and the milk prepared out of the said powder were distributed to patients. The milk distribution was frequently supervised by the District Health Officer, Kolar.

During the year famine conditions, which were prevalent during the previous year, continued. The Government of Mysore and Red Cross Association took all round measures to alleviate suffering of the people. The Department of Public Health also took an active role in mitigating the suffering of the sick and giving relief to the diseased at their own doors. The mobile dispensary van was of immense use to the staff of the Department in affording medical assistance to the needy at the earliest opportunity.

During the year under report there was considerable expansion of the departmental activities.

1. Taking up D.D.T. spraying in Bangarpet area.
2. Taking up Malaria control measures in epidemic areas.
3. Taking up curative measures in rural areas.
4. Taking up of Health surveys and starting of mobile units for control of epidemic.

The District Board, Kolar and the Deputy Commissioner, Kolar evinced keen interest in the several activities of the Department and gave their unstinted wholehearted co-operation in discharging the responsibilities of this office satisfactorily. But for the financial aid and ever ready co-operation and assistance of the Board it would not have been possible to achieve the success in all its aspects of the departmental activities.

The public are also evincing keen interest in the departmental activities and are co-operating to the great extent in carrying on the work of the office efficiently. In some of the villages situated round about cholera infected villages, the people came in large numbers to the camp for getting inoculated against cholera. Reports of incidence of cholera or plague, or fever or other

sickness are often brought at all hours of the day personally by the village officers. There has been a clamour in many parts of the district for the formation of the " Health Units ".

In spite of ' Kolar ' considered as a healthy district, there is plenty of scope for the expansion of the departmental activities. It is hoped that in the coming years the department will be able to expand its activities manifold so that the common man in the town or village may derive the maximum benefit from the Department.

Budget.—The total expenditure incurred during the year was Rs. 16,142-15-3, as compared with Rs. 12,948-11-6 in the previous year. The details of expenditure are given below :—

ABSTRACT.

	District Health Office	*Cyanogas Unit*
	Rs. a. p.	Rs. a. p.
Expenditure on staff ...	6,890 12 0	3,040 1 0
Equipment ...	...	...
Travelling allowance ...	1,196 4 0	971 0 0
Contingencies ...	990 13 3	220 3 0
Works fund ...	142 2 6	...
Drugs ...	2,691 11 6	...

In addition to the amount sanctioned by the Department, the District Board, Kolar kindly sanctioned the following amounts :—

	Rs.
1. For control of epidemics	5,000
2. For malaria control work	15,000
3. Running expenses of mobile Dispensery van ...	2,500

Out of Rs. 5,000 sanctioned for epidemic control work, necessary articles for control of epidemics were purchased.

Out of Rs. 15,000 sanctioned for malaria control work Rs 14,708-7-0 was spent for purchase of D.D.T. for payment of labour charges, petrol charges, etc.

Out of Rs. 2,500 sanctioned for incidental charges of mobile dispensary van a sum of Rs. 2,318-15-3 was spent for petrol and other incidental charges of the van.

MANDYA DISTRICT

DR. H. SHAMA SASTRY, M.B.B.S., D.P.H., M.P.H.
District Health Officer.

PART I

Personnel.— DR. H. Shama Sastry, M.B.B.S., D.P.H., M.P.H., continued to be in charge of the District up to 15th November 1954, and handed over charge of the District to Dr. M. Rama Rao, M.B.B.S., D.P.H., on the forencon of 15th November 1954 as per Memo No. C. 19-15, dated 15th September 1954 of the Director of Public Health, and Dr. M. Rama Rao continued to be in charge of the District during the remaining period under report.

District Health Organisation.—The Heath Unit area in the District covered an area of 743·1 square miles, comprising of 529 main with dakla villages with a population of 3,09,949 (1941 census). There were 4 Secondary Centres, 18 Primary Centres and 4 L.F. Dispensaries under the administrative control of District Health Officer, Mandya. Women's sections attached to Health Unit Dispensary Srirangapatna, Combined Dispansary, Kyathanahally, Malavalli and Women's section to L.F. Dispensary, Maddur sanctioned as per G.O. No. M. 15180-82—Med. 111-53-2, dated 16/18th December 1953 and functioning from 6th May 1954 and continued to work under the control of District Health Officer, Mandya, during the year under report.

As per G.O. No. M. 10018-31—P.H. 119-52-17, dated 6/10th October 1953 the implementation of residual insecticidal spraying under National Malaria Control Programme. in this District was sanctioned. The existing 4 posts of Health Probationers of Mandya, Maddur, Malavalli and Srirangapatna Secondary Centres, were converted into posts of Medical Officers of Health on Rs. 200-10-300-20-500 *plus* F.T.A. at Rs. 75. One Head Clerk to District Health Office and one I Division Clerk to each Secondary Centres were also sanctioned in addition to one Typist, existing in each Secondary Centres except in Malavalli.

As per G.O. No. M. 13-698-702—P.H. 68-53-4, dated 27th November 1953, bifurcating Malaria Investigation Centre, Saklespur into Malaria Investigation Centre, Mandya and Field Station at Saklespur, Secondary Centre, Mandya was transferred to the administrative control of Malariologist, Malaria Investigation Centre, Mandya. As per instructions of the Director of Public Health, the above Government Order was given effect to and Dr. H. Shama Sastry, M.B.B.S., D.P.H., M.P.H., was posted as Malariologist, and the office of the Malariologist began to function from 1st November 1954 and the Malaria Training Centre attached to District Health Office was also shifted over to that office

Municipal Health Organisation.—There are ten Municipalities working in the District with the Health staff.

There are no Health Inspectors in the Municipalities at Melkote and Belakavadi. They have not been able to employ the Health Inspector due

to their financial inability to maintain a Health Inspector. However the concerned Municipal Councils have been requested for passing necessary resolutions in this regard and get the posts of Health Inspectors sanctioned to their Municipalities.

District Board Health Organisation.—The work of the District Board Health staff was periodically checked by the District Health Officer during his itineration in the District.

The District Board Health staff is inadequate to attend to intensive health work in the area allotted to them. Detailed proposals have been submitted to the Director of Public Health for starting Health Units in the entire area.

A Senior Health Inspector is working in the Pilot training *cum* Development Project in the Visweswaraiah Canal Farm under the Agronomist.

A Junior Health Inspector and a Senior Health Inspector are working at Shimshapur and Sivasamudram Electric Colonies.

A Midwife attached to the L.F. Dispensary, Pandavapura continued to work in the Red Cross Maternity Home at Pandavapura during the year under report.

Malaria Training Centre.—As per G.O. No. M. 20655-50—P.H. 78-51-2, dated 1st March 1952, Malaria Training Centre was started at Mandya from 7th April 1952 in collaboration with the Rockefeller Foundation, to give training in Malariology to Medical Officers of Health, Assistant Medical Officers of Health and Health Inspectors of the Department. Dr. H. Shama Sastry, M.B.B.S., D.P.H., M.P.H., District Health Officer, Mandya continued to be the officer in-charge of the institution. As per G.O. No. M. 13-698-702—P.H. 68-53-4, dated 27th November 1953, Malaria Training Centre was transferred to the charge of Malariologist, Malaria Investigation Centre, Mandya from 1st November 1954.

Vital Statistics.—As the information regarding births and deaths are of vital importance, no pains were spared to get the correct figures about the vital events in the area. The District Health Officer and the Medical Officers of Health periodically visited the Taluk Offices and checked the Vital Statistics and the check registers maintained at the Taluk Offices.

During the year under report 11,766 live births were registered as against 12,515 live births registered during the previous year, of 11,766 live births 9,515 were recorded by the village patels of the Health Unit area, and the rest 2,251 were detected and got entered in the registers of the Patels by the Health Unit staff. Of 4,057 deaths registered during the year 3,225 were recorded by the Patels and the rest 832 were detected and included by the Health Unit Staff. Thus the registration of births and deaths by village patels works out to 80·8 per cent and 79·4 per cent respectively, as against 75 per cent and 77 per cent respectively during the previous year.

Of 11,766 live births, 295 were still births, giving a percentage of 2·5 of 4,057 deaths, 1,499 were infant deaths and 77 maternal deaths, as against 1,432 infant deaths and 100 maternal deaths. The main causes in respect of infant deaths were (*a*) Prematurity, (*b*) Bronchitis, (*c*) Diarrhoea, (*d*) Fever, (*e*) Convulsion, (*f*) Malnutrition, (*g*) Septic rash and

(*h*) Respiratory diseases, and for maternal deaths were (*a*) Eclampsia, (*b*) Anaemia, (*c*) Haemorrhage and (*d*) Obstetrics of difficult labour.

The birth and death rates for 1952, 1953 and 1954 were as follows :—

		1952	*1953*	*1954*
1. Birth rate	...	40·6	40·3	37·8
2. Death rate	...	12·7	12·3	13·1
3. Infant Mortality rate	...	107·8	114·4	127·4
4. Maternal Mortality rate	...	8·1	7·9	6·4
5. Still birth rate	...	2·3	2·4	2·4

I. Epidemic Control

(*a*) *Plague.*—During the year under report, the District was free from plague. Reports of only rat falls were received from Katte Kyathanahalli and Ramanahally villages of Krishnarajpet taluk and Hospet, Basavapura villages of Malavalli taluk. These villages were not sprayed with D.D.T. under the National Malaria Control Programme. As a precautionary measure 760 anti-plague inoculations were conducted in these villages and they were also sprayed with D.D.T.

Rodent Ectoparasitic Work.—Rodent Ectoparasite work which was taken up in the previous year at Satnur and Thumbakere Farm were extended to Maddur and Srirangapatna towns of Maddur and Srirangapatna Secondary Centres, during the year. The above villages and towns were under routine insecticidal spraying for malaria control. One thousand and eighty-eight rodents were collected in all, during the year and only 4 fleas, 293 other Ectoparasites were observed on the rodents giving a percentage of 0·4.

Fifty-seven rodents were also collected from the village Katte Kyathanahalli, wherefrom rat falls were reported. No fleas were observed on any of the rodents collected and B. pests were not found in the liver and spleen smears of dead rats. The exact cause of death of rats could not be traced.

(*b*) *Small-pox.* – During the year under report a total of 73 attacks and 19 deaths were reported from 10 villages (6 Health Units and 4 non-Health unit villages) in Mandya district, as against 405 attacks and 57 deaths reported from 42 villages during the previous year.

Vaccinations.—During the year under report a total of 81,987 vaccinations were done, of which 23,943 were primary and 58,044 were re-vaccinations, as against 1,03,149 vaccinations conducted during the previous year (23,903 Primary and 79,246 re-vaccinations).

(i) The Health Unit staff have conducted 50,045 vaccinations of which 11,349 were primary and 38,696 were re-vaccinations against 62,754 vaccinations conducted during previous year.

Mass vaccination drive on a five year plan was undertaken in the 2nd division during the year under report in all the 18 Primary Health Units. Thirty-three thousand three hundred and thirty-four vaccinations were done against 60,538 population allotted for 2nd division for mass

vaccination drive in 1954. Vaccination in Health Unit area under the Five-year Plan has not been quite up to the mark as vaccination work is progress in the area ever since the inception of Health Units.

(ii) The District Board Health staff conducted 26,640 vaccinations in non-Health Unit areas of which 10,480 were primary and 16,160 were re-vaccinations as against 22,654 vaccinations (10,150 primary and 12,054 re-vaccinations) conducted during previous year.

(iii) The Municipal Health staff (except Melkote and Belakavadi Municipalities, where no Health Inspectors are working) conducted 5,302 vaccinations, of which 2,114 were primary and 3,188 were re-vaccinations, as against 17,741 vaccinations (1,800 Primary and 15,941 re-vaccinations) were conducted during previous year.

(c) *Cholera.*—During the year under report a total of 575 attacks and 318 deaths were reported from 4 Towns *viz.*, Mandya, Maddur, Srirangapatna and Pandavapura under Health Unit area, 2 Towns *viz.*, Belakavadi and Nagamangala under non-Health Unit areas, and from 104 villages (72 Health Unit villages and 32 non-Health Unit villages of Mandya, Maddur, Malavalli, Srirangapatna, Pandavapura, Nagamangala and Mysore), a part of Health Unit villages of Srirangapatna Secondary Centre Taluks).

Inoculations.—Immediate preventive and curative measures were undertaken in and around the infected villages. One lakh, forty-nine thousand three hundred and twenty-three anti-cholera inoculations, intensive chlorination of all drinking water sources in the infected and surrounding villages, disinfection of infected families and localities, Gammexane spraying of fly breeding areas, Health Propaganda, stopping of shandies and catering establishments etc., were taken up and the epidemic was brought under control. Samples of motion and vomit were collected and forwarded to the Public Health Institute for examination. Twenty-nine motion samples sent from this office, cholera vibrios were isolated in 2 samples on culture. Infection was imported from labourers coming from infected area in Coimbatore, Nanjangud taluk and T.-Narasipur taluk. Detailed study of the incidence of cholera is being carried on with a view to prevent the importation and spread of the epidemic in the coming years.

Six hundred and thirty-five T.A.B. inoculations were also done in Mandya District during the year under report.

II. Fairs and Festivals.

As per G.O. No. M. 15553-699—P.H. 11-53-3, dated 24th December 1953, estimates for special sanitary arrangements for the major jatras of this district were forwarded to the concerned authorities under whose auspices the jatras are being held, for implementation of sanitary measures well in time.

The concerned authorities gave good co-operation and the sanitary arrangements were fairly satisfactory and it was gratifying to note that in spite of cholera raging in the District, not even diarrhoea cases were observed in any of the jatras. Mention may be made of a few major jatras and the sanitary arrangements done in brief.

Hemagiri Jatra.—One Medical Officer of Health, 10 Assistant Medical Officers of Health and 8 Health Inspectors were posted for special duty in connection with the Sri Venkataramanaswamy Jatra at Hemagiri. The

special duty staff conducted 28,764 anti-cholera inoculations on the pilgrims who visited the above jatra in addition to other sanitary measures. The Jatra was conducted in spite of the prevalence of cholera in the district and in several parts of the State. The jatra went off well and no cases of diarrhoea and vomitting were reported during or after the jatra.

Sri Vairamudi Jatra at Melkote.— ne Medical Officer of Health, 9 Assista t Medical Officers of Health and 9 Health Inspectors were posted for special duty in connection with Sri Vairamudi Jatra at Melkote, Pandavapura taluk. The Special duty st ff conducted 8,567 anti-cholera inoculations on pilgrims who visited the above jatra in addition to other sanitary measures undertaken by the special duty staff. This jatra also went off successfully.

Two Assistant Medical Officers of Health and two Health Inspectors were posted for special duty to Shivanasamudra Bridge, 4 times during the year, *viz.*, January 1954, February 1954, June 1954, and December 1954 in connection with Chikaiyalur jatra, Mahasivarathri Jatra, Darga Ramzan festival at Shivasamudram and Deepavali jatra of Madheswaran hills of Kollegal taluk, Coimbatore district, Madras State, to protect the pilgrims proceeding from this District against Cholera. A total of 7,037 anti-cholera inoculations were conducted on these 4 occasions ; in addition to intensive chlorinaton of drinking water sources enroute to the jatra in this district.

III. General Sanitation.

Introducton of Hand Flush Latrines.—During the year under report, a total of 244 hand flush latrines were introduced in the Health Unit area as against 295 hand flush latrines introduced during previous year.

Further 95 soak pits were got done as against 366 soak pits were got done during previous year. One thousand, one hundred and fifty-three windows of all sizes wese introduced, 247 cattle sheds improved, 1,303 back yards cleaned, 161 kitchen gardens introduced, 202 cart loads of rank vegetation got removed 91 manure pits introduced, 581 houses plastered, 1,724 houses white washed, flooring and roofing of 487 houses got improved, 42 dilapidated structures got removed, 4,662 yards of road formed and 5,701 yards repaired, 3,030 yards of drainage formed, 4,204 yards repaired and 3,146 yards cleaned in the Health Unit area during the year under report.

IV. Special Activities.

Bharat Sevadal camp.—A Bharat Sevadal camp consisting of about 600 volunteers undertook formation of roads and village improvement works at Chinkurli, Kangonahalli, K. Manchahalli and Jodigummanahalli of Pandavapura Taluk from 26th September 1954 to 9th October 1954. One Senior Health Inspector, 2 Junior Health Inspectors and 2 peons were deputed for special duty under the supervision of Assistant Medical Officer of Health, Pandavapura. The Assistant Medical Officer of Health, Pandavapura conducted 428 anti-cholera inoculations 423 T.A.B. inoculations to the volunteers of the camp. A total of 1,200 vaccinations were also conducted of which 343 primary and 857 re-vaccinations. Ten hand flush latrines and 13 soak pits were done by the special duty staff assisted by the Sevadal volunteers of the camp.

National Extension Service Block.—Hundred villages were taken up in Malavalli taluk under the National Extension Service block. Of these,

79 villages come under the Health Unit area of Malavalli Secondary Centre. In these Health Unit villages special attention is being given for carrying on intensive health work with the assistance of the staff of the National Extension Service Block, *viz.*, village level workers. With the assistance of N.E.S. funds, measures were taken to construct a Health Unit building at Kirgaval and Agasanapura.

Leprosy.—A leprosy survey in Malavalli Health Unit area was done and 142 cases of Leprosy have been found in 47 villages (out of 114 main and 74 Dakla villages).

In all 142 cases were listed giving 0·16 per cent of infection in the population of the Taluk. The incidence was found to be high in Agasanapura Health Unit and least in Dugganahalli Health Unit. The highest incidence was found to be in the age period 20-40 years. Male members were found to be suffering more than female members. (Only 29 females suffering as against 113 males). The majority of cases were found to be non-infective state.

In all the Health Units arrangements were made for giving regular treatment to the affected persons with "Avlosulphone". The response from the patients was very good. The Senior Leprologist of the Central Leprosarium inspected the affected areas and the Leprosy control work from time to time.

The infection of Leprosy in Maddur and Mandya taluks was kept under control.

PART II

Malaria Control.—As per G.O. No. M. 10018-34—P.H. 119-52-17, dated 6/10th October 1953, Malaria control by insecticidal spraying in the Health Units area was merged under National Malaria Control Programme from 1st November 1953, comprising the whole of Mandya District, exclusive of Nagamangala taluk, but inclusive of T.-Narasipur taluk of Mysore District, and Kunigal taluk of Tumkur District.

During the year under report 2,39,444 houses were sprayed scattered over 2,823 villages twice during 16,330 lbs. of 75 per cent wettable D.D.T. powder.

D.D.T. Spraying of towns.—As per G.O. No. M. 11470-81—P.H. 35-51-12, dated 4th September 1952 and the approval of the Director of Public Health, spraying of the following towns were taken up after recovery of 50 per cent labour charges from the concerned Municipalities.

Name of the Municipality.	*Population.*
1. Srirangapatna	10,433
2. Pandavapura	5,750
3. Maddur	5,331
4. Bannur	7,585
5. Kunigal	8,908

Spraying of Krishnarajapet town was not taken up for want of insecticide.

Mandya Town (Malaria control).—Malaria control in Mandya Town by lavicidal operations is in progress from 1936 under the direction of the

Department, and financed by the Municipality. The staff consists of one Junior Health Inspector, one head gangman and 7 gangmen.

During the year under report antilarval operations using Hexidol was continued. In addition to spraying of Hexidol other antimalaria measures like draining of puddles of pools, trimming of channels, etc., were also carried on by the above staff.

Larvae catches were made before and after spraying each day. Adult mosquitoes were collected on Saturdays. The larvae and adult catches were test checked by the Entomologist and the Medical Officer of Health, Mandya. The results of these catches showed that not only malaria control but also mosquito control was satisfactory during the year under report.

It was suspected that culicine larvae had developed tolerance to D.D.T. and this observation is being tested.

Entomological observations.—The Entomologist attached to this office continued to work under the control of this office till November 1954. With the advent of the Malaria Investigation Centre, Mandya, the services of the Entomologist were placed at the disposal of the Malariologist, Malaria Investigation Centre, Mandya.

Malaria Control work in Shivasamudram and Shimsha Electric colonies.—Malaria control in these two colonies by larvæcidal measures was in progress during the year under report. Two Health Inspectors in each of the colonies were in charge of control measures.

(*a*) *Examination of Infant blood smears.*—To assess the effectiveness of the residual insecticidal spraying, arrangements were made for collection and examination of infant blood smears, once in three months from 10 selected Primary Centres (3 Primary Centres each from Mandya, Maddur, Srirangapatna Secondary Centres and Kirgaval Primary Centre of Malavalli Secondary Centre) continued during the year under report.

A total of 1,166 infant blood smears were collected periodically from the above Centres and examined at the Laboratories of the Secondary Centres. Of them only one smear was found positive for Malaria Parasite, which was in imported case from outside the district. Thus during the year there was no evidence of Malaria transmission in the D.D.T. sprayed area.

(*b*) *Examination of blood smears taken from out-patients attending the dispensaries.*—With a view to know the actual malaria cases (as confirmed by finding Malaria Parasite in the blood smears) among the cases clinically diagnosed as Malaria and to know the presence of Malaria Parasite in actual fever cases having rigor and fever instructions were issued to the Medical Officers of Health to take blood smears from cases clinically diagnosed as Malaria cases and also from other fever cases where Malaria was suspected. This study is under progress from 1952.

During the year under report, 1,185 blood smears from clinically diagnosed cases of Malaria and 125 blood smears from fever cases when they had fever were taken and examined.

Out of the clinically diagnosed cases from which smears were taken only 38 smears (out of 1,185) were found to be positive for Malaria Parasite as against 89 positives out of 617 smears during 1953. Out of these 38, 23 showed P. vivax 13 P. falciparum and 2 mixed infection.

Out of the 125 smears taken from fever cases all were found negative as against 6 positive out of 157 smears taken during the previous year.

Among the positive smears the distribution of species as under.

Year	Number of smears taken	Number of Positive	Viva Species Falciparum		Quantum	Mixed
1953	617	89	64	16	...	9
1954	1,185	38	23	13	...	2

The percentage of infection during the year was thus very much lower than in the previous years as can be seen by the following figures :—

Year			*Percentage of infection in clinically diagnosed malaria cases*
1952	...	...	17·0
1953	...	...	13·4
1954	...	...	3·2

The dominating species in the region is therefore P. Vivax.

Biannual spleen survey.—Biannual spleen survey was undertaken in all the 18 Primary Health Centres of this District during the months of April and October. The spleen rate and A.E.S. for the year 1954, with the rates and A.E.S. of the corresponding month of previous year is given below in a separate statement :—

Spleen Report, 1954

Serial number	Name of Unit	Population	Rate of Spleen and A.E.S.		Spleen Rate and A E S.		
					April 1954		
			April 1953 Spleen Rate	October 1953 Spleen Rate	Examined	Negative	Positive
1	2	3	4	5	6	7	8
1	Mandya	22,700	11·6	12 8	1641	1,377	164
2	Kothathi	14.009	22·7	12·0	474	424	50
3	Kilara	14 501	9·9	7 61	950	886	64
4	Shivalli	22,403	15·7	9·02	1,549	1,419	130
5	Chandgal	14,543	7·6	2·4	223	1,,213	10
6	Maddur	14,143	1·1	0·3	2,101	2,100	1
7	Besagarahalli	10,641	4·0	5·7	665	642	23
8	Koppa	9,860	8·0	4 8	1,190	1,157	33
9	D. A kere	18,498	1·3	0·8	1,746	1,741	5
10	Gejjalagere	8,819	2·0	1·0	886	879	7
11	Malavalli	11,482	2·3	5·0	1.398	1,357	41
12	Dugganahalli	13,569	3 7	...	600	584	16
13	Agasanapura	20,848	6·6	...	41½	412	...
14	Kirgaval	16,592	6 27	4·5	1,903	1,851	52
15	Srirangapatna	13,780	5·02	6·0	1,773	1,716	57
16	Arakere	18,279	7·0	4·6	1,340	1,298	42
17	Pandavapura	23,234	8·1	6·6	2,296	2138	158
18	Bandihole	21,202	5·1	3·4	2,209	2,127	82
		3,09 949	6·9	5·1	23,256	22,321	935

Serial number	Name of Unit	Spleen Rate and A.E.S.						
		April 1954		October 1953				
		Rate	A.E.S.	Examined	Negative	Positive	Rate	A.E.S.
		9	10	11	12	13	14	15
1	Mandya	10·6	1 1	773	692	81	10·4	1·2
2	Kothathi	10·5	1·7	598	505	93	15 5	1 2
3	Kilara	6·7	1·8	1,615	1,509	106	6·5	1·8
4	Shivalli	8·3	2·4	1,621	1,506	115	7·9	2·8
5	Chandgal	4·4	1·4	222	216	6	2·7	1·6
6	Maddur	0·05	1·0	2,662	2,659	3	0·1	2·0
7	Besagarahalli	3 4	1·4	692	677	15	2·5	1·1
8	Koppa	2·8	1·7	1,228	1,202	26	2·2	1·1
9	D. A. kere	0·2	2·4	1,521	1,509	12	0·8	1·4
10	Gejjalagere	0·8	1·4	902	900	2	0 2	1·5
11	Malavalli	3·0	1·0	1,268	1,237	31	2·2	1·0
12	Dugganahalli	2·6	1·3	389	379	10	2·5	2·6
13	Agasanapura	...	...	576	572	4	0·7	2·2
14	Kirgaval	2·7	1·0	1,987	1,935	52	2·6	1·0
15	Srirangapatna	3·2	1·0	2,925	2,899	26	0·8	1 4
16	Arakere ..	3·1	1·5	1,264	1,238	26	2·0	1·7
17	Pandavapura	6·9	1·1	2,410	2,386	24	1 0	2·0
18	Bandihole	3·7	1·2	282	274	8	2·8	1 0
		4·0	1·6	22,935	22,295	640	2·9	1·8

Curative work.—During the year under report a total of 2,57,697 new patients for all diseases were treated in dispensaries, clinics and villages of which 9,106 were for malaria cases giving a percentage of 3·5, as against 3,34,355 patients treated during previous year, of which 13,674 were for malaria cases, giving a percentage of 4·09.

Thus shows a marked reduction of not only malaria cases but also in the incidence of sickness.

Other Activities.—(Health Standing Committee)—The District Health Officer attended the Health Standing Committee meeting held on 18th and 19th May 1954 and 25th September 1954. As per G. O. No. P. W. 9426—K.R.S. 11-53-9, dated 26th December 1953, all the existing Committees, such as K.R.S. Working Committee and K.R S. Health Committee, K.R.S. Working Sub-Committee, etc., were abolished, in the Visvesvaraya Canal area, and Development Standing Committee and Health Standing Committee were constituted, to advise Government for development of Irrigation, Health conditions, etc., in the V. C. area.

During the year under report, the District Health Officer visited 105 villages coming under V.C. area in connection with village reserve, dry belt, shifting of villages and village extensions and formation, A.K. extensions, etc., and furnished his opinion.

PART III

Maternal and Child Welfare Work.—During the year under report, 4 Public Health nurses and 58 midwives worked against the sanctioned posts of 8 Public Health nurses and 66 midwives (59 to Health Units and 7 to Dispensaries) as against 3 Public Health nurses and 40 midwives during the

previous year. An account of shortage of personnel the maternal and child welfare services could not be extended to entire Health Unit area during the year.

The Lady Assistant Surgeon, Grade III attached to Health Unit Dispensary, Srirangapatna, Women's Section, Combined Dispensary, Kyathanahalli and Malavalli (opened on 8th July 1953) continued to work, during the period under report.

The Ladies section to L. F. Dispensary, Maddur was added on 6th May 1954 in the existing L. F. Dispensary as per G. O. No. M. 15180—Med. 111-53-2, dated 16—18th December 1953, and a Lady Assistant Surgeon, Grade III with staff continued to work during the year under report.

The maternity kit boxes with its necessary accessories supplied by the UNICEF to the Secondary Centres are being made use of.

The Midwives paid 1,68,281 houses visits, and registered 13,111 new prenatals during the year under report, as against 1,43,707 house visits and 11,799 new prenatals during previous year. Taking 24 working days per month, each midwife on an average paid 10·07 house visits. On an average each midwife has registered 2·6 prenatals during the year or 18·9 prenatals during each month.

A total of 9,711 deliveries were conducted during the year under report, of which 4,506 were conducted by the unit midwives and 5·205 were conducted by local dhais, as against 8,444 deliveries conducted, of which 3,949 conducted by unit midwives and 4,495 conducted by local dhais during previous year. The percentage of labour cases conducted by midwives works out to 46·4 against 46·8 during previous year. On an average each midwife conducted 6·5 deliveries per month as against 8·2 deliveries per month per midwife during previous year.

This variation is due to the fact that a number of midwives sanctioned to the office were posted during the latter half of the year, and then the midwives were on Field Training for a period of 3 months, under the Public Health Nurses of their respective Secondary Centres before they were actually posted for Health Units.

The midwives paid 24,380 postnatal visits to 9.711 deliveries conducted in the area, giving an average postnatal visits of 2·5 per case as against 19,138 postnatal visits to 8,444 deliveries conducted during the previous year, giving an average postnatal visits of 2·2 per case.

They gave 55,593 health talks to an audience of 1,30,636. They recorded 1,029 infant deaths and 48 maternal deaths. They examined 18,644 urine samples.

The Public Health Nurses paid 23,985 houses visits of which 10,190 were prenatal visits and 2,404 were postnatal visits. They examined 10,221 infants and 10,455 pre-school children, as against 16,995 house visits of which 7,638 were prenatal visits and 2,072 postnatal visits, paid during previous year. They attended 349 clinics and examined 2,378 antinatals 1,653 infants and 2,289 preschool children. They conducted 35 deliveries and checked 168 deliveries conducted by unit midwives, as against 32 labour cases conducted and checked 233 labour cases conducted by midwives during the previous year.

They gave 6,357 health talks to an audience of 14,079. They investigated 368 infant deaths and 22 maternal deaths. They examined 3,209 urine samples.

Statement of Midwife's work for the year 1954

Hours spent	70,606
Number of houses visited	1,68,281
Number of Prenatals—	
Total registered	58,641
First visit	13,607
Re-visit	96,177
Deliveries conducted—	
Dhai	5,182
Midwife—	
Registered	4,115
Un-registered	465
Number of postnatal visits to cases of—	
Midwife	15,715
Dhai	8,665
Health Taluks—	
Number of talks given	55,593
Attendance	1,30,636
Number of clinics visited	983
Urine samples brought and examined	18,644
Number of infant deaths in case of—	
Midwife	363
Dhai	666
Total	1,029
Number of Maternal deaths in cases of—	
Midwife	15
Dhai	33
Total	48

Statement of Prenatals for the year 1954

1.	...
2.	...
Number of villages—	
3. Main	269
4. Dakla	121
5. Population	...
6. Number of prenatals remaining at the beginning of the year	3,526
7. Number of prenatals newly registered during the month	13,111
8. Total prenatals	16,637
Deliveries by—	
Midwife—	
9. Registered	4,122
10. Unregistered	384
Dhai—	
11. Registered by Midwife	4,524
12. Un-registered	681
13. Number of abortions and miscarriages ...	315
14. Number of prenatals who died, if any ...	13
15. Number of prenatals who left jurisdiction ...	2,455
16. Number of prenatals who went to hospitals ...	488
17. Number of prenatals remaining at the end of the month	4,720

Statement of Public Health Nurses for the year 1954

Number of hours spent	5,004
Number of houses	...
Number of houses visited	23,985
Home Visit—	
Prenatal cases—	
Old	8,336
New	1,854
Post-natal cases—	
Old	985
New	1,419
Infants—	
Old	7.793
New	2,428
Pre-schools—	
Old	9,729
New	729
Number of clinics held	349
Clinic—	
Antinatal cases	2,378
Infants	1,653
Pre-schools	2,289
Number of labour cases conducted	35
Number of labour cases checked	168
Demonstration—	
Number held	1,012
Attendance	1,856
Health Talks—	
Number held	6,357
Attendance	14,079
Little Mother's classes—	
Number held	920
Attendance	1,764
Infant deaths—	
Number	368
Investigated	368
Maternal Deaths—	
Number	27
Investigated	22
School Health work—	
Number of schools visited	189
Number of clinics held	1
Number of urine samples brought and examined	3,209

Laboratory Work

During the year in all 9,149 samples were collected, of these 9,001 were examined in the various laboratories of the Secondary Centre and the office of the District Health Office. One hundred and forty-eight samples were sent to the Public Health Institute, Bangalore for examination.

Of the 9,001 specimen samples collected and examined in the District the details were as under:—

1.	Blood smears for Malaria Parasite	2,476
2.	Urine for Album, sugar and microscopy	6,525
3.	Motion for Ova ...	14
4.	Throat smears ...	...
5.	Others ...	...

Of the 2,476 blood smears examined 38 smears were found positive for Malaria Parasite.

Of 148 samples sent to the Public Health Institute, Bangalore, the details were as under :—

1.	Blood for W.R.	70
2.	Blood for Widal	9
3.	Motion samples for Ova	14
4.	Motion samples for Cholera Vibrios ...	29
5.	Nasal smears for Lepra Bacilli ...	2
6.	Others	5

Departmental Training of Officers.—Six Health Probationers recruited to the Department were given training at the District Health Office, Mandya during the year under report.

The University Medical College students who were on study tour on 20th January 1954 were shown round the Anti-malaria Engineering Works and other Health works done in the District.

Itineration and Inspections by District Health Officer, Mandya.—The District Health Officer, Mandya was on tour for 139 days in the year and camped 49 days outside headquarters for annual, and routine inspection of Health Units, Dispensaries, Municipalities inspection of villages in connection with disposal of files referred to this office relating to village extension, shifting, etc., and for investigation of Epidemic Control, Malaria Control and other rural Sanitation Works undertaken with villages.

Visweswaraya Canal Village Extension records, etc.—The District Health Officer, Mandya visited 53 villages for inspection in connection with disposal of village extension files, village reserve, dry questions and shifting of villages coming in V.C. area.

Meetings.—The District Health Officer attended 13 meetings in all, of them 2 were Health Standing Committee meetings, 1 District Co-ordination Committee meeting, 1 Officer's meeting at Bangalore, 1 National Extension Scheme block meeting at Malavalli and other meetings held at Deputy Commissioner's Office and Municipal Offices, during the year.

Visitors.—

1. Leslie C. Coleman, M.A., PH.D., C.I.E., Retired Director of Agriculture in Mysore, Bangalore.
2. William M. Cary of United States of America.
3. Mr. Muirhead, from UNICEF, World Health Organisation, Field Organiser.
4. Col. Barket Narayan (Adviser, Community Project Administration and Planning Commission, New Delhi).
5. Dr. Taylor, Dr. Rice and Mrs. Rice of Rockefeller Foundation.
6. Dr. Bruce Chwatt of Nigeria, Africa.
7. Dr. B. Ananthaswamy Rao, Deputy Director, Malaria Institute of India, New Delhi.

MALARIA INVESTIGATION CENTRE *cum* MALARIA TRAINING CENTRE, MANDYA.

SRI H. SHAMA SASTRY, M.B.B.S., D.P.H., M.P.H.,
Malariologist, Malaria Investigation Centre, Mandya.

Introduction.—Government in their Order No. M. 13693-702—PH. 68-53-4, dated November 27, 1953 accorded sanction to the proposals of the Director of Public Health in Mysore, Bangalore to bifurcate, the Malaria Investigation Centre, Saklespur into Field Station, Saklespur and Malaria Investigation Centre, Mandya and to place the Secondary Centres, Mandya and Saklespur and the Malaria Training Centre, Mandya under the administrative control of the Malariologist, Malaria Investigation Centre, Mandya.

The above Government order was given effect to on Friday, the 29th October 1954, when Dr. H. Shama Sastry, M.B.B.S , D.P.H., M.P H., took charge as Malariologist, Malaria Investigation Centre, Mandya. Thus investigation, teaching and administration form the activities of the Malaria Investigation Centre-*cum*-Malaria Training Centre.

The scope of work of the three Study Stations at Nagenahalli, Mudigere and Hiriyur established during the pre-DDT period had to be considerably modified after the advent of the residual insecticides like DDT and BHC. With this object in view, the Government sanctioned in Government Order No. M. 12981-92—PH. 167-47-12, dated 2nd February 1949 the formation of 81 Primary and 16 Secondary Health Units in the three malnad districts of Shimoga, Hassan and Chikamagalur, with provision for opening a Malaria Investigation Centre at Saklespur.

The Malaria Investigation Centre, Saklespur came into existence in September 1950, according to Government Order N. 8648-49—PH. 43-50-4, dated 14th August 1950. By July 1951, the collaborating arrangements with the World Health Organisation team in Sagar area ceased and the staff of the Malaria Investigation Centre, Saklespur, working in Sagar area were reverted back to Saklespur.

The Government accorded approval to the proposal of the Director of Public Health in Mysore to start a Malaria Training Centre at Mandya (*Vide* Government Order No. M. 20455-56—PH. 78-51-2, dated 1st March 1952). The Rockefeller Fundation came forth again with generous donation of equipment and services of their experts.

In order to obtain basic information in connection with practical training and field studies for the current evaluation of malaria trends, it was necessary that a number of villages should be placed directly under the control of the Investigation Centre. This purpose could be best served only by placing the entire Saklespur and Mandya Secondary Centres under the control of the Investigation and Training Centres. Government sanctioned their approval to this proposal in Order Nos. M. 14819-20—PH. 29-51-1, dated 8th November 1951 and M. 13698-702—PH. 68-53-4, dated 27th November 1953.

The five Primary Health Units of Mandya Secondary Centre are in charge of whole-time Medical Officer of Health, Mandya Secondary Centre and the Assistant Malariologist, Field Station, Saklespur is also in additional charge of the Secondary Centre, Saklespur, which consists of seven Primary Health Units.

Dr. H. Shama Sastry, M.B.B.S., D.P.H., M.P.H., Malariologist, continued as District Health Officer, Mandya from 29th October 1954 to 15th November 1954, when he handed over charge of the District Health Office, Mandya to Dr. M. Rama Rao, M.B.B.S., D.P.H., on the afternoon of 15th November 1954.

Tours.—The Malariologist was on tour for 28 days with 12 halts in connection with inspections of study areas in Mandya, Saklespur and Arsikere, during October, November and December 1954.

The Entomologist, Malaria Training Centre, Mandya was on tour for 96 days with 55 halts during the year 1954.

Inspections.—The Director of Public Health in Mysore, Bangalore inspected the activities of the Malaria Investigation and Training Centres on 17th November 1954.

(*i*) *Parasitology and Haemotology and other Laboratory Work.*—(*a*) The collection of infant blood smears once in three months from three selected Primary Health Units of Mandya Secondary Centre, *viz.*, Mandya, Shivalli and Kilara were continued.

During November and December 1954, 68 infant blood smears collected from villages of Shivalli and Kilara Primary Centres were found to be negative for presence of malaria parasites.

(*b*) Ninety-five out-patient blood smears from clinical malaria cases received during November and December 1954 from the following places, were examined and found to be negative for malaria parasites, except one smear from Srirangapatna Dispensary (Male Section) which was found positive for P. Vivaz (1·0 per cent). The number of blood smears received from each Centre is indicated below:—

(1) Shivalli	3	Smears.
(2) Srirangapatna Dispensary (Male Section) ...	12	,,
(3) Do (Female Section) ...	9	,,
(4) Kyathanahally Dispensary	26	,,
(5) Pandavapura	11	,,
(6) Yadavanne Primary Centre	21	,,
(7) Huliyurdurga Primary Centre ...	8	,,
(8) Kesagode Primary Centre	1	,,
(9) General Hospital, Mandya	4	,,

(*c*) Eight blood smears from Pyrexia cases received from Arakere Primary Centre were examined and found to be negative for malaria parasite.

(*d*) Thirty-eight blood smears from Children of 2-12 years of age taken during October 1954 spleen survey by the Assistant Medical Officer of Health, Kilara, and 81 blood smears from children of the same age group from Arakere Primary Centre were examined and found to be negative for malaria parasite.

(*e*) In addition, 51 blood smears received from the several stations were examined and found negative for malaria parasite.

The negative infant parasite rate indicates that there was no malaria transmission during November and December 1954. One positive case of Vivax infection from a clinical malaria case may be attributed to relapse. The blood smears from Pyrexia cases and from children of 2 to 12 years of age are all negative thus indicating a very low level of parasitæmia.

(*f*) Two smears from rats and 1 smear from a leper patient were found to be negative for Bacillus pestis and Microbacterium leprae respectively.

(ii) *Entomological Studies*.—The post of Entomologist, Malaria Investigation Centre, Mandya was vacant during the period. The entomological studies carried out by the Entomologist, Malaria Training Centre, Mandya are reviewed below :—

Sri T. S. Rama Rao, B.Sc. (Hons.) Entomologist, Bureau of Malariology, O.O.D., Malaria Training Centre, Mandya took charge of the stores and library of the Malaria Training Centre during July 1954 from the Assistant Medical Officer of Health, Central Office, Mandya, consequent on his deputation to Calcutta for leprosy training and continue to be in charge of stores and library till the end of the year.

The itineration of the Entomologist consisted in routine and special visits to selected villages for study and he was on tour for 96 days with 55 halts. The Entomologist took part in the Departmental Officers' meeting held at Bangalore during the month of May and read a note on, (1) Rodent ectoparasites and (2) mosquito behaviour and Gammexane treatment in Mandya District.

The itinerancy of the Junior Entomologist consisted of 100 days during the year and he also assisted the Superintendent, Bureau of Malariology, Bangalore for a day at Mysore, in connection with practical demonstrations in Malariology to the students of the Medical College.

During the calendar year 1954, there were four Sessions of training in Malariology at the Malaria Training Centre, Mandya. The scheduled lectures in Entomology, Epidemiology and control were delivered by the Entomologist for all the four sessions. In practical work at Laboratory and in the field the Entomologist was assisted by the other members of the staff. Six hundred and nine specimens of adults and larvae of various species of anopheline and culicine were prepared to meet the requirements of the trainees.

(*b*) *Studies in relation to Malaria*.—Entomological appraisal of malaria control operations with residual insecticides in the Viswesvaraya Canal Area:-

1. Collections of adult mosquitoes at weekly intervals on a timed basis in 16 selected villages round about Mandya town, which were in progress since July 1951 were continued.

The mosquitoes collected at weekly intervals, fortnightly intervals and monthly intervals were classified into species and sex, noting the conditions of abdomen and wing.

The mosquitoes collected at weekly intervals from Bellundigere, Gopalpura, Kyathamgere and Guthalu were released into chimneys and were kept in the Insectory to observe 24 hour mortality.

Entomological appraisal work was started from July 1951 in selected villages when the residual deposit of 56 mgs of DDT was 23 and 24 weeks, the per man hour densities of A. culicifacies, A. fluviatilis and all anophelines were 5·00, 9·00 and 23·33, respectively.

For purposes of study, selected villages were treated with Benzine Hexachloride, DDT and Wettable powder for varying periods and the findings were recorded.

Since the use of residual insecticides for adulticidal work in the area from the year 1950 and 1951, Malaria is showing a steep decline. The spleen

rates recorded in these 16 villages during April and October from 1950 to 1954 are presented below :—

Year	April				October			
	No. Examd.	No.+ive	S.R. %	A.E.S.	No. Examd.	No.+ive	S.R. %	A.E.S.
1950 ...	1115	407	35·50	2·0	1093	484	44·28	1·89
1951 ...	1136	485	42·69	1·5	1123	378	33·65	1·5
1952 ...	970	227	23·40	1·5	959	147	15·32	1·5
1953 ...	1056	167	15·87	1·5	940	114	12·12	1·5
1954 ...	743	84	11·30	1·4	653	61	9·2	1·4

The ideal day-time resting place of anopheline mosquitoes is described as "a place where is high humidity, diffuse light and minimum air movement". In malnad villages of Mysore State, shelters used by man and animals are usually illbuilt and are surrounded by thick jungles. In these areas the mosquitoes have an option either to stay in the places where they feed during the night if it is suitable, or to go out into the environment in search of suitable day time shelters.

But in the Viswesvaraya Canal Area the houses in the villages, though not very well-built, are not surrounded by shady cool and humid jungles and as such the mosquitoes in the area have not much of an option, but are obliged to rest more indoors with the minimum amount of exodus for purposes of completion of gonotropic cycle and oviposition. As a support of this contention, it is a common experience to find huge numbers of mosquitoes of all species during daytime collections in dwellings of the area. Further, engorged and gravid numbers of A. culicifacies, A fluviatilis and all anophelines have been collected in untreated dungeons of Srirangapatna and Nagegowdana Doddi during 1953, which indicates that the mosquitoes in the area are more indoor resting than egress loving. As the proportion of the engorged and gravid mosquitoes are equal during these collections, it is reasonable to assume that the period of gonotropic cycle is normally of 48 hour duration.

The following statement gives the percentage of gravid C. culicifacies, A. fluviatilis and all anophelines collected after each round of treatment for the period till anopheline mosquitoes were recorded in all the 16 villages and for the rest of the observation period till treatment.

Formulation and Dosage	Period of treatment	Weeks	A.c.	Af.	A.A.	Weeks	A.c.	A.f.	A.A.
11 Mgms ...	July-August 1951 ...	...	...	...	...	4—21	35	30	34
Gammexane P 520 ...	.....	...	...	...	...	...	...	...	...
Gammexane 22 mgs ...	P. 520, December-January 1952.	1—9	0	25	26	10—20	22	36	27
Do ...	April-May 1952 ...	1—11	39	33	20	12—21	29	20	26
Do ...	August-September 1952.	1—12	29	33	27	13—19	46	0	21
Hexidole 22 Mgms. ...	December 1952-January 1953.	1—8	33	0	33	9—20	47	33	36
DDT Emulsion 100 Mgms.	April-May 1953 ...	1—15	35	18	52	16—26	37	18	43
75% DDT Wettable Powder 100 Mgms.	October-November 1953.	1—21	0	0	53	21—29	0	0	60
Do ...	April-May 1954 ...	1—18	0	0	32	18—33	25	25	45
Do ...	November 1954 ...	1—4	0	0	25	...	...	...	...

From a study of the above statement it can be made out that less than 50 per cent gravid A. culicifacies, A. fluviatilis and all anophelines have been collected from treated structures not only till a cent per cent of all anopheline infiltration was observed but even afterwards. A high* primi-parous mortality among the adult mosquito population of the mosquito is domestic.

If there is egress after feeding, then also a higher proportion of engorged mosquitoes to gravid ones may be expected. If the mosquitoes have gone for out-door resting and are completing their gonotropic cycle and oviposition, there cannot be differences in the intensity of breeding. If the engorged mosquitoes are dying before completing their gonotropic cycle, naturally the intensity of larval breeding will be affected.

The data on larval collections are being analysed; however, for the time being, the numbers of A. culicifacies, A. fluviatilis and all anopheline larvae collected for 100 dips during the years 1951, 1952 1953, and 1954 from the commencement of Gammexane treatment are given below:—

Year		*A. Cul.*	*A. Flu.*	*All Anoph.*
1951	...	1·50	1·72	59·55
1952	...	0·05	0·36	29·00
1953	...	0·41	0·17	29·00
1954	...	0·09	0·03	25·00

There is a reduction in the intensity of larval breeding from 1951 to 1954 in respect of A. culicifacies, A. fluviatilis and all anophelines to the extent of 91, 98 and 59 per cent, respectively which strengthens the view held that the high engorged proportion of mosquitoes collected after treatment was rather due to primi-parous mortality after feeding than due to egress of engorged mosquitoes to outdoor resting places.

As computation of average wing index is an important method of entomological assessment of malaria control measures by indoor residual surface spray, it is felt that the method of recording with index needs to be standardised before large scale observations are planned.

24 hours mortality.—Mosquitoes collected in Bellundegere, Gopalapura, Kyathangere and Guthalu during weekly collections were released into clean lamp chimneys soon after collection and were then transported to the laboratory, covered with wet lint and were kept in the insectary with feeds of raisins soaked in water to observe 24 hour mortality.

One thousand six hundred and four anophelines collected after the 3 rounds of treatment during the year 1954 were observed to die before 24 hours giving a 100 per cent 24 hour mortality among anopheline in the different ages of the residual deposit of 100 mgms of DDT per Sq. ft. This 100 per cent 24 hour anopheline mortality observed in the laboratory in the different ages of residual deposit is too good to be true under natural conditions where there is no handling of mosquitoes.

Anopheline Species.—The species, sex and number of adult anopheline mosquitoes collected during the year 1954 are presented in Statement IV. Similarly the anopheline larvæ collected are presented in Statement IV (a).

For a total of 2,931 man hours spent during the period, 7,613 anopheline mosquitoes were collected.

0·30 and 0·70 per cent of the mosquitoes collected during the year were A. culicifacies and A. fluviatilis respectively, as against 10·00 and 1·00 per cent recorded during 1953.

Two specimens of A. karwari were recorded for the first time in Mandya area during the month of October 1954. No A. turkhudi was recorded during the year.

For 31,878 dips taken from channels, tanks, paddy fields and pools in 8 selected villages 26,186 larvæ were collected of which 12,154 were of III and IV instars which were identified. Thirteen anopheline species recorded as adults were also recorded as larvæ. Larvæ of A. jeyporiensis, A philippinensis, A. tessellatus and A. karwari were not recorded.

0·24 and 0·08 per cent of the larvæ collected were A. culicifacies and A. fluviatilis as against 0·90 and 0·40 recorded during 1953.

Mandya Town.—Malaria control by anti-larval measures in Mandya Town by treating the breeding places in half-mile zone with Hexidole was in progress during the year.

The routine treatment of mosquito breeding places with larvicides at weekly intervals of 5 days in a week and collection of mosquitoes in the above mentioned catching stations for day in a week was carried on by the Anti-malaria gang during the year under report.

The entomological staff of the Malaria Training Centre, Mandya made test collections of mosquitoes and larvae for a day in a week, During the year under report, no A. fluviatilis adults were recorded in Mandya Town. The maximum density of A. culicifacies and all anophelines recorded were 1·50 and 36·00 per man hour during the month of March. During 1953 the maximum densities of A. culicifacies, A. fluviatilis and all anophelines recorded were 3·14, 0·11 and 39·60. The high level of malaria control achieved in Mandya Town by antilarval work up to 1953 was maintained during 1954 also.

Insectory.—In the temporary shed erected during 1952 on the building site of Malaria Training Centre, Mandya to rear mosquitoes for class work, rearing of several species of anopheline and culicine larvae were continued to meet the requirements of the trainees of Malaria Training Centre, Mandya during the year.

Collection of mosquitœs in calf-baited Magoon's trap modified according to Bates were made in Mandya Town on 12 occasions during the months of July and August. Only on one occasion during July 1954, 2 culicine mosquitoes were collected. In the rest of the observations no mosquitoes were found. It had been observed and recorded during 1953 when similar collections were made in Srirangapatna and Mandya areas locating the trap in situations close to the breeding places of mosquitoes, that only very few mosquitoes entered the traps. This year's observation lends additional support to the findings of the last year.

A survey of malariogenic factors in Sivasamudram Power Colony area was conducted and it was suggested that entomological appraisal of anti-malaria measures in progress may be taken up.

Studies in relation to Plague and other arthropods of Medical importance:—Rodent Ecto-parasitic studies in Mandya District.—Fortnightly collections of rodents in Tumbakere Farm and Sathanur which were in progress during 1953 were continued during the year under report.

Tumbakere Farm and Sathanur were treated with 75 per cent DDT Wettable powder giving a dosage of 100 mgms. of DDT per square foot.

Eighty-one specimens of Rattus rattus were collected in Thumbakere Farm during the year, which had no fleas on them. Similarly 85 Rattus rattus collected from Sathanur also had no fleas. Smears of heart, spleen, liver and lymph glands from these 161 Rattus rattus were found to be negative for Bacillus pestis on standing and examination.

Weekly collection of rodents in Srirangapatna and Maddur Towns by the Reserve Junior Health Inspectors of the respective Centres were continued during the year under report.

Srirangapatna Town and Maddur Town were sprayed during the year twice under the National Malaria Control Programme as indicated below:—

Srirangapatna Town	...	1 to 7th April 1954 and 11th to 15th October 1954.
Maddur Town	...	1 and 2 April 1954 and 11th to 13th October 1954.

Mysore District.—Ectoparasites collected from rodents crapped in Gundlupet and Heggadadevankote Taluks of Mysore District were examined and the results of identification were furnished to the District Health Officer, Mysore.

It was observed that rodents trapped in treated shelters had no fleas on them from 19 to 20 weeks in Mandya District and from 19 to 38 weeks in Mysore District.

Cyclops.—Collection of Cyclops from 13 ponds and 21 stepwells were made round about Mandya during June, July and August 1954. About 200 specimens collected were preserved in 70 per cent alcohol and were despatched to Lt. Col. R. B. Seymour Sewell, F.R.S. Zoological Laboratories, Cambridge, England for purposes of identifications. Results of identifications are awaited for taking up further studies.

MALARIA TRAINING CENTRE, MANDYA

Dr. H. Shama Sastry, M.B.B.S., D.P.H., M.P.H., continued as Officer-in-charge, Malaria Training Centre, Mandya, during the Calendar Year 1954.

Genesis of Malaria Training Centre

Government in their Order No. M. 20655-50—P.H. 78-51-2, Bangalore, dated 1st March 1952, accorded sanction for the starting of Malaria Training Centre at Mandya, with the avilable staff at District Health Office, Mandya, accepting the equipment and services of the experts of the Rockefeller Foundation, accepting the resolution of the Sugarcane Cess Fund Committee agreeing to pay 50 per cent of the cost of building not exceeding one lakh of rupees, accepting the gift of the Town Municipal Council, Mandya, of the land opposite to the district hospital, Mandya for the construction of the building, and making a Government grant of a sum not exceeding one lakh of rupees to be provided under Major Irrigation works.

Accordingly, on Monday, the 7th April 1952, a Training School in Malariology was inaugurated at Mandya, Mandya District, Mysore State, being located in the premises of the District Health Office, Mandya.

Site and Building Construction

Town Municipal Council, Mandya, in their meeting held on 4th August 1952, resolved to grant land measuring 23,350 sq. yards to the Public Health Department free of cost, by the side of the Kasturba Park and opposite to District Hospital, Mandya for the construction of Malaria Training Centre at Mandya and handed over the site in question in anticipation of approval by Government. Government in their Order No. L. 11028-31—Ml. 96-52-8, Bangalore dated 10th September 1952 approved of the action taken by the Municipal Council, Mandya.

Government in their Order No. P.W. 9812-15—KRS. 2-52-3, Bangalore, dated 24th January 1953 and P.W. 7774-7777—KRS. 2-53-9 Bangalore, dated 25th November 1953, accorded sanction for the construction of the Museum Block and Western Hostel Blocks.

First stage Malaria Training Centre works were inaugurated on 9th February 1953 and the civil portion of works relating to the Administrative Block, Lecture Hall Block and Museum Block, were completed during the year under report and the buildings were occupied in stages during October 1954 and November 1954. The Western Hostel Block sanctioned in the first stage works is still under construction. Electrical fixtures to the buildings completed are partially complete.

Training Sessions

The first Session of Training started on 7th April 1952 was designed to give training for four weeks to the Health Inspectors and a six-week course to the Medical Officers. Experience gained during the first Session Influenced the change of the four weeks course to the Health Inspectors to six weeks.

During the years 1952-53 and 1953-54, 5 and 4 Sesions of six weeks duration were held, on an average of one Session for two months period. As the responsibilities of the Training Centre were in addition to other official commitments of the resident staff, and as there was no period of the year which could be utilised by the president staff to avail earned leave and preparation of class materials, during the year 1954-55, proposals were submitted to the Director of Public Health for having four Sessions of training during the year which were approved.

In addition to the above routine training Sessions of the year, demonstrations were held to the students of the Medical College, Mysore and the trainees of Agricultural Extension Service.

Syllabus

The pattern set by Malaria Institute of India, Delhi, was carefully studied in devising a curriculum for Malaria Training Centre, Mandya and an abbreviated course of six weeks duration as against 12 weeks in Delhi was arrived, laying maximum stress on practical work in field and laboratory.

In 235 working hours of each six weeks session, 27 hours are spent for examinations, tests and registration and 208 hours on tuition. There are 43 lecture hours 55 field hours and 110 laboratory hours. The lectures include historical aspects of malaria, microscopy, Entomology, Parasitology Immunity Chæmotherapy, control and other aspects such as economic and administrative.

With the available laboratory facilities, in each Session eighteen candidates are trained. Usually four to six Medical Officers and 12 to 14 Health Inspectors working in the State Department of Public Health are posted for training in each Session. For 13 Sessions held from 7th April 1952 to the end of December 1954, 16 Medical Officers of Health, 52 Assistant Medical Officers of Health, 2 Junior Entomologists, 60 Senior Health Inspectors and 99 Junior Health Inspectors have been trained.

Equipment

The initial equipment in the form of microscopes, laboratory articles, books etc., donated by the Rockefeller Foundation to the tune of 5,570 dollars formed the nucleus to which additions are being made by the Department. Proposals for getting equipment to develop the Training Centre from sources like T.C.A., have been submitted. Also proposals for equipping the Hostel from the anticipated savings have been submitted. Approval and implementation of these proprosals are awaited.

Abstract of Time Table

Particulars	Lecture Hours	Field hours	Laboratory hours	Miscellaneous hours	Total
Historical	1	...	...	...	1
Microscopy	1	...	2	...	3
Entomology	14	22	72	...	108
Parasitology	6	3	33	...	42
Epidemiology	4	...	...	...	4
Survey	2	10	5	...	17
Pathology, immunity Chaemotherapy, Preceptintest. Black water fever.	5	...	...	...	5
Administration aspect Ecouomic Aspect.	2	...	...	...	2
Control	8	14	3	...	25
Registration and taking over equipment.	...	...	...	3	3
Quiz	...	...	...	6	6
Examinations	...	...	...	18	18
Total ...	43	49	115	27	237

Field Station, Sakalespur

As many of the objectives of the Field Station, Sakalespur were fulfilled during the year under review, the report for the year 1954 is a complete review of the activities of the Centre since its origin in 1950.

General.—The Malaria Investigation Centre, Sakalespur, came into existence in September 1950 according to Government Order No. M. 8648-49—PH. 43-50-4, dated 14th August 1950. The Division of Medicine and Public Health of the Rockefeller Foundation supported the work of the Centre till April 1953.

The objectives of the Centre according to the memorandum drawn up between the Government of Mysore and the Rockefeller Foundation were; to define the epidemiology of malaria in malnad; semimalnad and irrigated areas of Hassan district; to evolve economic methods of malaria control; to critically appraise the existing malaria control operations in the State; to study the bionomics of the malaria vector species and to carry out special investigations contributing for the advancement of knowledge on malaria in insecticides.

Dr. C. Achuthan, M.B.B.S, D.P.H., Assistant Malariologist, was in duties of the additional charge of the Malariologist till October 29, 1954 when according to Government Order No. M. 13698-702—PH. 68-53-4, dated 27th November 1953, Dr. H. Shama Sastry, M.B.B.S.,D.P.H., M.P.H., took charge as Malariologist and gave effect to the bifurcation of this Centre. Sri N. L. Sitaraman, M.Sc., Entomologist, continued to be in charge of the Entomological Section.

Entomological Studies.—During the year 1954, the studies initiated by the Centre in 1950 were fulfilled and the data gathered during orientation studies in 1951, 1952 and 1953 were analysed and written up in the form of a series of scientific papers for publication. Ten papers touching on all aspects of the work undertaken by the Centre have been put up and five more are under preparation.

The Centre was called upon to undertake special studies during the year in connection with the malaria epidemics at Kolar and Arasikere. Preliminary surveys were also conducted in the Kanva Project area and in the Kapila valley at Nanjangud to determine the causes for the low incidence of malaria in these areas.

Routine collections were continued only in Sakalespur Town and nearby villages throughout the year. Due to lack of transport for the major part of the year, appraisal collections in the study areas (Kadmane, Yeslur and Bikkodu) could not be pursued regularly. Studies in Channarayapatna area were also concluded during the year as the entire experimental area came under the National Malaria Control Programme.

Observations on the behaviour of anophelines in structures treated with DDT. and BHC. were again continued this year from January to May and results of these studies were put up for publication.

Three group of villages with high spleen rates and abundance of suitable breeding places of the alleged vector species A fluviatilis were selected for detailed studies. These villages represented samples of the low, intermediate and high rainfall areas, the average annual rainfall in the three areas being 48·23 inches, 83·19 inches and 223·0 inches respectively.

Methods and Materials.—Standard entomological methods were employed for routine surveys. Daytime collections of larvæ and adults were invariably made between 09·30 and 12·30 hours. Night-time hand and window trap collections were conducted between 12·00 and 06·00 hours to study the nocturnal activities of the anopheline species in the three are as. Adult captures were expressed as per man-hour or per trap-hour as the case may be while larval collections were reduced to average number of larvæ per 10 minutes of actual dipping to emphasis intensity. Data accumulated over a period of three years have provided information pertaining not merely to malaria vectors but to the anopheline of the area as a whole.

As entomological collections have been made on a rather wide scale the anopheline fauna of Hassan district has probably been almost completely sampled. Twenty-six species were recorded by the Centre, thus adding two species to the known anophelines fauna of the State.

The most striking feature of the seasonal cycle of A. fluviatilis species in all its stages in the high and intermediate rainfall areas is its virtual disappearance following the on set of the southwest monsoon and its sudden reappearance in November after the cessation of rains. This may be attributed to the fact that during the monsoon, the habitat of the species get flushed out. But intensive searches to locate the alternative breeding places during the rainy season in the high and the intermediate rainfall areas were, fruitless. However, in the low rainfall area, where the flooding is less extensive, fluviatilis larvæ were encountered right through the monsoon although in depleted numbers.

Observations on the daytime indoor-resting habits of fluviatilis adults again presented notable deviations from all previously accepted standards. The bulk of the collections in all the three rainfall areas came from cattlesheds, mixed dwellings yielding the next highest cathes, while in human dwellings were recorded the lowest numbers. Also, contrary to the general notion that mosquitoes are found resting on the lower portions of walls, they were captured more often hanging down from the attic.

The out-door resting habits of this species in the Sakalespur study areas again presented marked anomalies as it had been generally assumed so far that in foot-hill regions fluviatilis is mainly outdoor resting. In vigorous searches extending over five months near prolific breeding places of A. fluviatilis, not a single specimen was collected though numbers of other species were readily taken. From this, one is led to infer that in this area out-door resting A. fluviatilis do not form a large part of the vector population. This was also corroborated by a window-trapping programme extending over nine months, which yielded only one A. fluviatilis in the traps, although significant numbers could be collected resting inside the same dwellings.

The peak feeding interval of A. fluviatilis was established to be between 21·00 and 22·30 hours (81·0 per cent), though some feeding took place between 02·00 and 06·00 hours also. Contrary to the notion of a high anthropophilic index in the foot hill regions of Peninsular India, in Sakalespur study areas the anthropophilic index of A. fluviatilis was found to be very low, only 22 (3·3 per cent) out of 656 specimens being positive for human blood. It appears as though A. fluviatilis in this area is a mixture of anthropophilic and zoophilic races, the former forming a very low proportion of the population.

On the basis of observations conducted by this Centre over three years it seems as though we have to revise all our preconceived notions of A. fluviatilis which, in hilly and foot-hill regions, was assumed to be highly anthropophilic, out-door resting, strongly vectorial and low in density, while the plains regions were supposed to be inhabited by populations which were mainly zoophilic, indoor resting, weekly vectorial and high in density.

Sufficient evidence has been accumulated to show that in all hilly regions A. fluviatilis (*a*) need not be an efficient vector; (*b*) is not characterised by high anthropophilic predilictions; (*c*) is not maily out-door resting; and (*d*) does not resort to only human dwellings as daytime resting places

Studies in Sakalespur Demonstration Area.—This comprises of Sakalespur Town and nearby villages within a radius of five miles. As residual spraying promgrammes have been in force in this area since 1948 and as entomological collections have been made here regularly from July 1951 onwards on a continuous scale, the area serves as a background against which critical appraisal of spraying operations can be made. During 1954 the area received two rounds of DDT. spray (75 per centage W.P. 100 m.gms. per sq. ft.) the first round in April and the second in December.

Six thousand three hundred and forty-five man-hours were spent in Collection in the Demonstration area and 884 anophelines were collected, giving an average per man-hour figure of 1·4, this figure being considerably lower than that in 1953 and 1952.

In Sakalespur Town proper, 375 anopheline adults were collected in routine catching stations in 286·5 man-hours. In spite of the fact that detached cattle-sheds had been included in the spraying programme from November 1952, a few were left unsprayed due to the refusal of the owners to have these sheds sprayed. Of the 375 anophelines collected, 121 were A. culicifacies, 2 were A. fluviatilis, the rest being other anophelines. Sprayed human and mixed dwellings did not yield any A. culicifacies, while unsprayed cattle-sheds recorded the bulk of the collections. The two A. fluviatilis were from unsprayed cattle sheds. It was observed during the routine collections that the first A. culicifacies was collected during the 24th week after spray. During the 29th and 30th weeks the density had attained the level of 6·4 and 9·2 per man-hour respectively.

In the surrounding villages, in 348·0 man-hours spent in routine searches 509 anophelines were captured. Of these 32 were A. culicifacies, 6 A. fluviatilis, the rest being other anophelines. In sprayed human dwellings 4 A. culicifacies were collected. The 6 A fluviatilis were taken in cattle sheds only. Of the other anophelines only 47 were found in human dwellings.

Ninety thousand five hundred and thirty minutes were spent in actual collections and 18,232 anophlines larvæ were collected, yielding an average of 9·3 larvæ per 10 minutes of actual dipping.

The three years' routine surveys in Sakalespur Demonstration areas indicate that the adult densities are being gradually reduced, though there is not a corresponding fall in the larval densities. During 1952, the per man-hour figure for all anophelines was 6·6. In 1953 and 1954 it was reduced to 6·2 and 1·4 respectively. With regard to A. culicifacies and A. fluviatilis, the per man-hour figures for 1952 were 0·7 and less than 0·1 respectively. In 1954 they were reduced to 0·2 and less than 0·1 (still lower than in 1952).

Though there was not a fall in the total larval densities, there was an appreciable reduction in A. culicifacies and A. fluviatilis larval densities. In 1952, 2762 A. fluviatilis larvæ were collected, average larvæ per 10 minutes of dipping being 1·9. In 1953 this was reduced to (1427) 1·1 and in 1954 there was a further reduction to (743) 0·3. Comparisons of larval density between species of widely different habits and habitats are difficult. But the abundance of particular species (A. culicifacies and A. fluiraties) determined periodically (1952, 1953 and 1954) indicates fairly accurately the efficiency of control.

Studies in Channarayapatna.—The object of these studies initiated in 1950 was to evolve an economic method for efficient control of malaria in irrigated tracts, and to determine the relative merits of different dosages regimens of DDT. Twenty-two villages lying between the north of Ramadevara channel and the Hemavathi River in Channarayapatna Taluk were selected for these studies. The irrigation season in the area extended from June to January of subsequent year. The average annual rainfall in the area was 28·41 inches.

To appraise the relative merits of the three dosages of DDT that are commonly emp'oyed in malaria control operations *viz.*, 200 m. gms. 100 m. gms. and 56 m. gms. per sq. ft, the area was grouped into three zones. Group I villages were sprayed with 200 m. gms. DDT one application every six months. Group II villages received 100 m. gms. DDT once every three months, while in group III villages 56 m. gms. DDT was sprayed at intervals of six weeks. Identical villages in Holenarasipur taluk were left unsprayed to serve as comparison area.

Routine entomological data were collected in the whole area on a weekly basis till the end of August 1953, when the entire area including the comparison villages were sprayed with DDT under the National Malaria Control Programme. These field studies conducted over a period of three years, have clearly revealed that, in areas where the transmission extends for over six months, a dosage of 200 m. gms. is necessary, in areas where it is less than six months but more than three months, a dosage of 100 m. gms. DDT is sufficient to tide over the transmission season, while in areas of a short transmission period 58 m. gms. DDT would be sufficient.

Effect of line on residual activity of DDT.—The observations indicated that limewash mixed with DDT had some deleterious effect on the residual toxicity of DDT.

Age Composition studies of Anopheline populations and Wind Index.—Prevalence of malaria in an area is dependent upon a number of factors, such as the presence of adequate number of gametocyte carriers, suitable climatic conditions for the development of the parasite in the mosquito, critical density and the longevity of life of the vector species. Of these longevity of the mosquitoes is of the highest importance. Unless mosquitoes live long enough for the malaria parasite to develop to sporozoite stage, they will not be able to transmit the disease. Vector species must live at least nine to ten days after taking an infected blood meal to be able to become infective.

Large scale malaria control with residual insecticides is based on the principles of interception to transmission. The span of life of mosquitoes is reduced below ten days so that they are unable to become infective. Age composition studies of anopheline population collected in sprayed or unsprayed houses would therefore serve as an important guide to judge the waning of the residual effects of the insecticides.

Extensive studies conducted during 1952 and 1953 indicated that :—

(*a*) The age compositions of mosquitoes in unsprayed houses amidst sprayed houses was similar to that in entirely unsprayed comparison villages ;

(*b*) it is possible to have a comparison area in a sprayed village itself by leaving a few houses untreated ;

(*c*) it is very important to spray every house in a village in malaria control programme ; and

(*d*) the study of wing-grade composition of mosquitoes can be utilised as a simple entomological method for judging the effective residual activity of insecticidal deposits in the field.

Malaria-Metric Studies

Channarayapatna area.—The observations made so far indicate a progressive fall in the spleen indices in the three demonstration group of villages 200 m. gms. 100 m. gms. and 56 m. gms.) There was a fall in the unsprayed comparison group of villages also but the natural decline in the comparison area (unsprayed area) is in contrast to the marked fall in the demonstration area (sprayed area).

The observations conducted over a period of 3 years have revealed that DDT at a dosage of 100 m. gms. per sq. ft. prevents malaria transmission effectively as evidenced by entomological and parasitological findings and also from economic view point.

Group	Pre-spraying data		Post-spraying data		Remarks
	S. Rate	A.E.S.	S. Rate	A.E.S.	
	per cent		per cent		
I ...	91·4	4·2	14·7	1·8	200 m. gms.
II ...	86·8	3·5	13·3	1·4	100 m. gms.
III ...	49·8	1·9	7·3	1·7	56 m. gms.
Comparison ...	46·9	2·7	26·4	2·0	Unsprayed.

Infant Smears.—The infant parasite rates being the most sensitive index of fresh malarial infections, were determined despite the difficulty of procuring blood from the infants. Since it was necessary to satisfy the statistical requirements of this index, a representative sample was collected from sprayed and unsprayed villages.

With a view to (1) assess the residual effectiveness of DDT. and (2) to determine the season of transmission the routine infant smears were followed up in all seasons, in both the demonstration (sprayed) and comparison (unsprayed) areas.

The infant parasite rate which was 7·0 per cent during 1950, in the demonstration area has been reduced to 0·0 per cent during the 3 years of sustained anti-malaria activity (DDT spraying), whereas during the same period in the unsprayed comparison group of villages, there was a persistance of malaria infection, as indicated by p sitive infant smears.

Year	*Parasite rate* per cent
1951 ...	3·0
1952 ...	1·6
1953 ...	0·9

Further, a study of the parasite prevalence during the months of April and May (non-irrigation season) indicated that while there was active transmission going on in the comparison area, DDT has conferred protection during the same period in the demonstration (DDT) area.

Blood smear examinations (Crawford Hospital, Sakalespur).—The laboratory facilities available at the Malaria Investigation Centre Laboratory, were made available to the Crawford Hospital. A total of 121 blood smears were sent by the Medical Officer, Crawford Hospital. On examination only four proved to be positive for malaria parasite.

Species		*No. of smears*	*Remarks*
P. Vivax	...	2	...
P. falciparum	...	1	...
Mixed infection	...	1	(P.V. *plus* P. f)

The Superintendent, Bureau of Malariology, Bangalore, sent 1925 blood smears in two batches for first examination of which only 77 were found to be positive for malaria parasite. The species distribution is as follows:—

No. examined	No. of Pos.	Species distribution				Remarks
		P. vivax	P. fal.	P. mal	Mixed infection	
1925 ...	77	39	30	5	3	...

Blood smears under the National Malaria Control Programme.—In view of the large scale spraying (D.D.T.) operations, under the National Malaria Control Programme, it was thought desirable to critically appraise the malaria control programme in the sprayed villages by examining the blood smears, for evidence of malaria parasites. The blood smears from "clinical malaria" cases, "fever" cases and "infants" were obtained from various Health Units in the Districts of Chickmagalur and Hassan, from January 1954 to December 1954. The data collected so far have been summarised in the following paragraphs.

So far, 42 Units in the above the districts have sent 274 batches of blood smear slides, the total number of smears received being 4,633. An extract of the parasite picture is sent out in the following table.

Particulars	No. examined	Species distribution					Per cent of positive
		P.v	P.f	P.m	Mixed infection	Total positives	
							Per cent
Clinical malaria cases ...	1,532	322	81	24	15	442	28·8
Fever cases ...	1,137	43	32	5	4	84	7·4
Infant smears ...	1,744	7	1	...	...	8	0·5
Spleen survey smears ...	220	...	...	...	...	...	...
Total ...	4,633	372	114	29	19	534	11·5
Per cent positives to total examined.	8	2·5	0·6	0·6	0·4	11·5	...

The monthly distribution of the positives revealed that the greatest number of positives, were got during the months of May, June, July and August. December month also registered a high positives. The maximum number of positive infant smears corresponded to the above distribution.

In Lakkavalli, a very large number of malaria parasites positive cases were got both among the clinical malaria cases and fever cases. Enquiry

revealed that a large labour population imported from the neighbouring State of Madras were engaged in P.W.D. construction works. Apart from this, a few solitary positives were got from other Units, as stated earlier. It would be worth while to follow up the positives. Such a procedure has been proposed for the coming year.

Studies on the behaviour of anophelines in structures treated with D.D.T. and B.H.C.—Residual insecticides like D.D.T. and B.H.C. are so dominating the field of malaria control that it is readily assumed that, if application of these insecticides is sufficiently through and widespread malaria is bound to be controlled in any locality irrespective of the species of anopheles concerned or their behaviour. While this may be true in some cases, there are instances where large scale treatment of houses has produced disappointing results in the reduction of malaria.

An attempt was made by Malaria Investigation Centre in 1953 and 1954 to investigate some of the basic aspects of the problems concerned in governing the inter-action of mosquitoes and deposits of insecticides on wall surfaces.

The observations reveal that a study of the outside resting habits of anophelines plays an important part in interpreting the results of large-scale control schemes, as even the most highly domestic anophelines spend a good part of their genotropic cycle in resting places other than habitations and thus escape from the effects of insecticides.

Malaria Epidemic in Kolar District.—The conditions in some taluks of Kolar district in 1954 were peculiarly favourable for the occurrence of an outbreak of regional epidemic of malaria. No major epidemic had occurred since 1943, so that the majority of the child population below the age of 10 years had probably seldom or never been exposed to infection. The level of communal immunity against malaria was thus at a very low point. A series of years of deficient rainfall had preceded the year of the epidemic, whilst the unusually heavy rainfall in 1953 and the occurrence of widespread floods due to the combined effects of rainfall and of the overflow of tanks, created a state of sustained high atmospheric humidity in the pre-epidemic period. The area was also subject to famines due to deficient rainfall, with consequent economic distress.

As the result of creation of numerous breeding places by the excessive rainfall in 1953 and the high degree of relative atmospheric humidity, which rendered conditions especially favourable to mosquito life, there was an abnormal increase in the numerical prevalence of anophelines, and especially of A. culicifacies. The output of A. culicifacies was so large that a major proportion of these was deviated to human beings for blood meal.

Intensive mosquito collections were carried out in six villages and nine anopheline species were recorded. A culicifacies being the most abundant species. A total of 108 dissections was done of which 78 were A. culicifacies, 2 A. stephensi, 1 A. fluviatilis and the rest other anophelines. Four gland positives were incriminated from Kondamari village, thus yielding a sporozoite rate of 5·1 per cent for A. culicifacies.

Malaria Epidemic in Arasikere Taluk.—Entomological studies were conducted in Arasikere Taluk for over a period of 22 days. Anopheline surveys were carried out in thirty-one villages in the area and fourteen species were recorded, A. culicifacies being the most abundant species.

174·7 man-hours were spent in collections and 6,876 anophelines were captured, yielding a gross per man-hour figure of 39·3, 34·6 per cent of the total catches were dissected, mostly for salivary glands as the sporozoite rate was considered to be more valuable since it indicated the complete development of the plasmodium in the mosquitoes. Dissections of A. culicifacies occupied the major portion (83·3 per cent of the total dissections), the next in order being A. fluviatilis. A total of eight positives were recorded, all from A. culicifacies, yielding a sporomoite rate of 0·4 per cent. The anthropophilic index of A. culicifacies was 32·5 per cent.

In addition to image collections, larval surveys were also conducted on a very elaborate scale to find out whether A. culicifacies was still breeding extensively. It was ascertained that these breeding places were rapidly drying out and the output had decreased. The entire area was sprayed with 75 per cent D.D.T. W.P. the dosage given being 56 m.gms. per sq. ft in the last week of June 1954

A rapid splenometric and parasitological survey was also done with a view (1) to estimate the magnitude of the malaria problems, as well as (2) to find out the factors responsible for the genesis of the epidemic in Arasikere.

The overall spleen index for the taluk was 59·3 per cent and average enlarged spleen was 2·3. This high spleen rate with low average enlarged spleen denotes epidemic condition.

Of the 1,155 smears examined (685 at the Malaria Investigation Centre Laboratory, Sakalespur and 470 at the Laboratory attached to the Office of the Superintendent, Bureau of Malariology, 766 were found to be positive for malaria parasite, giving an overall parasite infection rates of 68·3 per cent).

From the foregoing discussions, it may be summarised that the regional epidemic in Arasikere, was the resultant effect of (1) the low communal immunity, (2) an enormous output of the vectors due to favourable climatic conditions and (3) the increased output of the gametocytes.

A summary and analysis of the entomological and parasitological data are furnished below :—

No. of villages where entomological collections were made	31
Total time spent in man-hours	174·7
Total No. of anophelines captured	6,876
Gross per man-hour figure	39·3
Total No. of larvae collected	901
Larvæ per 10 minutes of actual dipping... ...	7·7
No. of species recorded :—	
Adults	14
Larvae	9
No. of A. culicifacies collected ...	... 2,739 (39·8 per cent)
No. of A. fluviatilis collected	202 (2·9 per cent)
No. of dissections done	2,384
Percentage to the total collected	34·6 per cent
Percentage of A. culicifacies dissected to total dissections	83·3 per cent
No. found positive for gland infection ...	8
Sporozeite Rate	0·4 per cent
No. of blood smears examined	1,155
No. found positive for malaria parasites ...	766
Parasite infection rate	66·3 per cent

Species Rates :—	
P. vivaz	38·3 per cent
P. malariae	5·6 per cent
P. falciparum	41·7 per cent
Mixed infection	14·4 per cent
No. of blood meals of A. culicifacies subjected to Precipitin tests	80
No. positives for human Antisera	26
Anthropophilic index	32·5 per cent
No. of blood meals of A. fluviatilis subjected to Precipitin tests	6
No. of positive for human antisera	4
Anthropophilic index	65·6 per cent

Six post-spraying appraisal surveys were done in the area to assess the benefits of D.D.T. spraying. Densities of vector species have come down to negligible levels. Smears taken from infants born after D.D.T. spraying as observed in appraisal surveys were found to be negative for malaria parasite indicating that fresh transmission has been arrested.

A few infant positive blood smears were obtained during the post-spraying appraisal collections. But the infants were born before the spraying of D.D.T.

Spleen Surveys.—In a few selected villages, post-spraying appraisal survey of spleen findings were undertaken six months after D.D.T. spraying. A fall in the spleen indices was discernible.

Preliminary Surveys in Kanva Project areas.—A preliminary investigation into the causes for the low incidence of malaria in the channel and backwater villages of Kanva project area was undertaken by the Malaria Investigation Centre in September 1954. Thirteen villages were surveyed out of twenty in the area. Spleen and blood examination of infants and children between 2-12 years and entomological collections were made in these villages.

The overall spleen index was 1·3 per cent out of 257 blood smears examined only two were positive for malaria parasite (P. vivax light infection) in the adult population. No positive blood smears were encountered either among the infants or in the 2-12 years age group. The overall parasite infection rate was 0·8 per cent.

Lack of malaria in the area was attributed mainly to low anopheline densities which were insufficient to support malaria without continuous replenishment from outside. The people in the area were non-migratory. The adjacent areas were free from malaria due to residual spraying programmes. Insufficient numbers of gametocyte carriers have also contributed to the low incidence of malaria in the area. Enquiries revealed that so far malaria has not been a serious problem in the entire area.

Preliminary Surveys in Nanjangud Area.—A preliminary investigation into the causes for the low incidence of malaria in the Kapila valley at the confluence of Kapila and Gundlu river was undertaken by the Centre in the third week of October 1954. The survey had to be limited to a few villages because of the heavy precipitation. An entomological findings would have been incomplete due to heavy precipitation, the survey is proposed to be taken up again.

Other Activities

Training of personnel.—(i) One batch of IV Year Medical College Students, Mysore, accompanied by the Assistant Professor of Hygiene, visited the Centre. They were given field and laboratory training during December.

(ii) Field and laboratory training were imparted to four Health Probationers, newly appointed to the Department.

Visitors.—(i) Dr. U. Tin Sein, Malariologist, Burmah, accompanied by the District Health Officer, Hassan, visited the Centre during May.

(ii) Dr. L. J. Bruce Chwatt, Malariologist; Nigeria, British West Africa, accompanied by the Superintendent, Bureau of Malariology, Bangalore, visited the Centre during October.

(iii) Dr. B. A. Rao, Deputy Director, Malaria Institute of India, Delhi, accompanied by the Superintendent, Bureau of Malariology, Bangalore, visited the Centre during the month of December.

(iv) Mr. J. C. Cartner of the Rockefeller Foundation visited the Centre during March and July.

Gifts.—Mr. J. C. Cartner of the Rockefeller Foundation was pleased to present to the Centre as a gift various monographs and technical journals on the eve of his departure from Bangalore.

Secondary Health Centre, Sakalespur

Dr. C. Achuthan, M.B.B.S., D.P.H., Assistant to the Malariologist, Sakalespur continued to be in charge of this Centre from 1st November 1952.

Town Municipality, Sakalespur.—In the Secondary Centre headquarters is located a major municipality with a population of over 5,000 people. Since it had its own full compliment of sanitary staff it is not included for the Health Unit activities except for purposes of D.D.T. spraying. The town Inspection is being done routinely by the District Health Officer, Hassan.

Malaria Investigation Centre, Sakalespur.—Since 1950, a Malaria Research Centre is in existence at Sakalespur. Consequent to the bifurcation of the Investigation Centre only a field station is stationed here. The Secondary Centre is under the administrative control of the Assistant Malariologist of the Field Station, Sakalespur.

General Sanitation and Control of Epidemic Diseases.—During the year under report the unit area was free from the outbreak of any major epidemic diseases.

(i) *Cholera.*—Nil. As a routine protective measure the wells in the Unit area were chlorinated 4,143 times and in 904 wells, general cleaning was attended to. Seven hundred and seventeen anti-cholera inoculations were done during the year.

(ii) *Plague.*—Nil.

(iii) *Small-pox.*—No small-pox cases were reported during the year 1954. But as a routine the preparation of the list of the unprotected children and vaccination to them was pursued by the Unit staff, in addition to the mass vaccination drive under the five-year vaccination drive initiated during 1953. There were a few places where opposition for vaccination was heavy. But it could only be partially overcome by constant propaganda.

During the year a total number of 9,399 vaccinations were done. Of this 59·9 per cent (5,635) were males and 40·1 per cent (3,764) were females. Only 31·2 per cent (2,937) of the total vaccinations were primary and the remaining 68·8 per cent (6,462) were revaccinations. The percentages of the success of primary and revaccinations were 96·0 per cent and 39·7 per cent respectively. The following are the comparative figures for the last year.

	1953	*1954*
Vaccinations	9,782	9,399
Percentage of males	58·1	59·9
Do Females	41·9	40·1
Do Primary	24·6	31·2
Do Revaccinations ...	75·4	68·8
Do success among :—		
Primary	98 8	96·0
Revaccinations	48·3	39·7

Under the mass-vaccination drive, 5,436 vaccinations have been done. The age distribution is as follows :—

Age group	Vaccinations			Percentage to the total vaccinations in each age group
	Primary	Re-vaccinations	Total	
0—4 years ...	605	301	906	80
5—14 do ...	134	1,655	1,789	94
13—36 do ...	2	1,788	1,790	66
35—54 do ...	...	845	845	54·8
55 and above ...	...	106	106	15·9
All age groups ...	741	4,693	5,436	...

The progress under mass vaccination drive is set out in the following table :—

Year	Target	Actual No. of vaccinations	Percentage of the target	Remarks
1953 ...	7,768	4,596	59	...
1954 ...	7,500	5,436	72·7	..

At the end of the year 782 children were remaining unprotected, of whom 495 are below six months of age and 287 are above six months of age.

The vaccinations figures had reached a new height during 1952 but dropped down a little during 1954. This fall is attributable to the full complement of the Health Inspectors not being posted to the Units.

Year	Vaccinations done	Remarks
1944* ...	2,120	*From 1944 to 1949 only one Primary Centre was functioning (At Sakalespur).
1945 ...	849	
1946 ...	1,157	
1947 ...	629	
1948 ...	1,873	
1949** ...	6,707	**Six more Centres were sanctioned.
1950 ...	7,985	
1951 ...	10,699	
1952 ...	11,208	
1953 ...	9,782	
1954 ...	9,399	

(iv) *Typhoid.*—There were 4 attacks during the month of February 1954. Two cases succumbed to the attack (one at Ballupet and one at Sakalespur).

The following remedial measures were undertaken :—

(i) All the drinking water sources were chlorinated.

(ii) Four hundred and seventy-three anti-typhoid inoculations were done.

(v) *Mass treatment for Helmenthic infections* :—

(*a*) *Kollahalli.*—Forty residents of the village (including children) were given vermifuge drugs on 9th and 10th March 1954 for ascariasis.

Temporary trenches were dug the previous day for the proper disposal of the excreta.

(*b*) *Hosakere.*—This village was selected for mass hookworm treatment. It has a population of about 130.

Temporary trenches were dug in suitable places on 23rd March 1954 for proper disposal of the excreta. A total number of 96 people including children were treated on 24th March 1954 with the vermifuge.

(vi) *Guineaworm infection.*—Twenty-five cases in different stages were reported among the imported estate labour of 5 villages near about Ballupet for the first time during August 1954.

An immediate investigation was instituted and the histories elicited. They revealed all the cases to have been imported from North Arcot District of the neighbouring State of Madras.

The following treatment was given :—

(i) Continuous wet packs were applied to the parts to facilitate the expulsion of the worms.

(ii) The time honoured method of "Parturition" of the protruded worms was resorted to.

(iii) Asepsis of the wounds was maintained.

(iv) Discarded dressings were burnt.

(v) Sulpha therapy and general stimulent line of treatment was given.

The following preventive measures were undertaken :--

(i) The patients were prevented from infecting the drinking water sources—Hondas.

(ii) Super chlorination of water sources.

(iii) Biological method of cyclops control was also done by letting in fish into the drinking water sources, received from the District Health Officer, Chitaldrug.

Since this is the first infection reported in the Unit area, cyclops survey was done in the affected villages. The Junior Entomologist from Hassan was drafted for this work. The survey revealed the presence of copepods in plenty in the drinking water source. Attempts were made to identify the prevalent species of the cyclops in the area.

General Sanitation.—A few hand flush latrines were introduced during the year. The casting of 'P' traps and moulds have just been started. Every attempt is being made to popularise these sets prepared locally. The response appears to be good.

No. of latrines introduced	During the years		
	1952	1953	1954
Hand-flush latrines ...	10	6	4
Soak-pits ...	48	44	5

Malaria—its Incidence and Control.—Malaria which was one of the major public health problems in these large fertile tracts of malnad has been kept under control by sustained anti-malaria control measures.

Malaria Morbidity.—A total number of 39,427 out-patients were treated at the various unit dispensaries. Out of which only 788 were malaria cases. The percentage of malaria cases treated to the total cases treated is 2·0 per cent. The morbidity rate for malaria is 20·3.

Year	Percentage of malaria cases to total cases treated	Morbidity rate (per 1,000 population)
		Per cent
1952	9·5	96·4
1953	5·4	51·3
1954	2·0	20·3

Malaria mortality.—Out of the 530 total deaths recorded during the year, only 14 were due to malaria, giving a specific death rate of 36 per 100,000 population whereas for the previous year it was only 9.

Spleen rate.—The bi-annual spleen surveys were conducted by the respective Assistant Medical Officers of Health. The details are summarised below :—

Month	No. examined	No. positive	Spleen index	A.E.S.
April 1953 ...	5,233	265	5·0	1·3
October 1953 ...	4,104	142	3·4	1·1
April 1954 ...	3,529	76	2·1	1·2
October 1954 ...	3,364	41	1·3	1·4

Blood Smear examinations.—A total of 502 blood smears were collected during the year. They were examined at the laboratory attached to the Investigation Centre. Of the 502 total smears, 86 were taken from the clinical malaria cases, 260 from the " fever out-patients " and the remaining 156 were from infants, (15 days old to one year). Except for one smear from the Fever group which proved to be positive for P. vivax, the rest were negative for M.P. This positive smear was encountered in the Ballupet Health Unit.

Investigation revealed it to be an imported case from Yelavare (Arasikere taluk) where a history of recent malaria epidemic was forthcoming.

Crawford Hospital, Sakalespur.—One hundred and twenty-one smears were taken from 'Fever' cases attending the Hospital. On examination only four proved positive for M.P. The species distribution was as follows :—

P. vivax—2; P. falciparem—1; Mixed infection—1. All these were imported cases from the border area Kemphole.

Entomological work.—No systematic entomological work was undertaken by the health unit staff, since a detailed study was being carried out by the staff of the Malaria Investigation Centre, Sakalespur.

D.D.T. sprays.—Spraying of residual D.D.T. at 100 m. gms per square feet as an adulticidal measure was undertaken by the N.M.C.P. squad, whereas the second round was completed by the Belur squad.

The following are the summarised details of sprayings :—

Particulars.	*1st round.*	*2nd round.*
1. No. of houses :—		
(*a*) Sprayed ...	11,785	14,106
(*b*) Refused ...	690	240
(*c*) Locked ...	11,016	882
(*d*) Total ...	13,491	15,228
2. Materials used :—		
(*a*) D.D.T. (75% W.P.) in lbs. ...	6,160	6,626
(*b*) D.D.T. æromax solution ...	19 glns	...
(*c*) Emulsifier No. 1 ...	76 ozs.	...

Maternity Services.—The maternity services are extended to about 60 per cent of the Unit population whereas last year it was extended to only 30 per cent. Over a major part of the year, the full complement of the midwifery staff were on duty. On an average each midwife is allotted a little over 1,000 population. The maidan limit of 3,000 population could not

be allotted to each midwife because of the forest tracts and the sparsely distributed houses over vast areas. For want of proper housing facilities in the village, all the midwives are stationed in the unit headquarters.

The midwives have given 88,004 house visits during the year under report and have registered 1,367 new prenatals. One thousand and twenty-four births took place in the midwives area of which 466 were conducted by the dais, 558 by the midwives. Of the 558 labour cases conducted by the midwives, 480 were registered and 76 unregistered.

The percentage of the midwife conducted and dai conducted cases to the total was 54·5 per cent and 45·5 per cent respectively. The percentage of the registration among the midwife cases was 86·0 per cent whereas for the last year it was little over 75 per cent. The average number of antenatal and post-natal visits per case worked out to 2·5 and 2·9 as against 2·7 and 2·4 respectively, for the previous year. Each midwife has conducted on an average 31 deliveries per annum, as against 33·6 during 1953.

There ware 78 infant deaths in the midwife area out of which 43 were among the dai cases and 35 among the midwife cases. Of the 5 maternal deaths recorded in the midwife area 3 were among the midwife cases and the 2 among the dai cases.

The periodic urine examination of the pregnant women was done by the Unit midwifery staff. The number of urine samples examined is 4322. In order to conserve the chemicals, the midwives were instructed to perform the 'heat test' in the field itself. Such of those samples which showed opacity on heating the top layers, were brought to the Unit headquarters for the confirmation by adding acid after heating,

M.C.H. Clinic.—The clinic centre was started on 20th March 1954 with the available staff. During the year under report 40 clinics were held. The average attendance per clinic day is about 78. The details of the clinic attendance is set out in the following table :—

		First visits.	*Total visits.*
1. Infants	...	115	191
2. Children	...	654	473
3. Mothers	...	126	432
4. Others	...	487	258
Total	...	1,382	1,354

Milk beneficiaries.—Only skim milk distribution was done in the two centres (one at M.C.H. clinic and the other at Sisuvihara) during the year. A total number of 5,826 feeds were given to the beneficiaries. The age-war distribution of the beneficiaries is as follows :—

Particulars.		*No. of feeds.*
1. No. of infants	...	43
2. No. of children	...	5,708
3. No. of nursing or expectant mothers	...	75

Measurement data of children at birth.—Data regarding the height and weight of children at birth were collected from the Crawford Hospital, Sakalespur, from November 1953 to April 1954. Out of 87 children born

during the above period 47 were males and 40 females. The arithmetic means are worked for the two sexes. The measurement data is illustrated below :—

		Male.	*Female.*
Average height (in inches)	...	16·6	18·7
Average weight (in lbs.)	...	6·1	5·9

This shows that the male babies in this area are short and stout at birth, whereas the female babies are long and slender.

For purposes of the comparison the measurement cited by the Anthropometric Committee (British Association) are furnished below :—

Weight	...	7½ lbs.	At birth.
Length	...	19½ to 20 inches	At birth.
The average	...	17·6 inches.	
For Malnad as worked out here would be.		6·0 lbs.	At birth.

Vital Statistics.—During the year under report 1424 live births, 38 still births and 530 deaths (193 infant deaths and 14 maternal deaths) were recorded as against 1,213 live births, 26 still births and 469 deaths (159 infant deaths and 11 maternal deaths) for the previous year.

Apart from the periodic scrutiny of the village births and deaths registers by the revenue department, regular checking of the vital statistics was done by the health staff. In 1954, 562 unregistered births, 202 unregistered deaths were detected during the routine visits by the Health staff. These omissions form a fair percentage (39 per cent) of the total births and deaths. During 1953 percentage of omissions was over 46 per cent.

The detailed causes of deaths and their percentages to the total are furnished in the appendix I.

Infant deaths top the listed causes of deaths, contributing 36·4 per cent of the total mortality. Next in order comes the deaths due to other fevers (16·7 per cent) nearly 10 per cent of the total mortality is due to diarrhoea and dysentery. It is of interest to note that only 2·6 per cent of the total deaths are due to Malaria.

One hundred and ninety-three infant deaths (mortality under one year of age) were recorded during the year under report, giving an infant mortality rate of 135 per 1,000 live births (as against 131 for the previous year). The causes of infant deaths are :—

1.	Other fevers	...	39
2.	Pneumonia	...	10
3.	Whooping cough	...	1
4.	Other respiratory causes	...	15
5.	Diarrhoea and Dysentery	...	26
6.	Other digestive diseases	...	10
7.	Weakness and debility	...	15
8.	Prematurity	...	29
9.	Rickets	...	2
10.	Asphyxia	...	3
11.	Colic	...	2
12.	Convulsions	...	23
13.	Congenital syphilis	...	1
14.	Other causes	...	17

It is seen from the above causes of deaths of infants that serial Nos. 7, 8 and 9 contribute 23·8 per cent of the total infant mortality rate. This reflects on the mothers' condition. With intensive treatment of the clinics regularly and attention towards dietic habits it could be considerably reduced. It is here that the Public Health Nurses' service is required. But no Public Health Nurse has been posted since the very inception of the Unit.

The infant deaths for the different age groups expressed as a percentage of the total infant deaths is tabled below :—

Age group.	*No. of deaths expressed as a per cent of the total infant deaths.*	*Remarks.*
Below 1 month ...	58 per cent. ...	Neonatal.
Below 5 months ...	16 ,, ...	...
5 to 12 months ...	26 ,, ...	...

It is seen from the above figures that over 58 per cent of the infant deaths occurred during the first month after birth. This high neonatal mortality, attributable to maternal factors could be considerably reduced by a systematic expansion of the maternity services.

Fourteen maternal deaths were recorded during the year yielding a maternal mortality of 9 per 1,000 births. Though a very low rate is recorded, it is not consistent with the other vital occurrences. This needs thorough investigation by the Public Health Nurse.

The various rates are furnished below from 1949 for purposes of comparison.

Sl. No.	Rates.	1949	1950	1951	1952	1953	1954
1	Birth rate ...	18·0	21·2	25·3	24·5	31·3	36·7
2	Death rate ...	5·8	7·9	7·3	6·3	12·1	13·6
3	Infant mortality rate ...	69·4	103·2	89·6	103·1	131·1	135·5
4	Maternal Mortality rate ...	15·5	13·1	12·9	10·1	9·0	9·5
5	Survival rate ...	12·2	13·3	18·0	18·2	19·2	23·1

The salient features observed are :—

(i) An increase in birth rate from 18·0 in 1949 to 36·7 in 1954.

(ii) A low death rate recorded prior to 1953.

(iii) A sudden rise in death rate after 1953 and a further rise during 1954.

(iv) A steady rise of the infant mortality rate.

(v) A steady decline in the maternal mortality rate and somewhat stabilised after 1953.

(vi) A very wide difference between the birth rate and death rate reveals that there may be still some omissions.

(vii) A steady rise in the survival rate.

(viii) Except for the maternal mortality which needs further investigation, the data collected about other vital events during 1954 approximate truth.

Curative Services.—A total number of 39,427 out-patients were treated at the 6 dispensaries as against 36,744 for previous year. One hundred and forty-four minor operations were done as against 185 during 1953. In enclosed Appendix II, the cases under various ailments are expressed as a per cent of the total.

An analysis of the data reveals the following features:—

(i) Sixty-nine per cent of the total out-patients treated were new cases and the rest repeat cases.

(ii) Sixty per cent of the hospital attendance were males.

(iii) The peak in out-patient numbers is recorded during March and November.

(iv) Nearly 25 per cent of the total morbidity is due to respiratory causes.

(v) Hardly 2 per cent of the total dispensary out-patient attendance is attributable to malaria.

Laboratory Services.—The following are the details of the laboratory examinations done during the year :

Sl. No.	*Particulars.*	*Number.*	*Remarks*
1	Blood for:—		
	(*a*) Malaria parasite ...	540	At the M.I C. Laboratory.
	(*b*) W.R. ...	31	At the P.H.I.
	(*c*) Widal ...	13	do
	(*d*) Differential count ...	32	At the M.I.C. Laboratory.
	(*e*) H.B. per cent ...	3	do
2	Urine for sugar and albumin.	3,756	do and at the Primary Health Centres.
3	Motion for ova ...	7	At the M.I.C. Laboratory.
4	Smear for G.C. ...	13	do
5	Smear for T.B. ...	12	do and the P.H.I.
6	Others (Rat smears) ...	3	P.H.I. Bangalore.

When compared to the last year's examinations the number of the laboratory examinations done is far greater.

Other activities.—(*a*) Field training in D.D.T. spraying work was given to one batch of IV Year M.B.B.S. students of Mysore Medical College.

(*b*) A temporary inoculation depot and a first aid out-post was opened at Bisle in connection with the Subramanya jatra.

APPENDIX I

Deaths under various causes.

Sl. No.	Cause of death.	No. of deaths	Percentage to the total deaths.	Remarks.
1	Plague ...	...	...	
2	Cholera ...	...	...	
3	Malaria ...	14	2·6	
4	Typhoid ...	4	0·7	
5	Other fevers ...	89	16·7	
6	Diarrhœa and dysentery ...	55	10·3	
7	Small-pox ...	...	...	
8	Respiratory causes :—			
	(*a*) Pneumonia ...	33	6·2	
	(*b*) Other respiratory causes ...	20	3·7	
9	Consumption (T.B.) ...	17	3·2	
10	Leprosy ...	...	...	
11	Maternal death ...	13	2·4	
12	Drowning ...	...	...	
13	Suicide ...	1	0·18	
14	Accidents and Wounds ...	5	0·9	
15	Snake bites ...	...	...	
16	Rabies ...	1	0·18	
17	Wild beats ...	...	...	
18	Other causes :—			
	(*a*) Infant deaths ...	193	36·4	
	(*b*) Diseases of lever ...	6	1·1	
	(*c*) Diseases of heart ...	8	1·5	
	(*d*) Diseases of kidneys ...	5	0.9	
	(*e*) All other causes ...	66	12·4	
	Total ...	530	100·0%	

APPENDIX II

Sl. No.	Diseases.	No. of patients treated.	Percentage to the total cases treated.	Remarks.
1	Malaria ...	788	1·9	
2	Other fevers ...	4,140	10·5	
3	Pneumonia ...	753	1·9	
4	Other respiratory causes ...	8,750	22·1	
5	Diarrhœa ...	2,951	7·4	
6	Dysentery ...	1,819	4·6	
7	Other digestive diseases ...	3,375	8·5	
8	Worms ...	1,024	2·8	
9	Anæmia ...	915	2·3	
10	Ulcers ...	1,584	4·1	
11	Other skin diseases ...	2,165	5·4	
12	All other causes ...	11,063	28·5	
	Total ...	39,427	100·0	

ACTIVITIES OF SECONDARY CENTRES.

Mandya Secondary Centre and Extension Training Centre, Visvesvaraya Canal Farm.

Personnel.—Dr. H. Narayana Rao, M.B.B.S., D.P.H., Medical Officer of Health, was in charge of the Secondary Centre, Mandya, throughout the year.

Expenditure. – The total expenditure for the year was Rs. 47,506-14-0.

Epidemics.—The Secondary Centre was free from plague and small-pox. As regards cholera, 82 attacks and 54 deaths have occurred in the area during the year under report, commencing at Chandagal Health Unit area in May 1954 reaching a peak in July 1954 at Mandya, Kothathi, Keelara and Shivally and subsiding in August 1954.

Vaccinations.—Two thousand seven hundred and eighty-three primary and 10,382 re-vaccinations were conducted during the year of which 1,138 primary and 9,299 re-vaccinations in allotted villages for mass vaccinations under five-year plan and 1,645 primary and 1,083 re-vaccinations in non-allotted villages, thereby protecting 58·14 per cent of the allotted population during the year and 53·99 per cent of the allotted population for 1953 and 1954.

Inoculations.—Twenty-eight thousand and fifty anti-cholera inoculations were done in the Unit area during the year. Two hundred and seven typhoid inoculations were also conducted in Shivalli Primary Health Unit during the year.

Sanitary Improvements.—Forty-nine (61) hand-flush latrines were got constructed during the year 1954.

Maternity and Child Welfare.—During the year the midwives have given 46,099 house visits and registered 4,330 new prenatals. They have conducted 1,632 labour cases out of 3,051 that occurred in their area. They paid 6,937 P.P. visits to midwife conducted cases and 2,254 dhai conducted cases. The Public Health Nurse visited 9,788 houses and gave 4,457 prenatal visits and 1,002 post-natal visits. She has checked 61 labour cases. On an average per month a midwife has conducted 11 deliveries.

Laboratory work.—Six hundred and sixty-nine blood smears for M.P. were examined during the year. Out of 669 blood smears examined, 429 were infant blood smears, 203 were from out-patients and 37 drawn at the time of spleen survey. Out of 203 out-patient blood smears, 10 were positive for M.P. (5 for P. vivax, 4 for P. falciparum and 1 for mixed infection).

Six motion samples were sent to the Public Health Institute during the year of which 2 were positive for cholera vibrios.

Curative work.—Three thousand four hundred and fifty-two patients in 3 dispensaries, 5,901 in clinics and 2,702 in villages were given treatment.

Vital Statistics.—Three thousand five hundred and twenty-two births, 1,175 deaths and 127 still births have occurred in the Unit area during the year, of which 18 births, 2 deaths and 1 still birth were detected by the staff. Among the deaths, 467 were infant deaths and 15 were maternal deaths. For the calculated mid-year population of 1,02,753, the different

rates have been 34·17 birth rate per mile, 11·43 death rate per mile, 132·97 infant mortality rate per 1,000 live births and 4·12 maternal mortality rate per 1,000 deliveries.

Milk Distribution.—Milk distribution at Kothathi, Shivalli, Keragode, Keelara and Hosagavi was commenced from January 1954 and continued during the year. Five hundred and twenty-eight lbs. of whole milk and 4,692-7 lbs. of skim milk were spent during the year. Nine thousand seven hundred and one infants, 1,04,821 children and 8,579 nursing mothers received milk during the year under report.

EXTENSION TRAINING CENTRE.

Pilot Training *cum* Development Project, Visvesvaraya Canal Farm—Shivalli Health Unit, Mandya.

Introduction.—This Extension Training Centre was started as a part of the Pilot Training *cum* Development Project on the 28th April 1952. Since April 1954, it is working as Extension Training Centre.

The Extension Training Centre is located on a 600 acre Agricultural Research Farm (Visvesvaraya Canal Farm) in Shivalli Health Unit Headquarters and about 9 miles from Mandya Town. The Centre is 26 miles away from the nearest National Extension Service Block at Malavalli, which was part of the Pilot Training *cum* Development Project up to the 1st April 1954.

For purposes of village work experience of the Trainees including that of Rural Health and Sanitation, 33 villages, belonging to Shivalli Primary Health Unit, round about the Extension Training Centre within a radius of 8 miles, have been attached to the Training Centre.

So far 234 trainees and 4 supervisors in 5 batches have undergone training. The training programme for the VI batch of trainees has started on 1st December 1954, with 108 trainees. These 108 candidates comprise of various categories in respect of their qualification, such as B.Sc. (Agri.), L.Ag., B.A., B.Sc. graduates, undergraduates and S.S.L.C. Excepting 6 from the Coorg State, all the rest are from Mysore State.

For getting village work experience in general and experience in rural health and sanitation, the trainees spend 3 months out of six months training period in the assigned villages and work there with the assistance and supervision of the wholetime Senior Health Inspector; the Senior Health Inspector of Shivalli Health Unit and Assistant Medical Officer of Health, Shivalli Health Unit and other Health staff of Mandya Secondary Centre and Malaria Investigation Centre as and when they visit these villages periodically. The trainees stay continuously for a month at a time in the villages assigned to them, out of the 33 villages mentioned above and alternate with their stay at the Training Centre. The trainees keep their assigned villages throughout the training period and carry out rural health and sanitation works, which are reviewed at the end of their training period. For this purpose, trainees are grouped into two batches, one batch getting village experience for a month, while the other batch is at the Training

Centre. The Health Training staff during their routine visits to the training centre villages also help the trainees and guide them in the various health activities in progress or to be taken up.

During the year 200 persons (3rd, 4th and 5th batches) were trained. The training of sixth batch, comprising of 108 trainees was started on 1st December 1954.

List of villages assigned to the Trainees of Extension Training Centre, Visvesvaraya Canal Farm, Mandya.

1	Shivalli	18	Panakanahalli
2	Hullenahalli	19	Induval
3	Thibbanahalli	20	Yaliyur
4	Hilikere	21	Chandagal
5	Hulikerekoppal	22	Yerehalli
6	Bevakal	23	Arrerahalli
7	Dudda	24	Maradipura
8	Madla	25	Gunnaikanahalli
9	Goravale	26	Sambanahalli
10	Sampahalli	27	T. Malligere
11	Kebbahalli	28	Machahalli
12	Holalu	29	Kamnahalli
13	M.N. Katte	30	Biligoli
14	Gandhalu	31	Madachakanahalli
15	Hadya	32	Sowdenahalli
16	Kirgundur	33	Mayanna Koppal
17	Sundahalli		

Progress achieved so for.

1	Hand flush latrines introduced	...	40
2	Soak-pits introduced ...	...	328
3	Chlorination of wells ...	...	588 times
4	Drainage :—		
	(*a*) Got constructed ...	...	4,144 feet
	(*b*) Got cleaned ...	...	29,548 feet
5	Manure pits closed ...	...	200 pits
6	First Aid rendered ...	...	1,601 persons
7	General cleaning of houses ...	...	1,587
8	Houses baited for rats ...	...	2,580 times
9	No. of rats killed ...	...	10,405

Medical Inspection of Trainees.

A thorough physical examination of all the trainees of each batch is done for purposes of evaluation of the health status of the trainees both at the beginning and at the end of their training course. Individual health cards are maintained for each of the trainees. All of them are protected against small-pox, cholera and typhoid by vaccination and inoculations immediately before they are admitted to the Training Centre. An X-Ray examination of all the trainees is also arranged with the District Medical Officer, Mandya. A plan for the construction of a sick-room has been furnished to the Officer-in-charge, Extension Training Centre.

On 5th June 1954. Lt. Col. Barkat Narain, Adviser (Health), C.P.A., Planning Commission, New Delhi, visited Visvesvaraya Canal Farm Extension Training Centre, and was pleased to go through the training programme that is being given in rural health and sanitation to the trainees.

On 26th July 1954 Dr. H. Shama Sastry, M.B.B.S., D.P.H., M.P.H., visited the Extension Training Centre and addressed the trainees on their role in respect of Rural Health and Sanitation.

Visitors-—(1) One batch of fourth year M.B.B.S. students, accompanied by the Assistant Professor of Hygiene, Medical College, Mysore, visited this Centre, when practical demonstration in field spraying (D.D.T.) was put up.

(2) Dr. Leslie C. Coleman, M.A., Ph.D , C.I.E., Retired Director of Agriculture in Mysore.

(3) Mr. William H. Carry, Junior Superintendent, Administration of Hospital, Boston, Massachusetts.

(4) Mrs. Muirhead from UNICEF.

(5) Col. Barkat Narain, Adviser (Health) Community Project Administration, New Delhi.

(6) Dr. Taylor, Dr. and Mrs. Rice.

(7) Dr. L. J. Bruce Chwatt, Malariologist, Nigeria, British West Africa.

(8) Dr. B. Ananthaswamy Rao, B.Sc., M.B.B.S., M.P.H., Deputy Director, Malaria Institute of India, Delhi.

Mr. J. C. Carter of the Rockefeller Foundation, presented to the Malaria Investigation Centre a series of monographs and technical journals for reference.

Scientific Papers published and presented.

Published papers.—(1) A survey of the economic status of villagers in a malarious irrigated tract of Mysore State, India, before and after D.D.T. residual insecticide spraying.

(2) Anophaline mosquitoes recorded in the districts of Shimoga and Hassan, Mysore State.

(3) Studies on the Bionomics of *A. fluviatilis* in Mysore State, Part I.

(4) Seasonal prevalence of anophalines in western hill tracts of Mysore State.

(5) A first record of *A. theobaldi* Giles from Mysore State.

(6) Effect of lime on residual activity of D.D.T.

(7) Wing-grade composition as an index for judging the effectiveness of residual toxicity of insecticide deposits.

(8) A report on the survey of blindness in the Health Units of Mandya District.

(9) Preliminary Note on Plague investigation.

Papers submitted for publication.—(1) A preliminary note on the behaviour of anophelines in structures treated with D.D.T. and B.H.C.

(2) Studies on the bionomics of *A. fluviatilis* in Mysore State, Part II.

(3) Further observations on the effect of lime on residual activity of D.D.T.

Papers presented at the Departmental officers' conference.—(1) Experiences with residual insecticides in Mandya District.

(2) Treatment with Gammexane P520 and anopheline behaviour in Mandya District.

(3) Rodent Kotoparasites in certain areas of Mysore District.

(4) Checking of Vital Statistics.

(5) Domicilliary Midwifery services.

MYSORE DISTRICT

Dr. C. Gopalaraj Chetty, B.A, M.B.B.S., D.P.H, M.P.H., District Health Officer.

Sri M. L. Loganathan, M.B.B.S., D.P.H., M.P.H., was in charge of the office till 13th November 1954 when he handed over charge to Sri C. Gopalraj Chetty, B.A., M.B.B.S., M.P.H.

Five Health Units were sanctioned in Government Order No. M. 14062-65—PH. 88-54-2, Bangalore, dated the 9th October 1954 by converting 3 dispensaries in Gundlupet Taluk (Gundlupet, Terakanambi and Begur) and 1 dispensary in Heggaddevankote Taluk (Badagalapura), and 1 New Health Unit in Alanahalli of Heggaddevankote Taluk. The dispensaries were handed over from the Medical Department, practically towards the end of December 1954.

Epidemics and their Control

Plague.—Nine cases of plague with 2 deaths were reported during the year mainly from Hunsur and Periyapatna Taluks. One thousand three hundred and sixty-eight anti-plague inoculations were conducted in the infected places. The incidence of plague in the district was very low during 1954 as contrasted with the previous years are shown below. The result was largely due to the D.D.T. spraying started during 1952, in the endemic towns and villages and the subsequent National Malaria Control Programme activities covering the entire rural areas of the district.

1951	...	789 attacks	352 deaths
1952	...	444 do	188 do
1953	...	90 do	51 do
1954	...	9 do	2 do

Cholera.—Unlike plague, Cholera was a menacing epidemic. During the year 1954, 406 attacks and 222 deaths were reported, as against 367 attacks and 174 deaths in 1953. Highest incidence in the recent years was in 1949 followed by epidemics of gradually lesser severity during 1950, 1951 and 1952.

A few cases of cholera were reported during January 1954 mainly confined to Krishnarajanagar Taluk. During the later part of the year, the infection spread to other taluks and reached its peak in the month of November. By the end of November 20 villages were effected with 105 attacks and 45 deaths. By the end of December 1954 the epidemic had spread to 27 other villages with a total of 275 attacks and 118 deaths. A total of 60,000 anti-cholera inoculations were done. The infected taluks were Nanjangud, Chamarajanagar, Yelandur and T.-Narasipur. The epidemic originated in the labour camps of Nugu Project and later spread to the other places. This epidemic subsided only towards the middle of February 1955. Intensive inoculation drive was launched with the help of local Assistant Surgeons and additional staff posted for the purpose. In view of the large number of villages infected simultaneously in different parts of the district, progress under anti-cholera inoculations could not be accelerated as the staff could not be concentrated. The total population at risks as at the end of the year was about 100,000 but the total inoculations done were only 60,703.

Small-pox.—Only 15 attacks were reported during the year with no deaths. During the year 1953 there were 55 attacks with 7 deaths. Since 1951 there has been no epidemic of small-pox in the district. The mass vaccinations started in 1951 have partly contributed to the decline of the disease.

Vaccination Programme.—A total of 38,998, 62,106 and 4,661 vaccinations were done in the Health Units, District Board and Municipal areas. The mass vaccination campaign organised in the Health Unit area on a five-year plan was carried out in 12 out of 14 Primary Units. In five Units about 90 per cent of the target was reached.

Statement showing the progress made under the mass vaccination drive during the year 1954 in Health Units.

No.	Name of Unit	No. of villages selected	Total population	Vaccinations done			Percentage of the target
				Pri.	Re	Total	
1	Sosale	4	5,269	270	3,185	3,455	60
2	Bannur	...	...	...	...	...	...
3	Mirle	7	5,946	336	3,736	4,072	91
4	Hebbalu	6	2,413	62	18	80	4
5	Saligrama	6	3,421	257	2,651	2,908	85
6	Tippur	..	613	20	125	145	24
7	Hampapura (K. R. Nagar) ...	9	6,912	385	3,901	4,286	60
8	Krishnarajanagar... ...	10	4,193	338	3,355	3,693	90
9	Hanasoge	13	8,407	987	6,280	7,267	86
10	Heggaddevankote ...	7	1,994	100	1,062	1,162	88
11	Hampapura (H. D. Kote) ...	3	2,863	68	393	461	16
12	Saragur	...	...	...	...	...	...
13	Nisna	2	2,057	105	995	1,100	50
14	Periyapatna	11	4,390	257	2,073	2,330	50

Vital Statistics—Verification.—In the Health Unit areas the verification of the vital events reported by the patels was carried out as usual by the Health Inspectors. Out of 6,702 births, 1,319 were detected which is nearly 20 per cent. Likewise 404 deaths out of reported total of 1,999 were detected by the Health Inspectors.

	Reported	*Detected*	*Total*
Births ...	5,383	1,319	6,702
Deaths ...	1,595	404	1,999
Infant deaths ...	431	152	583
Maternal deaths ...	23	9	32
Still births ...	68	30	98

Maternity and Child Welfare work.—There were 134 posts of midwives in the district, of which 64 belonged to Health Units and Maternity Hospitals, 27 belonged to District Board and 43 belonged to Medical Department. The work done by the Health Unit midwives is summarised below.

No. of houses visited ...	...	...	1,60,236
No. of prenatals—			
Total registered ...	...	...	20,364
First visit ...	...	...	6,655
Revisits ...	...	...	38,654
Deliveries conducted—			
By Dais ...	...	...	2,313
By Midwives : Registered	...	...	2,048
Unregistered	...	...	391
No. of postnatal visits to case of—			
Midwife ...	...	...	6,157
Dais ...	...	...	3,727
Health talks—			
No. of talks given ...	...	...	29,639
Attendance ...	...	...	92,440
No. of clinics visited ...	...	...	802
Urine samples brought and examined	...	...	6,386
No. of infant deaths in case of—			
Midwife ...	...	...	111
Dais ...	...	...	320
	Total	...	335
No. of maternal deaths in case of—			
Midwife ...	...	...	8
Dais ...	...	...	11
	Total	...	19

National Malaria Control Programme.—Dr. Nasiruddin, M.B.B.S., D.P.H., continued as Medical Officer of Health till October 1954 when he was transferred to Tumkur as District Health Officer and for the rest of the year the District Health Officer, Mysore was in charge of the National Malaria Control Programme. D.D.T. spraying was undertaken during the following periods.

1. From 1st January 1954 to 31st March 1954.
2. From 8th April 1954 to 8th May 1954.
3. From 11th October 1954 to 18th February 1955.

The entire rural areas of the district were covered. T.-Narasipur Taluk was attended to by Malavalli Sub-Unit.

Hill Tribe Health Unit, Nisna.—Under the amelioration of the Hill Tribe Scheme, the unit at Nisna continued to operate this year also and the activities are summarised below :—

1.	No. of Hadis visited	...	290
2.	No. of visits	...	557
3.	No. of huts	...	3,314
4.	Population	...	13,725
5.	Treatments—		
	Paludrine tablets 0·1 gm. ...	...	1,517
	Paludrine tablets 0·3 gm. ...	...	2,022
	S.T. tablets	...	1,288
	Q.S. tablets	...	137
	T.Q. tablets ...	...	2,695
	S.N.T. tablets ...	...	483
	S.N.P. tablets ...	...	6¾ ozs.
	S.G. tablets ...	...	998
	F.R.S. tablets ...	...	675
	Yeast B ...	...	220
	Vitamin A and D tabs ...	...	945
	Hex. Vitamin tabs ...	...	778
	Calcium tablets ...	...	1 lb. 10 ozs.
	Mat. vit. tabs ...	...	150
	A.P.C. ...	...	40
6.	Vaccinations done—		
	Primary vaccinations ...	...	140
	Revaccinations ...	...	61
		Total ...	201
7.	Milk distribution—		
	No. of persons ...	...	13,608
	Quantity of Milk powder ...	...	628¾ lbs.

All the 3 major fairs Chunchanakatte, Bettadapura and Mudukutore were held with necessary sanitary arrangements as usual.

In view of the prevalence of cholera epidemic compulsory mass inoculations were undertaken.

Statement of curative work for the year 1954.

Diseases	Number of patients treated at								
	Dispensary			Clinics			Village		
	New	Old	Total	New	Old	Total	New	Old	Total
1. Malaria ...	3,197	1,371	4,568	288	3	291	671	17	688
2. Other fevers ...	11,874	5,467	17,341	625	4	629	637	135	772
3. Pneumonia ...	2,208	1,210	3,418	58	...	58	85	44	129
4. Other respiratory diseases	32,607	11,132	43,739	1,351	38	1,389	991	189	1,180
5. Diarrhoea ...	8,504	3,417	11,321	425	13	438	349	63	412
6. Dysentery ...	4,294	1,888	6,182	229	14	243	146	31	177
7. Other digestive diseases...	13,609	6,876	20,485	661	19	680	224	53	277
8. Worms ...	2,907	93	3,000	133	...	133	100	3	103
9. Anaemia ...	1,880	1,473	3,353	63	4	67	36	30	66
10. Ulcers ...	11,867	5,077	16,944	793	22	815	295	85	380
11. Other skin diseases ...	7,998	5,117	13,115	676	13	689	237	39	276
12. All other diseases ...	61,049	29,182	90,231	1,874	23	1,897	9,591	141	2,100
Total ...	1,61,994	72,303	2,34,297	7,176	153	7,329	4,730	830	6,560
Male ...									
Female ...									
Operations done ... 1,214									

Statement of Laboratory work for the year 1954.

Specimens	No. examined at his office	No. sent to Public Health Institute	Total
1. Blood for—			
(*a*) M.P. Picture etc. ...	...	1,290	1,290
(*b*) W.R.	...	24	24
(*c*) Widal, and Weil-Felix ...	...	1	1
(*d*) Brompt Test ...	1	...	1
2. Urine for sugar or albumin etc. ...	5,508	4	5,512
3. Motion for Ova of worms etc. ...	3	2	5
4. Smear for G.C.	...	1	1
5. Smear for T.B.	...	2	2
6. Other pathological specimens ...	1	3	4
7. H. B. percentage ...	128	...	128*
8. Urine for Bile Pigment ...	2	...	2

*Maternity Hospital, Bannur.

	Health Unit area		Non-Health Unit area		Grand Total	
	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths
1. Plague ...	...	...	9	2	9	2
2. Small-pox ...	...	...	15	...	15	...
3. Cholera ...	38	15	368	207	406	222
4. Typhoid ...	47	8	...	...	47	8
5. Malaria ...	4,156	187	...	...	4,156	187
6. Other fevers ...	13,136	327	...	...	13,136	327
7. Dysentery ...	4,669	162	...	...	4,669	162
8. Pneumonia ...	2,351	114	...	...	2,351	144
9. Pulmonary T.B. ...	81	43	...	...	81	43
10. Leprosy ...	2	2	...	...	2	2
11. Other diseases, if any.	340	315	...	...	340	315

The above table gives details of communicable diseases for the year 1954.

The following table gives details of preventive measures undertaken against communicable diseases for the year 1954.

	Health Unit area	Non-Health Unit area	Grand Total
Inoculations—			
Plague ...	400	968	1,368
Cholera ...	64,513	73,000	1,37,513
Typhoid ...	80	...	80
Vaccinations against small-pox—			
(*a*) Primary ...	7,528	26,594	34,122
(*b*) Revaccinations ...	31,470	40,173	71,643
Villages cyanofumigated ...	...	...	...
Population ...	...	...	...
No. of houses fumigated ...	...	...	...
No. of burrows fumigated ...	...	...	...
No. of rats seen killed ...	...	...	...
No. of houses disinfected ...	64	...	64
Chlorination of wells—			
(*a*) Potable ...	4,989	...	4,989
(*b*) Brackish ...	331	...	331
General cleansing of wells ...	263	...	263
Places declared infected ...	4	...	...
Shandies, jatras, cinemas etc., stopped.	...	...	...

Details of sanitary improvements done during the year 1954 is given below :—

	Health Unit area	Non-Health Unit area	Grand Total
1. No. of latrines—			
Started ...	380	...	380
Completed ...	213	...	23
Repaired ...	11	...	11
2. No. of soak pits—			
Started ...	107	...	107
Completed ...	87	...	87
Repaired ...	90	...	90
3. No. of windows introduced—			
Big ...	303	...	303
Medium ...	442	...	442,
Small ...	332	...	332
4. Cattle sheds improved ...	333	...	333
5. Backyards cleaned ...	329	...	329
6. Kitchen gardens introduced ...	172	...	172
7. No. of cartloads of rank vegetation removed.	1,110¼	...	1,110¼
8. Manure and other pits introduced—			
Number ...	129	...	129
Cubic capacity ...	11,098	...	1,108
9. Mud plastering of houses ...	489	...	489
10. Whitewashing of houses ...	1,270	...	1,270
11. Improvement of flooring and roofing.	437	...	437
12. Dilapidated structures removed—			
Number ...	54	...	54
Cubic capacity ...	3,449	...	3,449
13. Roads in running yards—			
Formed ...	1,990	...	1,990
Repaired ...	7,898	...	7,898
14. Drainages in running yards—			
Formed ...	1,846	...	2,846
Repaired ...	8,936	...	8,936
Cleaned ...	4,195	...	4,195

Details of malaria cases treated during the year under report is given below :—

No. of out-patients—	
(*a*) Unit area	2,23,875
(*b*) Outsiders	24,311
Total No. of malaria cases treated during the month—	
Dispensary—Unit area	3,583
Outsiders	985
Clinics—Unit area	641
Outsiders	338
Total ...	5,547

Percentage of malaria cases treated to total cases treated—

Unit area	...	...	...	1·88
Outsiders	...	...	...	5·43

Total No. of out-patients during corresponding month (Previous year)—

(*a*) Unit area	...	...	...	1,85,895
(*b*) Outsiders	...	...	...	28,452

Total No. of malaria cases treated during the corresponding month (Previous year)—

Dispensary—Unit area		...	...	9,605
Outsiders		...	...	703
Clinics—Unit area		...	...	503
Outsiders		...	...	35
	Total		...	10,846

Percentage of malaria cases treated to total cases treated—

Unit area	...	...	...	...
Outsiders	...	...	...	...
Reasons for increase, if any		...	...	...

Vaccination Statement for the year 1954.

Name of Village or Primary Centre or Secondary Centre or Range	Sex	Total vaccinations				Primary vaccination			
		Total	Successful	Unsuccessful	Unknown	Total	Successful	Unsuccessful	Unknown
1	2	3	4	5	6	7	8	9	10
I. Health Unit area (Population 2,33,369)	Male ...	22,192	8,953	5,024	8,215	3,997	3,489	214	294
	Female...	16,806	7,535	3,170	6,101	3,531	3,072	189	270
	Total ...	3,89,981	16,488	81 941	4,316	7,528	6,561	403	564
II. District Board area (Population 6,85,469)	Male ...	3,76,631	19,396	12.232	6,085	14,014	12,676	465	873
	Female...	24,443	12,941	7,611	3,891	10,171	9,086	368	717
	Total ...	6,21,063	32,337	19,843	9,926	24,185	21,762	833	1,590
III. Municipal area (Population 1,21,292)	Male ...	2 645	1,222	327	1,096	1,221	1,166	13	42
	Female...	2,016	1,153	119	744	1,188	1,128	9	51
	Total ...	4,661	2,375	446	1,840	2,409	2,294	22	93
Grand Total (Population 10,40,130)	Male ...	62,500	29,571	17,583	15,346	19,232	17,331	692	1,209
	Female...	43,265	21,629	10,900	10,736	14,890	13,286	566	1,038
	Total ...	1,05,765	51.200	28,483	26,082	34,122	30,617	1,258	2,247

Name of Village or Primary Centre or Secondary Centre or Range	Sex	Successful under one year of age	Re-vaccination				Percentage of success		No. of unprotected remaining	
			Total	Successful	Unsuccessful	Unknown	Primary vaccinations	Re-vaccination	Below six months of age	Above six months of age
...	...	11	12	13	14	15	16	17	18	19
I. Health Unit area (Population 2,33,369)	Male ...	1,276	18,195	5,464	4,810	7 921	94·2	53·1	...	...
	Female...	1,045	13,275	4,463	2,981	5,831	72·9	59 9	...	...
	Total ...	2,321	31,470	9,927	7,791	13,752	94·2	56.2	...	...
II. District Board area (Population 6,85,469)	Male ...	3,597	23,649	6,720	11,767	5,162	96·4	36·3	...	...
	Female...	2,791	14,272	3,855	7,243	3,174	96·1	34·7	...	...
	Total ...	6,388	37,921	10,575	19,010	8,336	96 3	35·7	...	...
III. Municipal area (Population 1,21,292)	Male ...	513	1,424	56	314	1,054	98 8	13·5	...	...
	Female...	543	828	25	110	693	99·2	18·5	...	...
	Total ...	1,056	2,252	81	424	1,747	99 06	16·03	...	...
Grand Total (Population 10,40,130)	Male ...	5,386	43,268	12,240	16,891	14,137	96·2	42·1	...	...
	Female...	4,379	28,375	83,431	10.334	9,698	95·9	44 6	...	...
	Total ...	9,765	71,643	20,583	27,225	23,835	96·05	43·05	...	...

SHIMOGA DISTRICT

DR. S. P. ANIKER, M.B.B.S., D.P.H.
District Health Officer

Personnel.—Dr. S. P. Aniker, M.B.B.S., D.P.H., continued to be the District Health Officer, and Officer in charge of the National Malaria Contro Unit, Shimoga, during the year 1954. Twenty-six posts of the Assistant Medical Officers of Health remained vacant out of of 51 posts of Assistant Medical Officers of Health sanctioned and additional posts for the District including Araga Health Unit sanctioned recently.

The post of Nursing Supervisor has been sanctioned and Nursing Supervisor is posted for the supervision of Maternity and Child Welfare work of the 3 districts of Shimoga, Chitaldrug and Bellary with her head-quarters at Shimoga.

The Health Unit activities continued to be the same as in 1953. The following table gives an idea of the development of Health Units in the District Organisation since 1942.

Year	Primary Health Units	Secondary Centre	Pocket areas	N.M.C. Unit
1942	3	Nil	Nil	Nil
1946	15	1	Nil	Nil
1949	31	7	Nil	Nil
1953	42	7	18	1
1954	43	7	16	1

The dispensary at Kulambi has not yet been transferred from the Medical Department. The Dispensary at Thyavanige is not yet opened for want of building and the doctor is not yet posted to the unit. The nearest dispensary is 10 miles from Thyavanige.

It was proposed to cover the entire District with Health Units converting the present pocket area units to full pledged Health Units with a Dispensary in each place. Out of 18 pocket area units sanctioned to the district, as per G.O. No. M. 18914-7—PH. 7-50-4, dated 15th December 1952, at the end of calendar year there were 15 pocket area units functioning. Araga Health Unit in Thirthahalli taluk is converted to a full pledged Primary Health Unit as per G.O. No. M. 14052-65—PH. 88-52-2, dated 9th October 1954 and the headquarters of Anjanapur Health Unit is shifted to Chikjogihalli, distributing the villages of the pocket area to the neighbouring Health Units. Arehalli pocket area is not functioning. The 15 pocket area Units are functioning with one Junior Health Inspector in each Unit.

Health Services are rendered by three types of organisations in the district as follows :—

(*a*) *Health Units.*—Under the administrative control of the District Health Officer, Shimoga, there are 7 Secondary Centres, 43 Primary Centres, 15 pocket area Health Units and one N.M.C. Unit. Araga pocket area is converted to a full pledged primary health unit, the villages attached to the pocket area of Chickjogihalli was distributed to the neighbouring primary health units and the Headquarters of Anjanapur Health Unit was shifted to Chikjogihalli, and the pocket area Health Unit at Arehalli is not functioning. The population involved in the Health Unit area of the district is 3,78,517 distributed in 1,450 villages, except Sakrebyle and Jog Health Units.

(*b*) *Municipalities.*—There are 2 town municipalities, 10 minor municipalities and one new town Board (Iron and Steel Works and paper town) at Bhadravati. Vaccination work is carried on in the 3 Municipalities of Kumsi, Hosanagar and Sorab by the Health Unit Staff, and Maternity work of Municipalities at Thirthahalli, Hosanagar, Sagar, Sorab, Shikaripur. Shiralkoppa, Kumsi is also attended to by the Health Unit Midwives. The population involved in the local bodies of the district is 1,46,294 including New Town Board, Bhadravathi.

(*c*) *District Board.*—For purposes of administration the Health Unit staff of the District Board is divided into five ranges, each in charge of a Senior Health Inspector under the administrative control of the Special Officer, of the District Board. There are 5 Senior and two Junior Health Inspectors attached to the District Board. It is seen from the Annual Report of the Health Inspectors attached to the District Board that they are not attending to any of the sanitary improvements like, (1) the introduction of hand flush latrines, (2) collection and checking of vital statistics and (3) conducting regular and mass vaccinations drive under the five years programme. But it is pleaded that they are entrusted with other duties like collection of revenue, supervision of public works and supervision of the work of midwives and vaccinators, and they find it difficult to attend to their routine duties regularly.

The Health Unit activities are summarised as follows :—

1. *Medical aid.*—The curative work done in the Health Unit dispensaries is given below :—

Statement of Curative work for 1954.

Diseases	Number of Patients Treated at									Grand Total
	Dispensary			Clinics			Villages			
	New	Old	Total	New	Old	Total	New	Old	Total	
1 Malaria ...	12,534	4,498	17,032	2,531	57	2,588	42	7	49	19,669
2 Other fevers.	22,819	9,266	32,085	1,916	172	2,088	183	51	234	34,407
3 Pneumonia ...	1,633	1,790	3,423	222	50	272	58	27	85	3,780
4 Other Respiratory Diseases.	88,529	28,792	1,17,321	5,287	474	5,761	552	111	663	1,23,745
5 Diarrhoea ...	26,188	7,788	36,967	1,794	164	1,958	403	58	461	39,395
6 Dysentery ...	18,142	6,455	24,597	1,376	109	1,485	236	52	288	26,370
7 Other digestive diseases	28,997	10,758	39,755	1,908	262	2,170	352	86	488	42,263
8 Worms ...	10,325	310	10,635	695	1	696	80	12	92	11,423
9 Anaemia ...	7,280	5,836	13,116	1,056	115	1,171	104	45	149	14,435
10 Ulcers .	22,968	8,398	30 666	2,676	90	2,766	215	49	264	33,696
11 Other skin diseases.	17,142	4,027	21,169	1,306	129	1,435	276	79	355	22,959
12 All other diseases.	1,01,557	47,317	1,48,874	6,178	1,058	7,236	739	530	1,269	1,57,379
Total ...	3,57,114	1,38,235	4,95,649	26,945	2,681	29,626	3,240	1,107	4,347	5,29,622
Male ...	2,13,990	86,669	3,00,259	16,080	1,789	17,869	1,883	708	2 591	3,20,719
Female ...	1,43,424	51,566	1,95,390	10,865	892	11,757	1,357	399	1,756	2,08,903
Operations done...	...	...	1,315	...	...	...	...	...	...	1,915

The following table shows comparatively the total number of cases treated for various ailments in the Health Unit dispensaries since 1950.

Sl. No.	Year	No of Health Units in the District	Total patients treated in H.U. Dispensaries	**Total patients treated in the dispensaries of the District
1	1950	20	2,35,369	5,61,845
2	1951	31	4,55,304	6,22,211
3	1952	...	4,03,905	6,04,585
4	1953	42	4,69,441	5,97,780
5	1954	43	5,29,622	7,14,245

**(Figures excluding major hospitals).

Vital Statistics.—A total of 12,965 births and 3,979 deaths are recorded in the health unit areas of the district and 2,426 births and 673 deaths are reported to have been detected by the Health Inspectors. If these figures had not been entered in the village registers of births and deaths maintained by the patels 18·9 per cent of total births and 16·8 per cent of total deaths would have escaped registration by patels, which were detected during the frequent checking by the Health Inspectors and other officers of the Department. The following table shows the percentage of cases detected since the starting of Health Units in 1949.

Year	*Percentage of births detected*	*Percentage of deaths detected*
1949	5·4	7·0
1950	15·2	16·0
1951	18·6	23·9
1952	24·0	27·6
1953	19·3	16·6
1954	18·9	16·8

The comparative figures for birth and death rate for the previous year are summarised below taking the population of the entire unit as 2,93,322 till the end of 1952 and 3,78,517 at the end of 1954.

Rates	1949	1950	1951	1952	1953	1954
Birth rate	27·61	38·00	34·00	34·10	31·7	34·2
Death rate	10·51	11 20	9 60	8·90	9·1	10·5
Maternal mortality rate ...	24·56	13·00	13·00	10 70	7·6	6·2
Infant mortality rate ...	99 20	95·00	89·00	94·10	94·4	87·7

(*b*) *Maternity and Child welfare services.*—Out of 136 posts of midwives sanctioned to the Health Units of the district 109 have been filled up. A total of 15,957 antenatals were registered during the year by the Health Unit midwives. Out of the total of 7,107 births occurring in the areas served by midwives 3,939 births were conducted by them and the remaining 3,158 by dhais. The percentage of confinements attended to by the midwives in their areas from 1949 are as follows:—

Years	1949	1950	1951	1952	1953	1954
Percentage by Midwives ...	50	64	67·2	60·6	62·5	55·4
Percentage by dhais ...	50	36	32·8	39·4	37·5	44·6

The following table explains the more important work of the midwives.

No. of Midwives		Total No. of Antenatal Regd.	Average ant: registered by one midwife on duty	Total deliveries conducted by midwives of H.U.	Average for one midwife (of H.U.)	Percentage of deliveries by the		Average No. of visits by each midwife	
Sanctd.	On duty					Midwife	Dhai	For Prenatal cases including re-visits	For post-natal case
140	109	15,957	146·9	8,939	36·1	55·4	44·6	594·5	173·9

Out of 3,939 confinements attended to by the health unit midwives, 627 had not been registered, the percentage of unregistered cases in 1954 being 15·9 as against 24·4 in 1953. Most of the unregistered cases are from outside the jurisdiction of the midwives allotted area. Twenty-one maternal deaths are reported out of 3,939 confinements attended by midwives as against 23 maternal deaths from 3,168 deliveries attended to by dhais giving a maternal mortality rate of 5·3 and 7·2 respectively. During 1953 these rates were 7·1 in midwives cases and 8·2 in dhais cases. The infant mortality rate is more in dhai conducted deliveries than in the cases attended to by the trained midwives and these rates may be taken as a gauge to assess the efficiency of midwifery services. The following is the comparative table since 1952.

Years	Mat. mortality rate in cases conducted by		Infant mortality rate cases conducted by	
	Midwives	Dhais	Midwives	Dhais
1952	5·6	11·6	56·3	76·0
1953	7·1	8·2	47·2	71·7
1954	5·3	7·2	52·9	73·8

Statement showing the causes of infant and maternal deaths in Shimoga District during 1954 in Health Unit areas.

Infant deaths (causes)—			
Premature death	...	...	305
Other fevers	...	...	137
Weakness and debility	...	...	148
Unknown causes	...	...	144
Convalescence	...	...	115
Diarrhoea and Dysentery	...	...	97
Brancho-pneumonia	...	...	148
Constipation	...	...	17
Liver complaint	...	...	26
Total	...	...	1,137

Maternal deaths (causes)—

Hæmorrhage	...	....	8
Abstinated labour	...	...	5
Peurperainsepsis	...	...	25
Anæmia	...	...	32
Lack of Nutrition	...	...	...
Pneumonia	...	...	4
Un-known causes	...	...	22
Total	...	...	96

From a review of the causes of infant deaths it may be seen that the major infants deaths 26·8 per cent are due to prematurity and among the maternal deaths (33·5) Anæmia, froms the major cause. These can be prevented if a system of balanced diet is taken by the people using the available cheap vegetables like greens, or by forming kitchen gardens for growing the same near their houses.

(c) *Miik Distribution.*—Free milk distribution to the needy and poor children was in force during the whole of the year. The milk powder is donated by the UNICEF and the scheme is operated in Mysore State by the State Liaison Officer, UNICEF milk distribution scheme and the Deputy Director of Public Health in Mysore, Bangalore. There are four M.C.H. Centres at Anandapuram Sagar, Sorab and Thirthahalli, through which whole and skimmed milk are being distributed and four skimmed milk centres at Shikaripur, Sakrebyle, Gajanur, Jog and District Health Office, Shimoga. In total there are 8 milk centres in the district. The quantity of milk distributed and the number of infants, children under 1-12 years and nursing and expectant mothers who were fed with milk are noted below :—

Statement of milk distribution scheme in Shimoga District for the year 1954.

Month	No of infants up to one year of age	No of children from 1 to 12 years of age	No of Nursing or expectant mothers	Total columns 2, 3 and 4	Qty. of milk powder spent	
					Skim	Wbole
January	1,462	16,740	212	18,414	952 9	22 4
February	811	13,031	615	14,457	923 12	111 12
March	794	13,965	397	15,156	1,370 12	108 6
April	581	7,767	2,777	11,125	337 5	101 8
May	681	5,973	537	7,191	296 2	19 8
June	471	10,440	403	11,314	505 10	54 0
July	557	19,329	505	20,391	1,376 4	53 10
August	385	18,068	454	18,907	1,115 2	...
September	368	24,849	435	25,652	1,359 7	...
October	315	17,622	272	18,209	750 15	2 10
November	539	8,276	217	9,032	651 15	6 1
December	433	14,589	339	15,361	698 7	65 5
Total ...	7,397	1,70,649	7,163	1,85,209	10,338 4	545 0

(d) *Curative Services.*—The following statement summarises the work done in the dispensaries.

Statement of curative work at Shimoga District in the Health Unit areas for the year 1954.

	Diseases	*Total*
1	Malaria	19,669
2	Other fevers	34,407
3	Pneumonia	3,780
4	Other respiratory diseases	1,23,745
5	Diarrhœa	39,395
6	Dysentery	26,370
7	Other digestive diseases	42,363
8	Worms	11,423
9	Anæmia	14,436
10	Ulcers	33,696
11	Other skin diseases	22,959
12	All other diseases	1,57,379
	Total ...	5,29,622

It may be seen from the statement that apart from the general classified diseases like (*a*) other fevers, (*b*) other respiratory diseases and (*c*) other digestive diseases, the highest number of cases treated is for diarrhœa and dysentery and next to that is for ulcers. The percentage of cases treated to total treated for diarrhœa and dysentery is 12·4 as against 14·0 during the previous year. One thousand nine hundred and sixteen operations have been done in the year under report as against 1,786 done during the previous year.

(*e*) *Malaria Control Programme.*—This activity is now being undertaken by the National Malaria Control Programme which was inagurated by the Hon. Minister for Education on 4th November 1953, at Shimoga continued to be in progress throughout the District including non-health unit areas during the year under report. Two rounds of D.D.T. spraying with a deposit of 100 mgs. each per sq. foot were done in all villages and municipalities of the district excepting Shimoga Municipality. Anti-malaria operations by larvicidal measures were in operation in the towns of Shimoga and Bhadravati old and new towns. The following comparative table indicates the remarkable reduction in the incidence of malaria and spleen rate since 1949.

Year	Total No. of cases treated	Total No. of Malaria case treated	Percentage of Malaria cases treated to total cases treated	Spleen rate	
				April	October
1949 ...	7,08,648	1,48,248	20·9	Not done	24·3
1950 ...	5,61,845	73,193	13·0	15·5	10·03
1951 ...	6,22,211	54,829	8·8	6·9	5·3
1952 ...	6,04,585	44,586	7·3	2·6	2·7
1953 ...	5,97,780	38,870	6·5	1·7	2·3
1954 ...	7,14,245	30,068	4·2	1·5	0·97

The above figures are from the dispensaries functioning in the entire district, both health unit and non-health unit. The biannual spleen surveys were conducted as usual and the findings are summarised in the following statement where comparative figures are given for the years 1953-54. A

total of 1961 blood smears were obtained from children including some infants for malaria parasite during spleen survey in villages and four were found positive giving a commulative parasite rate of 0·2. Out of the positives one vivax two falciparum and one quartan infections were observed. One quarter infection and one vivax infection amongst the infants was observed in 2 villages of Shikaripur taluk.

Infant blood smears were taken at random in eight taluks except Thirthahalli taluk during the beginning of the year and later this study was confined only to the selected villages of the 4 sub-units of the N.M.C. programme. One thousand eight hundred and seventy-five infant blood smears were taken and on examination one of these was found positive for M.P. An average of six blood smears in the selected villages from among the same selected infants was done and none of these was positive for M.P.

Statement showing the spleen survey done in the Health Unit area (Shimoga District) for the year 1954.

Sl. No.	Name of the Sec. Centre	Name of the Primary Centre	Population	Spleen Rate				Average Enlarged Spleen			
				1953		1954		1953		1954	
				April	October	April	October	April	October	April	October
1	Shimoga ...	Sowlanga ...	7,759	6·1	3·5	2·8	1 2	2·0	1·9	1·9	1·5
2		Kumsi ...	11,190	1·4	0 2	0·7	0·2	2·1	2·0	1·0	1·3
3		Holehonnur ...	14,605	4·9	2·02	1·8	1·5	1·8	1·45	1·5	2 5
4		Bhadra colony ...	9,120	0·41	0·2	0·3	0·5	1·57	1·25	1·2	I·0
5	Shikaripur ...	Shikaripur ...	15,836	2·4	2·0	0·76	0·86	1·3	1·3	1·2	1·1
6		Shiralkoppa ...	14,336	3·4	3·2	1·7	0·1	1·8	1·1	1·2	1·0
7		Anjanapur ...	8,687	4·4	7·5	3·8	3·88	1·52	1·3	1·5	1·49
8	Sorab ..	Anavatti ...	10,975	0·5	0·5	...	0·27	1·22	1·0	...	1·0
9		Jade ...	6,819	...	...	...	...	...	...	...	...
10		Chandraguthi ..	5,813	0·13	1·0	0·4	..	2·0	1·0	1·0	...
11		Sorab ...	6,894	...	1·3	..	0·51	...	...	...	1·0
12		Kuppagadde ...	6,521	0·28	0·61	0·4	...	2·0	2·0	1 0	...
13		Ulvi ..	4,052	...	0·4	1·1	0·64	...	1·0	1·0	1·0
14		Shimoga ...	5,165	0·62	0·4	2·7	...	1·5	1·0	1·0	...
15		Muthogoppa ...	5,223	...	...	...	...	...	...	...	...
16		Tattur ..	6,668	1·7	0·9	...	1·3	1·1	1·0	...	1·0
17	Thirthahalli ...	Thirthahalli ...	11,456	1·5	...	1·2	1·2	1·0	...	...	1·0
18		Megaravalli ...	4,399	0·2	0·2	0·11	0·7	1·0	2·0	1·0	1·0
19		Agumbe ...	3,995	...	3·2	2·62	1·78	...	2·1	1·0	1·0
20		Devangi ...	6,215	0·6	0·74	0·65	0·8	1·0	1·4	1·3	1·0
21		Mandagadde ...	3,825	1 3	1·1	0·33	0·3	1·5	1·2	1·0	1 7
22		Malur ...	6,270	3·0	2·4	0·8	1·7	1·4	1·2	1·2	1·4
23	Sagar ...	Sagar ...	8,750	0·25	8·2	0 23	0·15	1·75	1·33	2·0	2 0
24		Avinahalli ...	771	1·22	1·4	1·53	...	2·0	2·0	2·0	...
25		Tumari ...	1,150	2·08	...	...	..	2·5	...	...	...
26		Hirebhsgar ...	3,050	1·14	1·44	0·26	...	2·2	2·33	1·0	...
27		Talaguppa ...	3,087	...	...	...	2·8	...	...	...	1·0
28		Hirenallur ...	1,028	1·4	1·69	...	0·9	1·5	11·0	...	1·5
29		Aralagodu ...	788	...	...	...	...	...	...	...	...
30	Anandapuram.	Anandapuram ...	...	2·1	1·7	0·31	0·15	1·4	1·0	1·0	1·0
31		Ripponpet ...	...	9·0	5·0	2·07	2·02	1·6	1·6	1·0	1·2
32		Thyagarthi ...	5,272	1·9	0·74	0·96	0·95	1·0	0·1	1·0	1·0
33		Heggodu ...	3,636	2·5	2·5	0·73	0·5	1·0	...	1·0	1·0
34		Haridravathi ..	...	9·3	3·9	1·3	1·1	1·5	1·1	1·0	1·0
35	Hosanagar ...	Hosanagar ...	5,393	0·22	0·29	0·54	...	0·2	1·0	1·5	...
36		Nagar ...	3,854	8·0	3·7	0·9	3·0	1·0	1·1	1·2	0·5
37		Humchadakatte ..	3,024	2·22	1·15	...	...	1·4	1·8	...	...
38		Yadur ...	...	5·8	7·3	1·8	2·7	1·5	1·1	1·5	1·2
39		Kodur ...	...	3·6	12·3	1·9	...	1·5	1·2	1·3	...
40		Sonle ...	...	1·7	...	...	...	1·5	...	...	...
41		Hurali ...	...	0·17	No survey	...			...	..	...
42		Jog colony ...	4,232	...	0·18	0·37	0·5	1·0	1·0	1·0	1·0
43		Gajanoor (Sakrebyle)	3,272	0·3	...	...	...	1·0	...	...	...

Statement showing the spleen survey done in the Health Unit Pocket Area (Shimoga District) for the year 1954.

Serial No.	Name of the Sec. Centre	Name of the Pri. Centre	Population	Spleen rate 1954		Average enlarged spleen	
				April	October	April	October
1	Thirthalli ...	Shedgar	981	...	No survey	...	...
2	Do ...	Salur	2,208	0·44	1·2	1·0	1·0
3	Do ...	Arehalli	...	...	No survey	..	... ...
4	Do ...	Aralasurali	2,247	1·2	...	2·5	
5	Do ...	Araga	4,245	0·31	...	1·0	...
6	Do ...	Kannangi	872	5·1	5·7	1·1	1·0
7	Shimoga ...	Aynur	5,818	...	0·7	...	1·0
8	Do ...	Channagiri	9,161				
9	Do ...	Moranvanji	10,921				
10	Lo ...	Thavarekere ...	4,544		No survey		
11	Do ...	Nallur	13,446				
12	Do ...	Basavapatna ...	10,276				
13	Do ...	Honnali	6,137				
14	Do ...	Belaguthi	7,115	9·6	5·13	1·9	2·10
15	Do ...	Sasuvehalli	8,028	...	...	...	...
16	Shikaripur ...	Hosur	5,082				
17	Do ...	Mathikote	4,115		No survey		
18	Do ...	Sunndakoppa ...	7,003				

1. (*f*) *Epidemic Diseases and their Control*: 1. *Plague*.—The District was free from the epidemic of plague during the year.

2. *Smallpox*.—During the year under report a total of 54 attacks with 8 deaths due to smallpox were reported from 12 places as noted in the following table. Mass vaccinations were done in these places immediately on receipt of information of infection as a preventive measure.

Serial No.	Name of the villages	Taluk	Total No. of		Remarks
			Attacks	Deaths	
1	Malavagoppa ...	Shimoga ...	1	1	M. I. vaccinators (area).
2	Ramagondanahalli ...	Channagiri ...	9	...	Pocket area.
3	Banihathi ..	Do ...	1	...	Do
4	Hodigere ...	Do ...	17	...	Do
5	Kabbala ..	Do ...	1	...	Do
6	Thippagondanahalli ...	Do ...	9	...	Do
7	Rajagondanahalli ..	Do ...	1	...	Do
8	Agumbe ...	Thirthahalli ...	1	...	Health Unit.
9	Sagar Town ...	Sagar ...	2	2	Municipal area.
10	Balebyle ...	Thirthahalli ...	5	...	Do
11	Sagar Labour camp ..	Honnali ...	5	5	District Board area.
12	Shimoga Town ...	Shimoga ...	1	...	Municipality.
		Total ...	54	8	

From the above statement it may be seen that 40 attacks out of 54 are from Channagiri Taluk where pocket area units were started during 1953 for Malaria control work and each Junior Health Inspector of the pocket area was attending to D.D.T. spraying, Vaccination and Vital Statistics collection work till the implementation of N.M.C. programme during November 1953. The Health Inspectors attended to the registration and protection of unprotected children in all the villages in addition to conducting mass vaccinations in epidemic areas during 1954. The implementation of mass protection against smallpox has been in force from January 1955.

(*a*) *Vaccination Programme.*—Systematic vaccinations has been one of the main activities of the health units. Statement given below gives the summary of vaccinations done by each agency.

.. ...	Health Units	M.I. Vaccinators	District Board	Municipalities	Total
Total Vaccinations :—					
Total	93,050	5,253	11,465	22,250	1,32,018
Successful	41 610	2,477	4,909	80,697	59,693
Unsuccessful	31,950	2,166	4,245	685	39,046
Unknown	19,490	610	2,311	4,743	27,159
Primary Vaccinations :—					
Total	25,262	2,316	4,047	6,673	38,298
Successful	21,189	2,093	3,583	6,061	32,926
Unsuccessful	1,421	149	165	208	1,943
Unknown	2,652	74	299	404	3,429
Successful under one year of age ...	7,974	935	1,950	3,914	14,773
Re. vaccinations :—					
Total	67,788	2,937	7,418	15,577	93,720
Successful	20,421	384	1,326	4,642	26,773
Unsuccessful	30,529	2,017	4,080	6,585	43,211
Unknown	16,838	536	2,012	3,350	22,736
Pecentage of success:—					
Primary vaccinations ...	93·7	93·3	95·5	96·8	87·2
Re-vaccinations	40·2	15·5	24·5	57·7	52·8
Below six months of age ...	7222	968	...	1346	9536
Above six months of age ...	5600	547	...	777	6924

The following table shows the comparative figures of vaccinations done by these staff in the whole district since 1951.

Year	Total Vaccinations done	Primary	Re-vaccinations	Percentage of success	
				Primary	Re-vaccinations
1951 ...	2,01,348	36,116	1,65,232	89·4	42·8
1952 ...	9,04,114	24,243	66,171	19·6	37·6
1953 ...	1,10,787	31,743	79,043	93·9	41·0
1954 ...	1,32,018	38,298	93,720	87·2	52·8

The number of unprotected children in all the above areas except District Board (figures not furnished) of the district during the year under report are 16,460 as against 17,732 during 1953.

(*b*) *Special Planned Vaccination and Re-vaccination programme.*—Vaccination drive under 5-year programme which was started from March 1953 continued to be in progress in the 2nd division villages of primary units and pocket areas during the year 1954. Progress achieved is indicated in the following table.

Secondary Centre	Target fixed		Porsons protected		Percentage protected	
	1953	1954	1954	1953	1954	1953
1. Sagar ...	6,084	6,513	6,159	5,296	90·0	67·0
2. Sorab ...	13,795	14,330	11,733	12,195	81·8	88·4
3. Shikaripur	10,978	12,403	10,976	10,384	88·4	94·5
4. Shimoga ...	9,594	8,859	8,100	8,377	91·4	38·2
5. Thirthahalli ...	7,342	6,672	5,993	7,023	9·13	96·1
6. Hosanagar ...	4,622	5,761	4,928	4,098	85·5	88·2
7. Anandapuram ...	4.625	5,228	4,610	3,602	85·9	76·9
Total ...	56,340	59,766	52,505	51,980	87·9	92·2

The remaining unprotected population out of the target allotted during 1953 was tagged on to the target population of 1954 and vaccinations were conducted in the 2nd division of the five-year programme. The Medical Officers of Health were requested to protect complete population allotted. But due to the non-co-operation of the people in full, cent percent target has not been achieved.

(*g*) *Cholera.*—During the year under report a total of 562 attacks and 268 deaths due to cholera are reported in the district. A total of 1,30,861 anti-cholera inoculations, chlorination of 7,269 drinking water sources, disinfection of the infected and surrounding houses and spraying of manure heaps, with Bexidole and notification wherever required to prevent the spread of infection were adopted in the district, out of this, a total of 47 attacks and 20 deaths due to cholera were reported from Health Unit area of Shimoga, Shikaripur and Sagar Taluks. The infection started from the labour camps of Bhadra Reservoir project area in Bhadravati and Shimoga Taluks and most of the cases reported are from Bhadra Reservoir Project Channel of construction of area. A total of 39 attacks and 21 deaths occurring in this district in the labour camps was reported by the health staff of Bhadra Reservoir Project. The following statement shows the occurrence of cholera during the year in various taluks and towns of the district.

Sl. No.	Taluk	No. of villages infected	Total No. reported	
			Attacks	Deaths
1	Shimoga	Shimoga Town	16	6
2	Do	23	112	59
3	Bhadravati	26	126	65
4	Do	Bhadravati Old Town ...	15	4
5	Do	Bhadravati New Town ...	10	4
6	Channagiri	7	19	6
7	Honnali	47	198	99
8	Do	Honnali Town	3	1
9	Do	Nyamathi Town	34	13
10	Shikaripur	4	26	9
		Total ...	562	268

It may be observed from the above statement that 4 municipal towns and 96 villages of Shimoga-Bhadravathi and Honnali Taluks have reported 515 attacks with 248 deaths, which are situated in the channel construction areas of Tunga and Bhadra river projects.

Statement of Communicable Diseases for the year 1954, in Shimoga District.

		Attacks	*Deaths*
Population ...	3,81,794	...	...
Plague ...	...	...	...
Smallpox ...	...	2	...
Cholera ...	...	181	95
Typhoid ...	...	81	57
Malaria ...	...	13,217	8
Other fevers ...	...	17,925	560
Dysentery ...	...	19,609	270
Pneumonia ...	...	1,976	221
Pulmonary T.B. ...	...	41	40
Leprosy ...	...	8	6

Statement of preventive measures undertaken against communicable diseases for the year 1954.

Inoculations—	
Plague	...
Cholera	43,576
Typhoid	436
Vaccination against smallpox ...	...
Primary	27,578
Re-vaccinations	70,725
Villages cyanofumigated	...
Population	...
No. of houses fumigated	...
No. of burrows fumigated	...
No. of rats seen killed	...
No. of houses disinfected	475
Chlorination of wells	...
Potable	6,725
Brackish	544
General cleansing of wells	1,681
Places declared infected	...
Shandies, jatras, cinemas etc., stopped ...	2

The following table shows the comparative incidence of Plague, Cholera and Smallpox in Shimoga District since 1949 :—

Serial No.	Year	Plague		Cholera		Smallpox	
		A	D	A	D	A	D
1	1949 ...	365	159	...	...	15	...
2	1950 ...	1	...	14	11	20	5
3	1951 ...	...	...	589	257	279	59
4	1952 ...	...	...	179	59	122	28
5	1953 ...	1	...	13	6	45	8
6	1954 ...	...	...	562	268	54	8

Bowel Diseases in Health Units in Shimoga District.—The following statement shows the comparative major bowel diseases treated in the Health Unit dispensaries since 1950.

Year	Total cases treated	Diarrhœa	Dysentery	Worms	Total of 3, 4 and 5	Percentage of total
1950 ...	2,35,369	12,325	11,315	3,626	27,266	11·6
1951 ...	4,55,304	30,634	20,282	6,721	57,637	12·6
1952 ...	4,03,905	28,972	18,960	8,502	56,434	13·9
1953 ...	4,69,441	35,039	30,693	10,268	76,000	16·1
1954 ...	5,29,622	39,395	26,370	11,423	77,188	14·5

Hand flush latrine construction.—A good number of hand flush latrines in rural parts is being introduced since 1949, the total being 1,437 introduced up to date in the district as a main preventive measure of Helminthic and bowel diseases.

A comparative statement of hand flush latrines introduced since 1949 is noted below :—

Sl. No.	Name of Secondary Centre	1950	1951	1952	1953	1954	Total
	Existed prior to 1950...	...	...	...	...	...	94
1	Shimoga ...	3	5	4	14	48	74
2	Shikaripur ...	15	2	...	33	228	278
3	Sagar ...	...	...	7	31	304	342
4	Sorab ...	15	5	6	74	163	263
5	Anandapuram ...	...	13	3	30	144	190
6	Hosanagar ...	...	4	...	15	29	48
7	Thirthahalli ...	2	...	3	17	82	104
8	Gajanur ...	37	7	...	...	...	44
	Total ...	72	36	23	214	998	1,437

(*h*) *Special Activities*: 1. *Development Scheme.*—The Development scheme under the five-year plan included 12 Primary Health Units, 5 in Sorab Taluk 3 in Hosanagar Taluk, one in Sagar Taluk and 1 sanctioned during the end of the year under report in Thirthahalli Taluk, and Two in Channagiri Taluk sanctioned during the end of 1953.

2. *The Community Project area.*—Consists of Shikarpur and Sorab Taluks and part of Sagar Taluk. There are 18 Primary and 3 Pocket areas under this scheme ; 9 primary centres of Sorab Secondary Centre, 3 of Sagar, 3 of Anandapuram and 3 Primary and 3 pocket area units of Shikarpur.

3. *Canstruction of Dispensary and Hospital Buildings.*—The construction of the general hospital at Thirthahalli was completed and the General Hospital was opened by the Hon'ble Minister for Local Self-Government and Public Health during November 1954 and the institution was handed over to the Medical Department. The construction of the combined dispensary at Shikarpur was completed except for the sanitary fittings. At sagar the construction of dispensary was in progress. The combined dispensary at Anandapuram is functioning and a Lady Doctor was posted to be in charge of the women's section.

4. *School Health Work.*—Annual Medical Inspection of School Children was continued in some places as usual.

5. *Exhibitions.*—During the year under report the Malnad Conference and Exhibition was held in Shimoga when with the assistance of the Bureau of Health Education a health exhibition was arranged. On a smaller scale another exhibition was got up in connection with the 76th Works Day celebration of the Mysore Iron and Steel Works, Bhadravati.

6. *Eye camp.*—During the year under report two free rural eye clinics were conducted at Shikarpur and Thirthahalli under the auspices of the

Mysore State Ophthalmological Society, Dr. B. K. Narayana Rao and Dr. Mekhri assisted with other eye specialists, the Health Unit staff conducted the clinic. The total number of patients examined at Thirthahalli was 860. Of these 204 were operated. At Shikarpur 986 patients were examined and 201 were operated.

7. *B.C.G. campaign.*—The B.C.G. team did 1,51,038 vaccinations out of 3,49,759 persons tested out of a population of 6,63,315 of the District.

8. *Laboratory work.*—A summary of work done is given below. The samples of urine, blood and motions were despatched as usual to the Public Health Institute for various examinations. Proposals for starting a district laboratory to facilitate examination of diagnostic material *re*: cholera, typhoid, plague and other diseases were under active consideration.

Statement of Laboratory work done for the year 1954.

Specimens	Number examined at his office	Number sent to Public Health Institute	Total
1. Blood for—			
(*a*) M.P. Picture etc. ...	539	1,464	2,003
(*b*) W.R. ...	...	349	349
(*c*) Widal, and Weil-Felix ...	...	20	20
(*d*) Brompt Test ...	...	...	...
2. Urine for sugar or albumin etc. ...	10,076	64	10,140
3. Motion for Ova of worms, etc. ...	113	18	131
4. Smear for G.C. ...	8	2	10
5. Smear for T.B. ...	19	29	48
6. Other pathological specimens ...	4	7	11

9. *Village Extension Records.*—Sixteen village Extension records were disposed of.

VI. *Meetings and itinerations.*—The District Health Officer attended 50 meetings, 27 departmental and 23 non-departmental in connection with the Community Project, New Town Board, Ad-hoc committee and Indian Medical Association.

He toured 176 days and has visited several places.

VII. *Visitors.*—(*a*) The members of the Royal Society of Chemistry Indian Institute of Science, Bangalore; and

(*b*) The members of the Malnad Conference standing committee visited Anandapuram Secondary Centre.

TUMKUR DISTRICT.

DR. M. NASIRUDDIN, M.B.B.S, D.P.H.
District Health Officer.

Personnel.—Sri E. Anantha Rao, B.SC., M.B.B.S., D.P.H., District Health Officer, continued till 8th October 1954, when he handed over charge to Sri M. Nasiruddin, M.B.B.S., D.P.H.

HEALTH UNITS.

The first Health Unit in the District was the Marconahally Secondary Health Centre in Kunigal Taluk with headquarters at Marconahally. This was started in 1944 to undertake preventive measures against malaria and the connected diseases consequent upon opening up of the Marconahally Irrigation project. This Centre continued to work as such until 1951 when the need for a whole time Health Probationer was not felt necessary, and the Centre was, therefore, converted into one Primary Health Centre, at Amruthur and another at Yedavanne was formed in 1951, with a population of about 11,110 and 10,676 respectively and each centre with One Assistant Medical Officer of Health, two Junior Health Inspectors, 3 Midwives and 4 Peons and these two units are since continued.

To these only two Primary Health Centres in the District, were added three more Primary Health Centres as per G. O. No. M. 14062-65—PH. 88-54-2 dated 9th October 1954, by converting the two existing L. F. Dispensaries of Kunigal and Huliyurdruga and the creation of a new one at Nagasandra in Kunigal Taluk. Kunigal Taluk is, therefore having five Primary Health Centres. The last two were taken over to the Department on the 1st of December 1954. The full compliment of the staff has not been posted yet to any of these three newly started health centres. The activities, detailed below, therefore, relate to the existing two centres of Amruthur and Yedavanne.

VITAL STATISTICS.

To assess the Health work of the Unit, the Unit staff also collects these statistics and the figures are as follow :—

		Amruthur Health Centre	*Yedavanne Health Centre*
Population	...	11,110	10,676
Births—			
Reported by Patels	...	262	273
Detected by Health staff	...	129	183
Total	...	391	456
Rate per Mille	...	35·2	42·6
Deaths—			
Reported by Patels	...	103	115
Detected by Health staff	...	39	61
Total	...	142	176
Rate per Mille	...	12·7	16·5

		Amruthur Health Centre	*Yedavanne Health Centre*
Infant Deaths—			
Reported by Patels	...	31	29
Detected by Health staff	...	5	21
Total	...	36	50
Rate per Mille	...	92·0	109·6
Maternal Deaths—			
Reported by Patels	...	6	3
Detected by Health staff	...	...	...
Total	...	6	3
Rate per Mille	...	15·1	6·5

There were 391 births in the Amruthur Health Unit area of which 129 were omitted by the Patels and were detected by the unit staff. Similarly there were 142 deaths of which 39 were detected by the Unit staff. In like manner, 50 infant deaths were recorded of which 21 were detected by the Unit staff. The birth-rate, death rate, and the Infant Mortality rates calculated on the basis of figures furnished by Patels would work out to 23·6, 9·3, 118, whilst calculated on the basis of the complete collection they work out to be 35·2, 12·7 and 92·0 respectively for Amruthur.

Yedavanne Health Unit collected 456 births, 176 deaths 50 Infant deaths and 3 maternal deaths as against 273 births, 115 deaths, 29 infant deaths and 3 maternal deaths reported by patels. The inadequacy of collection therefore is quite apparent.

Vital Statistics collection in the Municipal areas.

Sl. No.	Municipalities	Population estimated mid-year	Births	Deaths	Infant Deaths	Maternal Deaths	Still births
1	Tumkur ...	41,991	897	287	16	12	
2	Sira ...	12,855	219	66	2	5	
3	Turuvekere ...	4,178	67	30	5	...	
4	Tiptur ...	15,305	201	37	...	...	
5	Koratagere ...	5,263	116	34	5	3	
6	Madhugiri ...	5,732	329	29	...	2	
7	Pavagada ...	5,240	139	24	1	...	
	Total ...	80,564	1,968	507	29	22	
	Rate ...	24·4	6·2	...	...	...	

The birth and death rates being 24·4 and 6·2 respectively are too low for urban areas.

Control of Epidemic Diseases.

Plague.—The district remained free from Plague during the year.

Cholera.—Fifteen villages in six taluks reported 97 attacks with 48 deaths from cholera during the year. These six taluks are Kunigal, Madhugiri, Pavagada, Tiptur, Tumkur and Gubbi, in the order of number of cases—

Kunigal reporting as many as 48 attacks and 23 deaths. This was against 248 attacks and 122 deaths in 54 villages and one town in 1953. Nine thousand two hundred and twenty-seven anti-cholera inoculations were done during the year under report as against 57,158 during the previous year. Fifty-two wells were chlorinated in the infected villages, one town was declared INFECTED and two weekly fairs were stopped as preventive measures against the disease during the year under report.

The Health Unit areas remained free from the disease.

Small-pox.— Thirty-five attacks and 5 deaths were reported from small-pox from six taluks during the year under report. Immediate preventive measures were undertaken in and the surrounding villages and the further spread was checked.

The two Health Units areas of Amruthur and Yadavanne remained free from the disease.

The number of vaccinations done during the year are shown in the following table.—

Area	Midyear estimated population	VACCINATIONS						Per cent of population protected
		1953			1954			
		Primary	Re	Total	Primary	Re	Total	
Health Unit area ...	23,190	1,086	4,345	5,431	1,015	3,594	4,609	20
Municipalities ...	1,18,788	4,840	34,804	39,644	3,708	3,646	7,345	6·2
District Board ...	16,72,937	8,656	13,039	21,695	3,3041	56,908	89,949	8·4

Other Communicable Diseases.

1. *Malaria.*—The Amruthur and Yedavanne Unit villages were malarious consequent upon canal water irrigation from the Marconahally reservoir. These two Health Units together have reported 1,898 cases of malaria during the year under report. Out of a total number of 35,988 persons treated at the two dispensaries. This works out to 5 per cent of the patients as being clinical cases of malaria as against 7·5 in the previous year. Three hundred and sixty blood smears were taken for examination from these clinical cases of malaria and 2 showed malaria parasites.

The usual biannual spleen surveys in the two Primary Health Centres continued during the year and the result of the survey is furnished below :—

.....	Population	Number examined	Positive	Spleen rate	A. E. S.
Amruthur	11,110	1,238	12	0·97	1·5
Yedavanne	10,676	1,287	3	0.23	1·3
Total ...	21,786	2,525	15	0·98	1·5

The spleen rate for the whole unit was 0·98 per cent as against 0·51 per cent in the previous year.

The control of malaria was given over to the National Malaria Control programme since November 1953 and continued during the year, with residual insecticides. Four hundred and seventy-five villages in Tumkur district were included under this programme—120 in Kunigal, 136 in Koratagere, 94 in Sira, 35 in Chicknaikanahalli, 10 in Tiptur, 43 in Turuvekere and 37 in Gubbi. Two rounds of spraying with 100-milli-gram dose were done during the year under report.

A large number of requisitions were received at this office for the inclusion of many villages under the Nationrl Malaria Control Programme on the plea of their being malarious. Such of those requiring the spray on account of malaria are gradually being included in the programme, and further inclusion is stopped on account of restricted supply of D.D.T. Any way there is need for another sub-unit at Tumkur.

General Sanitation.—The following sanitary arrangements were affected in the two Health Unit areas :—

1.	No. of hand flush latrines introduced	22	
2.	No. of soak pits introduced	4	
3.	No. of windows introduced	270	
4.	No. of cattle sheds improved	67	
5.	No. of backyards cleaned	157	
6.	No. of kitchen gardens introduced	32	
7.	No. of houses in which roofing and floor are repaired ...	17	
8.	No. of dilapidated structures removed	4	
9.	Drains formed (in running yard)	17	yds.
10.	Drains repaired (in running yard)	135	,,
11.	Drains cleaned ,, ...	403	,,

The number of hand flush latrines introduced is 22. For want of supplies of cement in time much progress could not be shown although demands had been created by propaganda by the Health staff.

Maternal and Child Health Services.—The six midwives of the two primary health centres of Amruthur and Yedavanne rendered domiciliary midwifery services. They registered 2,798 prenatals, gave 3,524 revisits to these prenatals during the year under report. On an average each prenatal got 1·9 visits by the Midwives.

Out of 802 deliveries in the Health Unit area, 390 or 49 per cent were conducted by the trained midwives and the remaining 412 or 51 per cent by the villages Dhais. On an average each midwife has conducted 5·4 labours per month.

These six midwives gave 1,850 post-partem visits to the 390 midwife-conducted deliveries and 1,135 post-partem visits to the 412 Dhai-conducted cases, thus giving 4·7 and 2·7 post-partem visits per case respectively.

Meetings.—The District Health Officer conducted the usual inspections of the sub-units. He also visited Town Municipalities in the District whenever found necessary and gave suitable recommendations for the sanitary

improvement of the town. He also attended to the District Board, District Development, District Co-ordinating and National Extension Service Block meetings.

Fairs and Festivals.—The following major jatras were conducted during the year under report. The District Health Officer visited all the jatra areas, both before and during the jatra, and gave necessary instructions for affecting sanitary arrangements for the safe conduct of the jatra.

Sl. No.	Taluk	Place	Name of the Jatra	Approximate congregation
1	Pavagada ..	Nagalmadike ...	Sri Subramanyaswamy ...	20,000
2	Turuvekere	Doddasettikere...	Sri Gangadhareswaraswamy ...	8,000
3	Do ..	Lokkamanahally.	Sri Mahaligeswaraswamy ...	2,000
4	Do ...	Pura ...	Sri Shambulingeswaraswamy ...	2,000
5	Do ...	Dandinasivara ...	Sri Honnammadevaru ...	5,000
6	Kunigal ...	Yadiyur ..	Sri Siddalingeswaraswamy ...	40,00
7	Koratagere	Kyamenahally ...	Sri Anjaneyaswamy ...	80,000
8	Sira ...	Patnaikanahally.	Sri Gurugondabrahmeswaraswamy...	5,000
9	Madhugiri...	Madhugiri town.	Sri Dandinamaramma ...	6,000
10	Tumkur ...	Devarayanadurga	Sri Lakshminarasimhaswamy ...	5,000
11	Do ...	Siddaganga ...	Sri Siddalingeswaraswamy ...	20,000
12	Do ...	Seebi ...	Sri Narasimhaswamy ...	10,000

Site Inspections.—The District Health Officer visited 16 villages for inspection of sites for extensions and gave his opinion regarding the suitability or otherwise of the sites for the purpose.

Milk Distribution.—During the year under report 5,235 lbs. of milk powder were received from the State Liaison Officer, Bangalore and 5,235 lbs. were issued to the 6 Centres for distribution to the poor. Four thuosand two hundred and fifty-six lbs. of milk powder were distributed to 11,395 infants, 52,471 children under 12 years, and 6,823 pregnant women and nursing mothers in the several distribution centres.

National Extension Service.—During the year there was one N. E. S. Block in the District in Mayasandra, Turuvekere Taluk, covering a population of 35,026 distributed in 107 villages. The Health staff attached to the District Board have been attending to the Vaccinations and other items of health work in the area. The statement below shows the health work done in the area during the year (Mayasandra N. E. S. Block).

Vaccinations : ...	Primary ...	3,209
	Re ...	10,149
	Total ...	13,358

No. of anti-cholera inoculations done	...	...	750
No. of wells chlorinated	...	...	79
Total No. of out patients treated at the Dispensary, Mayasandra.			9,465
No. of in-patients	...	...	17
Malaria patients treated	...	...	2,044
No. of labour cases conducted by the midwife	...	...	52
No. of anti-malaria drugs distributed	...	...	1,000
No. of Hexavitamin tablets distributed	...	...	2,000
No. of Health talks given	...	...	140
No. of people attended	...	...	1,841
No. of villages visited by the Range Health Inspector		...	245
No. of latrines introduced	...	...	1
No. of soak pits introduced	...	...	5
No. of windows introduced	...	...	55
No. of kitchen gardens introduced	...	...	8
No. of cattle sheds improved	...	...	15

BELLARY DISTRICT

SRI M. L. LOGANATHAN, M.B.B.S., D.P.H., M.P H.,
District Health Officer.

Dr. C. Gopalaraj Chetty continued to be the First District Health Officer of the merged district and handed over charge of the Office to his Assistant Dr. K. Ranganatha Rao, Assistant District Health Officer, from whom Dr. M. L. Loganathan took charge of the Office on 2nd September 1954.

SITUATION.

Physical Characteristics.—Bellary is the Westernmost of the four ceded districts of Madras State, which merged with the State of Mysore during October 1953, consequent on the formation of Andhra State. It is situated between 14°—30° and 16° of the Eastern longitude. Now, the district forms the northernmost part of the Mysore State and flanked on the West by the Bombay State, on the North by the Hyderabad State and on the East by the Andhra State. The District consists of the 7 taluks comprised in two Revenue Sub-Divisions with headquarters at Bellary and Hospet. Under the former Revenue Sub-Division is included Bellary and Siruguppa taluks and the latter consists of Hospet, Sandur, Kudligi, Hadagalli and Harapanahalli taluks.

The level of the District falls gently from South to North towards the valley of the river Thungabhadra which cover its entire Northern boundary. A small area in the East of Bellary and Siruguppa Taluks slope down towards the East where the Hagari River cuts across from South to North.

The District is divided into two natural regions by the Sandur hills running right across the middle of the district from North-West to South-East. The Eastern portion is a flat treeless expanse of black cotton soil diversified here and thereby rocky hills characteristic of the Deccan. The western portion is of mixed soil and the terrain is broken up by a succession of tires of wild and rugged hills lying at a greater elevation than in the Eastern portion.

Irrigation and drainage facilities.—The river Tungabhadra is a perenniel source of water for irrigation in the district, through channels, mainly in Hospet, Siruguppa and parts of Bellary Taluks. The project for impounding the waters of this river by means of a dam is practically under completion and is located three miles west of Hospet. The project is expected to command nearly two million acres of land for irrigation.

Population and its growth.—The growth of population of the District and Taluks in 1941-51 and the percentage variation is furnished below:

Name of District and Taluks	Population		Percentage variation
	1941	1951	
Siruguppa Taluk	69,431	74,966	11·9
Bellary Taluk	151,403	184,929	22·1
Sandur Taluk	49,509	52,523	6·1
Hospet Taluk	81,847	133,238	62·8
Hadagalli Taluk	92,118	101,961	10·7
H. Halli Taluk	104,915	117,633	12·1
Kudligi Taluk	106,854	122,035	8·7
Bellary District	656,177	787,285	16·4

Statement showing Intercensal growth of population of the district from 1901 to 1951.

Year	Persons	Variation	Males	Variation	Females	Variation
1901 ...	608,123	...	309,019	...	299,104	...
1911 ...	605,034	3,089	306,114	2,905	298,902	184
1921 ...	523,628	—81,406	266,541	39,573	257,087	41,833
1931 ...	593,770	70,142	302,448	35,907	291,322	34,235
1941 ...	649,028	55,258	329,990	27,542	319,338	27,716
1951 ...	773,712	124,684	395,034	65,044	378,678	59,640

Area, Houses, and Population.—The following table shows for the rural and urban areas of each taluk and for the district, the area, the number of inhabited villages, towns, occupied houses and the total population with distribution by sex.

Sl. No.	Taluk	Area in Sq. miles	Villages	Towns	Occupied Houses		
					Total	Rural	Urban
1	Siruguppa ...	403	69	2	15,274	12,376	2,896
2	Hospet ...	284	65	2	24,768	16,617	8,151
3	Sandur ...	481	69	1	10,854	9,809	1,045
4	Bellary ...	652	88	1	30,016	19,222	10,794
5	Hadagalli ...	587	81	1	19,407	18,046	1,361
6	H. Halli ...	611	76	1	19,784	17,879	1,905
7	Kudligi ..	703	93	1	21,262	19,637	1,625

Audit and Accounts.—

Income

Sources.—

		Rs.	a.	p.
1.	Central Funds ...	...		
2.	Provincial funds ...	60,922	5	0
3.	L. F. District Board	31,884	15	0
4.	Miscellaneous ...	...		
	Total ...	92,807	4	0

Expenditure

		Rs.	a.	p.
1.	Office Establishment.	7,146	9	0
2.	Officers ...	8,680	0	0
3.	D.H.O. & A.D.H.O...	2,353	12	0
4.	Range H. Is. ...	16,213	2	0
5.	Health Assistants ...	15,805	3	0
6.	Plague H. I. S. ...	3,898	8	0
7.	Mazdoors ...	9,795	9	0
8.	T. A. & Dearness Allowance ...	5,469	9	0
9.	Contingencies ...	2,675	9	0
10.	Drugs & Equipments.	17,724	5	0
11.	Others M. & C. Staff.	3,045	2	0
	Total ..	92,807	4	0

The main sources of income for the District Health Administration is from the Provincial or State funds and the Local Fund—the District Board Funds.

Curative Services.—The personnel for the curative services for the medical relief arrangements, are from the Medical Department, and the rural Medical Practitioners employed by the District Board. In addition to the Doctors there are the other auxiliary personnel like Nurses, Midwives, Compounders and menials etc., are employed in the Hospitals and Dispensaries.

The appended list will indicate the various institutions existing for the curative services by taluks in Bellary District.

Sl. No.	Taluk	Govt. Hospitals	Mi. Dispensaries	L. F. Dispensaries	Rural Dispensaries	T. B. P. Hospitals	Private Hospitals	Maternity Hospitals	Remarks
1	Bellary Taluk ...	2	5	2	3	1	Informa-	3	...
2	Siruguppa Taluk.	...	...	2	2	...	tion not	1	...
3	Hospet Taluk ...	1	...	1	2	...	available	...	...
4	Sandur Taluk ...	1	...	1	1	...	...	1	...
5	Kudligi Taluk ...	...	...	1	3	...	...	...	...
6	H. Halli Taluk.	1	...	...	4	...	...	...	...
7	Hadagalli Taluk.	...	...	1	4	...	...	...	...
	Bellary District,	5	5	8	19	1	...	5	...

Hitherto the epidemic control work, particularly preventive immunization was being done mainly by the Health staff. After the merger the doctors in the above institutions are gradually coming forward for immunization work, as it is the practice in other parts of the Mysore State. The number of Local Fund and Rural Dispensaries that are existent are not adequate for the distance and the number of villages in the district. To rise to the standard of medical facilities available in other parts of the State many more institutions need to be opened.

Health Unit Organization.—There is no Health Unit Organisation in the district at present. There is awakening and agitation from the people for starting of Health Centres in the district.

Statement showing Births and Deaths and their Rates by Ranges and the District for 1954.

Sl. No.	Range	Population	Births				Deaths			
			No. Reported	No. Detected	Total	Rate per Mille	No. Reported	No. Detected	Total	Rate per Mille
1	2	3	4	5	6	7	8	9	10	11
1	Bellary ...	1,14,607	4,286	330	4,616	37·4	2,234	41	2,275	19·5
2	Hadagalli ...	88,043	3,750	51	3,801	43·1	2,110	11	2,112	23·9
3	Harapanahalli ...	1,17,627	3,152	147	3,299	29 4	2,215	26	2,215	25·5
4	Hospet ...	56,802	45	...	45	4·5	22	...	22	2·2
5	Kudligi ...	1,08,462	3,166	147	3,313	30 6	2,051	34	2,051	19·0
6	Sandur ...	52,523	2,853	29	2,882	33·1	1,557	18	1,575	10·6
7	Siruguppa ..	69,431	2,483	162	2,645	38·9	1,561	26	1,527	21·9
	Total ...	6,07,495	19,735	866	20,601	21·70	11,621	156	11,777	19·33

Statement showing Births and Deaths and their Rates by Range and the District for 1954—*concld.*

Sl. No.	Range	Infant Deaths				Maternal Deaths				Still Births			
		No. Reported	No. Detected	Total	Rate per mille	No. Reported	No. Detected	Total	Rate per mille	No. Reported	No. Detected	Total	Rate per mille
...	...	12	13	14	15	16	17	18	19	20	21	22	23
1	Bellary ...	483	...	483	104·5	60	...	60	41·1	...	...	...	...
2	Hadagalli	504	...	504	132·7	131	...	131	...	40	...	40	10·5
3	Harapanahalli ...	356	...	356	117·7	30	...	30	9·5	...	...	...	...
4	Hospet ...	...	...	...	...	...	...	...	...	...	...	...	...
5	Kudligi ...	437	...	437	131·9	14	...	14	0 12	10	...	10	0·1
6	Samdur ...	67	...	67	23·3	...	...	...	...	...	...	...	...
7	Siruguppa ...	162	...	162	62·41	5	...	5	0·09	...	...	...	...
	Total ...	2009	...	2009	97·4	239	...	239	11·6	50	...	50	10·6

Vital Statistics.

The acts prevailing and mode of collection.—The Madras Birth and Death Registration Act III of 1899 continued to be in force till the merger of the district on 1st October 1953 and this act was not included among the laws by Mysore Government on the merger. Under this act the village Munsiffs are the Registrars of Births and Deaths in their respective Villages. The Mysore Registration Act of Births and Deaths will have to be made applicable to Bellary District at the time of adopting Mysore Acts and Rules and Regulations.

The villagewise births and deaths registers maintained by the Village Munsiffs are scrutinised by the Public Health staff during their visits to the villages, the mistakes if found are rectified; and the unregistered births and deaths detected by the Health staff are brought to the notice of the Village Munsiff and the same got recorded in the registers. More intensive verification by the Health staff was taken up during off-seasons and efforts made to improve reporting.

Vital Events of the Year Review.—Statement appended: Statement showing Birth and Death Rates by Years.

Sl. No.	Year	Birth Rate	Death Rate	Infant Mortality Rate	Maternal Mortality Rate	Still Birth Mortality
1	1952 ...	33·47	15·76	123·9	4·78	4·7
2	1953 ...	35·02	15·01	109·93	5·22	5·58
3	1954 ...	33·93	19·38	97·4	11·1	...

Births.—During the year under review the total of 20,601 births were registered and detected with the birth rate 33·33 per mille, as against birth rate of 35·02 in the previous year.

Deaths.—A total of 11,777 deaths were registered and detected during the year under report with the death rate of 19·38 per mille. Corresponding figure of death rate for the previous year being 15·01.

Infant deaths.—As calculated the infant deaths per mille of live births shows a rate of 97·4 for the year under review, as against 109·93 for the previous year. There is the decline of the infant mortality rate which is due to the normal conditions that prevailed.

Maternal deaths.—Two hundred and thirty-nine maternal deaths were recorded during the year with the maternal mortality rate of 11·1 as against 5·22 the previous year.

Still births—A total of 50 still births have been recorded for the whole area.

Control of Communicable Diseases.

Small-pox infection.—There has been a total of 337 attacks and 84 deaths reported from the district during the year under report as against 315 attacks and 37 deaths during the previous year. Bellary Taluk reported the maximum attacks 139 and deaths 55 spread over 23 villages. Next highest attacks were from Sandur and Harapanahalli Taluks with 86 attacks and 5 deaths and 55 attacks and 5 deaths respectively. The taluk of Kudligi and Siruguppa reported the minimum number of attacks and deaths, 6 attacks and 1 death and 7 attacks and nil death respectively.

Vaccination work.—The total of 90,377 vaccinations as against 28,994 during 1953 have been done in the district for a population of 607,495. Of the total vaccinations done, 23,327 were primary vaccinations and the 67,050 re-vaccinations as against 1,926 primary vaccinations and 27,032 re-vaccinations during 1953. The percentage successful among primary vaccinations are 75·8 per cent that of Re-vaccination 23·8 per cent. It is seen that nearly 15 per cent of the rural population has been protected against small-pox during the year.

Thus it is seen that the vaccination work may be said to be satisfactory as per the 10-year programme of work, as was set up by Madras. But taking into consideration that the immunity against small-pox after vaccination is only 3 years (as per World Health Organisation) this work of Vaccination is rather poor standard. Taking the standard of 5 years duration of immunity after vaccination at least double the number of the present vaccination should be done and the entire population completed within 5 years, so that after the end of 5 years start again both the primary and re-vaccinations and protect 1/5 of the population per year.

Cholera infection and its control.—The total of 447 attacks and 216 deaths due to cholera were reported during the year under report as against 403 attacks and 173 deaths during the previous year. The maximum attacks and deaths have been in Hospet and Kudligi taluks—147 attacks and 64 deaths, and 122 attacks and 66 deaths respectively. The Taluks of Sandur and Siruguppa remained free from cholera during the year under report.

The total of 83,522 persons have been protected against cholera as against 60,022 during the previous year.

It is noteworthy that the practice that the Health Inspectors are doing the anti-cholera inoculations has been of much value in the effective protection of the people in the infected villages against cholera. The Health Inspectors have been very prompt in this work and this one protective measure has been the important factor in the control of the infection to a very great extent. In addition the proper disposal of the infected materials of the cases, disinfection of the infected houses and drinking and non-drinking water sources have been other factors which were adopted towards the control and prevention of the infection.

Plague.—Special mention could be made that the expenditure incurred on the plague staff has been worth its while, because there has been no plague cases reported in the district for the year under report. One hundred and eight villages of endemic and infected origin were got D. D. T. sprayed covering the total of 26,623 houses. In addition the rat burrows were insufflated with D. D. T. (10 per cent) dust.

Malaria control work.—Malaria control work by D. D. T. spraying was being done by the Health Officer, Tungabhadra Project Area in the Rehabilitation villages and a few villages coming under the Tungabhadra Low Level Channel Area.

The Government Order No. 10018-34—P. M. 119-52-17, dated 10th October 1953 was received sanctioning the 6th Malaria Control Unit for Mysore State, mainly for Bellary District, under the National Malaria Control Programme, by which it is expected that the Malaria Control work would be put on a much more systematic basis in the district.

Leprosy Control.—In a few of the villages in the Taluks of Harapanahalli and Hadagalli where Leprosy infection is prevalent, from where there has been hue and cry for doing something for treatment of the Leprosy patients and control of the infection, Sulphone tablets are being distributed by the Range Health Inspectors. The Senior Leprologist has been paying regular visits to these villages once in two months to check the work and to issue necessary advice and education regarding the infection and the precautions to be taken up for preventing the spread of the disease.

A much more thorough survey of Leprosy in the area in addition to the regular treatment is very essential. This would facilitate to assess the quantum of infection prevalent in the area and to ensure proper follow up of the cases and of the progress of improvement among the treated.

8. *Environmental Sanitation.*—

1.	No. of Latrines constructed :—		
	Private	... ...	Nil
	Public	... ...	115
2.	No. of soak pits introduced	... ...	32
3.	No. of windows introduced	... ...	136
4.	No. of kitchen gardens formed	... ...	334
5.	Improvement to cattle sheds	... ...	7
6.	No. of houses white washed	... ...	10,316

7.	Improvements flooring and roofing ..	...	23
8.	No. of manure pits removed ...	...	7,040
9.	Compost pit formed ...	...	482
10.	Roads formed—length in yards ...	...	11,610 yds.
11.	Drainage formed—length in yds. ...	...	3,172 yds.

Housing Site selections.—During the report under review, for 21 villages, sites to satisfy Public Health point of view, were selected for general extension of the village; and in 17 village sites were selected for the Adi-karnataka Extensions. In addition, in one village, site for burial ground was selected. Thirty other spot inspections have been done for selecting suitable site for cinemas, markets, public latrines, etc.

Industries.

Site selections.—Fifty-two spot inspections have been made and opinion furnished for suitability or otherwise of the sites and the buildings for location of the flour mills, cotton ginning and compressing factories, etc.

Rural Water Supply.—Thirty-seven sites were selected for provisions of drinking water wells in the villages. This is an important problem which is being taken up under a systematic basis in the district. Thanks to the funds available from the Centre and the State Government and to the I and II Five Year Plans which is giving more attention to this part of the environmental sanitation.

Fairs and Festivals.—The funds provided are mainly from the local bodies, *e.g.*, the Panchayat Board or District Board, and in a few cases the temple funds. The amount sanctioned has been, as usual, inadequate to the extent of the service that is needed for the gathering. Constant requests are being made by the District Health Officer for grant of adequate funds.

Sanitary services as allocation of places for offensive trade, cattle, shops, cinemas, etc., general sanitation, proper collection and disposal of rubbish; and facility for night soil disposal; protected water supply, lighting, medical aid, etc., are being arranged. Preventive measures against cholera by protecting the pilgrim by giving anti-cholera inoculation and issuing of certificates for them was being systematically done. Yet the percentage of protection on the whole is less than 50 per cent as the people are yet to realise its importance and come forward for protecting themselves against cholera.

Maternity and Child Welfare.—There are only three Maternity Centres under District Board control, one at Moka, Bellary Taluk, Sirigeri of Sirugguppa Taluk, and Toranagal of Hospet Taluk. There is one Midwife and one Aya for each of the Maternity Centres. The work turned out by them is rather poor, as there has been no proper supervisory agency against these midwives. However, attempt is being made to get proper work from the midwives by allocating a certain number of villages to be regularly visited by for pre-natal and natal and post-natal work every week. Thus it is seen that the midwives attached to the three Centres have conducted 174 deliveries both registered and unregistered. The house visits paid for pre-natals, natals and post natal are not properly recorded and it is very inadequate.

It is suggested that a Public Health Nurse if appointed who would go a long way for supervision of all the Rural midwives and to get proper work from them and place the maternal and child health services on a much more scientific method.

Health Education.—A separate trained staff for this work is essential so that they could do Health Education on set programmes to achieve results.

Laboratory work.—Laboratory wo.k done is nil at present. There is proposal to start the District Laboratory and a refrigerator has been provided in this regard. The provision of the certain barest equipment and other necessaries of stains media, reagents, etc., would go a long way for doing certain minimal laboratory examinations which will be of help for diagnostic and survey work in the district.

Suggestions for Improvement.—1. There is only provision for control of epidemics and certain general health work. The Health Unit Organisation in the district has to be taken up immediately.

2. The Malaria control measures would be put on a much more systematic basis under the National Malaria Control Programme.

3. The Maternal and child Health Services needs to be improved.

4. The environmental sanitation work is the one thing that has got to be taken up seriously and village sanitation improved.

5. The District Laboratory needs to be improved.

6. Scarcity of water and water supply position has to be improved.

BUREAU OF HEALTH EDUCATION

DR. M. SHAMA RAO, B.SC., M.B.B.S., D.P.H., M.P.H.,
Superintendent.

The Bureau continued to be in charge of Dr. M. Shama Rao during the year under report. The Propagandist, Sri J. Krishna Murthy was relieved of his duties on 5th November 1954 and permitted to avail of 6 months leave preparatory to retirement. The Publicity Officer was placed in additional charge of the propaganda work.

Publicity Section.—The following *Press Notes* were issued to appraise the public of the prevalence of the epidemic and the measures taken to combat the same in various parts of the State.

1. Plague in Kolar District and control measures undertaken.
2. The part public have to play when epidemic breaks out—Plague epidemic in Kolar District.
3. Control of Cholera in Ramanagaram Taluk.
4. Control of Malaria in Arasikere Taluk.
5. Forecasting of the possibility of cholera occurring in an epidemic form in Mysore State in 1955.

Other Press Notes included reporting, as of topical interest, of the visits of distinguished persons to the office of the Director of Public Health.

During the year under report *articles* on health matters were contributed to the following magazines and news papers :—

1. One article for the Congress Exhibition Hand book.
2. One article for 'Gramabhyudaya, Special issue', in connection with the First Malnad Conference held at Shimoga.
3. One article on the necessity of having a Hand flush latrine.
4. One article on the importance of nursing in connection with the celebration of the World Health Day.
5. One article on the celebration of the malaria control week.
6. A comprehensive note for the book "Seventh Year of Freedom".

The following *reports* were also prepared :—

1. A concise report on the activities of the Department during the the year was prepared as material for the speech of Rajpramukh at the time of declaring open the Budget Session.
2. A Similar, but separate report, was also prepared as material for the speech of the Chief Minister at the time of declaring open the Budget Session.
3. A report on the celebration of the World Health Day.
4. A report on the celebration of the Malaria Publicity Week.

Press Conference.—One Press Conference was held by the Director when he explained to the Press representatives the following activities of the Department :—

1. Malaria Control work in Kolar District.
2. Cholera situation in Mysore State.
3. Progress of B.C.G. vaccination.
4. Leprosy control work.

The two important events during the year in which planned publicity was required were the celebration of the W.H.O. Day and the Malaria Publicity Week. Arrangements were made to have the events celebrated throughout the State on the specified dates. In addition to contributing articles to the Press by the Bureau, taking points were compiled and distributed, folders were prepared, and lantern slides were supplied to be shown in the selected cinema houses of District Headquarters.

Artist Section.—Fourteen posters on nutrition and on communicable diseases were prepared. Twelve maps for N.M.C. programme and on Five Year Plan and six graphs were drawn. Thirty-two boards and 14 number plates were painted. Three hundred and twelve photos were taken and 298 contact prints and 255 enlargements were made. One hundred and ten lantern slides were prepared.

Propaganda Section.—During the year under report the Propaganda unit was on tour for 138 days covering a distance of 6,555 miles. The unit toured in the districts of Bangalore, Mysore, Bellary, Hassan, Tumkur, Kolar,

Chickmagalur and Shimoga, visiting 23 towns and 30 villages. Mysore City was visited during the months of September and October, in connection with the Dasara Exhibition. The Health Section was fitted up as an adjunct of the Mysore Dasara Exhibition and health films were shown on the Exhibition Grounds. Propaganda by means of film shows and lectures was carried on in connection with the B.C.G. Vaccination Campaign at Ripponpet, K.G.F. area and in Krishnarajanagar Taluk. The unit was deputed for special duty in connection with the B.C.G. vaccination campaign at Coimbatore, Madras Presidency. Film shows and lectures were given at Ghati Subramanyaswamy Jatra, Chunchanakatte Jatra and Car Festival at Agumbe. The unit did health propaganda in connection with the eye clinic at Konanur; health exhibition and baby week at Tumkur, National Malaria Control publicity Week at Bukkapatna and Corporation day celebrations (Kemmangundi Road), Bangalore, In all 167 cinema shows, projecting 64 films on various health subjects, were screened to an approximate audience of 1,47,650. Health talks were also given to High and Middle School Students during the year.

Library and Reading Room.—The Bureau maintains a Library containing books of Public Health and Medical interest, for the use of the Officers of the Department. Fifty-three books were newly added to the library during the year.

The following magazines were being subscribed for by the Bureau :—

British :—

British Medical Journal.

Mother and Child.

Public Health.

Medicine to-day and to-morrow.

American :—

To-day's Health.

Journal of Public Health.

Journal of Social Hygiene.

Indian :—

Indian Medical Gazette.

Besides the Library, the Bureau maintains a Reading Room and the following news papers were being subscribed for :—

1. Hindu.
2. Deccan Herald.
3. Tainadu (Kannada).

Health Inspectors' Training Class.—A supplementary examination for 20 candidates was conducted during April 1954. The Government were pleased to sanction the conduct of another Session of training 60 candidates during the year 1954-55.

PUBLIC HEALTH INSTITUTE, BANGALORE.

SRI S. ANANTHASWAMY, B.SC., M.B.B.S., D.P.H., M.P.H.,
Chemical Examiner.

General.—During the year under report Dr. S Ananthaswamy, B.SC., M.B.B.S., D.P.H., M.P.H., who was in-charge of the duties of the Chemical Examiner was granted a Rockefeller Foundation travel fellowship for 6 months and deputed to visit important Public Health laboratories and Chemical Examiner's Laboratories in India in G.O. No. M. 155-42-43—P.H. 19-53-6, dated 23rd—24th December 1953. He was relieved of his duties on 30th January 1954 by Dr. C. V. Natarajan who was in-charge of the duties till 22nd April 1954. Dr. C. V. Natarajan retired on 22nd April 1954 and Dr. K Krishnamurthy Rao, B.SC., M.B.B.S., D.P.H., held charge till 31st July 1954 when Dr. S. Ananthaswamy returned from his study tour and took charge from Dr. K. Krishnamurthy Rao.

Dr. K. Krishnamurthy Rao, Assistant Chemical Examiner was deputed for training for 6 months from 1st November 1954 in the office of the Chemical Analyser, Madras in G.O. No. 14579-80—P.H. 91-54-2, dated 16th October 1954. Dr. C. P. Kannan Menon was posted as Assistant Chemical Examiner and he reported for duty on 15th December 1954.

PART I—MEDICOLEGAL SECTION.

A total number of 429 cases with 2,086 articles were examined during the year as against 483 cases with 1,878 articles during the previous year. The details are given in table No. I.

Blood Stains.—One hundred and ninety-three cases with 1,231 articles were examined as against 173 casses with 1,062 articles during the previous year. Mammalian blood was detected in each one of these cases and in 1,075 articles. During the year blood stains from 131 cases were referred to the Serologist, Government of India, for the detection of human blood and determination of blood group. The articles are given in table No. II.

Seminal Stains.—Twenty-seven cases with 91 articles were received and examined during the year for the detection of spermatoza as against 27 cases with 59 articles during the previous year. Ten out of these cases (37 per cent) were found positive as against 40·7 per cent in the previous year.

Human Poisoning.—A total number of 129 cases with 574 articles were examined during the year for poisons as against 142 cases with 595 articles during the previous year. Out of these some poison or other was detected in 62 cases (48·1 per cent) as against 45·7 per cent during the previous year. Table No. IV shows details of the cases examined and table No. V details regarding the nature of the poisons detected.

Cases under Prohibition Act.—Sixty-six cases with 141 articles were examined during the year as against 130 cases with 132 articles during the previous year as shown in table No. VI.

Miscellaneous Cases.—Fourteen cases with 49 articles were received for miscellaneous examination such as identification, determination of chemical composition analysis for the presence of explosives or the products of their combustive decomposition, etc., as against 11 cases with 20 articles during the previous year as shown in Table No. VII.

A statement showing places from which medico-legal cases were received is appended in Table No. VIII.

Some medico-legal cases of interest received during the year.—(*i*) *Zinc Phosphide poisoning.*—Case No. Ch. Ex. 404/11th December 1954. Cases of poisoning by zinc phosphide have been reported in Medicolegal literature. Cases have also been reported by Chemical Analysers of adjacent States. However, such cases of poisoning have been relatively rare in Mysore and have not been observed during the previous year. Three cases were examined for zinc phosphide during the year. A person was supposed to have taken "rat poison" and was admitted to the Hospital for treatment. Samples of stomach wash, motion and urine sent for analysis as also a sample of the substance consumed. Zinc phosphide detected in the article alleged to have been consumed. Phosphine and phosphide were detected in the stomach wash of motor. The quantities detected were 4·1 m. gms traces respectively (determined as silver phosphide).

(ii) *A Fatal case of poisoning by Amonia.*—Case No. Ch. Ex. 295/15th September 1954. A relation of a dispensary doctor was found to have died in the dispensary and the matter was reported to the Police authority, who arranged for post-mortem and further investigation. Postmortem revealed signs suggestive of poisoning by corrosive alkalies and congestion of larynx trachea and lungs. Stomach with contents, small intestines, liver spleen and kidney and blood stained vomitted matter were sent for analysis. Amonia was detected in the vomitted matter and stomach contents. The quantities detected were 122 m.gms. and 2·2 m.gms. per 100 c.cs. respectively.

(iii) *Fatal cases of suicidal poisoning by cyanides.*—Seven cases of suicidal poisoning by cyanides were analysed this year as against 6 cases in 1953 and 4 cases in 1952. In some of these cases (Ch. Ex. Nos. 300/15th September 1954, 305/24th September 1954, 306/20th September 1954, 307 20th September 1954) relatively large quantities of cyanides were detected in the stomach contents and other viscerea, *viz.*, 227 m.gms. per 100 c.cs. of stomach contents, 21 m. gms. per 100 c.cs., 26 m.gms. per 100 cc.s., 521 m·gms. per 100 c.cs., (determined as K.C.N.) respectively.

(iv) *A non-fatal case of poisoning by D.D.T.*—Case No. Ch. Ex. 340/13th October 1954. A women was said to have taken a suspension of DDT for some reason, and vomitted and felt giddy. The symptoms as described were vague. Vomitted matter which was sent for analysis revealed traces of a substance reacting to some of the colour tests for DDT.

Fatal poisoning by Aloes.—Case No. Ch. Ex. 374/25th November 1954. Some roots, etc., of a plant was said to have been administered to a woman who suffered from pain in the stomach and later died. Viscera and the root administered were sent for analysis. The root was found to be of a species of Aloes and the stomach contents answered to colour tests for resinons substances resembling the active principles of aloes.

TABLE I.

Summary of work done in the Medico-legal section during 1954 compared with that of 1953.

Nature of medico-legal cases	1954		1954	
	No. of cases	No. of articles	No. of cases	No. of articles
1. Blood stains ...	193	1,231	173	1,062
2. Seminal stains ...	27	91	27	69
3. Human poisoning ...	129	574	142	595
4. Cases under prohibition Act	66	141	130	132
5. Miscellaneous cases ...	14	49	11	20
Total ...	429	2,086	483	1,878

TABLE II.

A statement of the number of cases received and examined monthly for blood stains during 1954.

Month	No. of cases	No. of articles	No. of articles in which blood was detected	No. of articles in which blood was not detected
January ...	14	98	89	9
February ...	14	77	68	9
March ...	17	89	78	11
April ...	23	119	110	9
May ...	10	43	32	11
June ...	11	70	61	9
July ...	26	215	202	13
August ...	20	128	97	31
September ...	13	80	65	15
October . .	13	69	56	13
November ...	19	151	137	14
December ...	13	92	80	12
Total ...	193	1,231	1,075	166

TABLE III.

A statement of the number of rape cases received and examined for seminal stains during 1954.

Month	No. of cases	No. of articles	No. of cases positive	No. of cases negative
January	2	19	1	1
February	2	3	...	2
March	2	4	1	1
April	5	8	2	3
May	2	12	1	1
June	1	1	...	1
July	2	7	1	1
August	3	10	2	1
September	2	8	2	...
October	1	4	...	1
November	2	2	...	2
December	3	13	...	3
Total ...	27	91	10	17

TABLE IV.

A statement of the number of cases received and examined for human poisoning during 1954.

Month	No. of cases	No. of articles	No. of cases in which poison was detected	No. of cases in which poison not detected
January	7	30	4	3
February	7	44	2	5
March	14	53	7	7
April	10	46	5	5
May	6	21	3	3
June	23	100	5	18
July	5	25	2	3
August	7	31	2	5
September	17	70	9	8
October	14	72	10	4
November	9	40	6	3
December	10	12	7	3
Total ...	129	574	62	67

TABLE V.

A statement showing the number and nature of poisons detected during 1954. (Total 62)

Serial No.	Nature of poison	No. of cases 1954	No. of cases 1953
	Inorganic :—		
1	Arsenic 1	1	7
2	Copper 1, 2, 1, 1, 3	8	3
3	Iron	...	3
4	Mercury 1	1	6
5	Hydrochloric acid	...	1
6	Sulphuric acid 1, 1, 2	4	1
7	Nitric Acid 1, 1, 1, 1	4	4
8	Nitrate 1	1	...
9	Nitrite	...	...
10	Copper sulphate 1, 2, 1, 1	5	8
11	Magnesium sulphate	...	1
12	Corbon Monoxide 1	1	1
13	Iodine and Iodides	...	1
14	Potassium Bromide	...	1
15	Arsenic and Copper 1	1	...
16	Ammonia 1	1	...
17	Zinc Phosphide 3	3	...
	Total	30	37
	Organic :—		
1	Chloroform 1, 1	2	1
2	Phenol	...	1
3	Castor oil	...	1
4	Aconite	...	...
5	Alcohol 3, 2, 1, 2	8	5
6	Barbituric Acid 1, 1	2	3
7	Cyanides 1, 5, 1	7	6
8	Datura 2, 1, 1, 1, 1	6	6
9	Madar 1, 1	2	1
10	Oleander	...	...
11	Classiatora 1	1	...
12	D.D.T. 1	1	...
13	Opium alkaloids	...	...
14	Strychnine	...	1
15	Turpentine 1	1	...
16	Nitrodye	...	1
17	Enphorbia	1	...
18	Aloes 1	1	...
19	Miscellaneous	...	1
	Total	32	28

Table VI.

A statement showing the number of cases received and examined under prohibition Act during 1954.

Month	No. of cases	No. of articles
January	6	11
February	4	10
March	4	7
April	5	29
May	8	15
June	11	15
July	5	8
August	7	10
September	4	6
October	5	18
November	4	7
December	3	4
Total ...	66	141

Table VII.

A statement showing the number of miscellaneous cases received and examined during 1954.

Month	No. of cases	No. of articles	Remarks
January	...	...	
February	1	5	Explosives.
March	...	...	
April	...	...	
May	1	1	Opium.
June	3	7	Chemicals.
July	...	...	
August	1	4	Explosives.
September	4	12	
October	2	10	
November	...	...	
December	2	6	
Total ...	14	49	

PART II—Analytical Section.

During the year under report a total number of 2,078 samples were received and examined as against 1,884 samples in the previous year. Details are appended in Table IX. It is observed that 173 samples of milk out of a total of 380 samples (45·5 per cent) 46 samples of butter and ghee. Out of a total of 131 samples (35 per cent), 4 samples of oil. Out of a total of 62 samples (6·5 per cent) 5 coffee and tea. Out of a total of 12 samples (28 per cent) and 26 samples of other foods. Out of a total of 115 samples (22·6 per cent) was substandard. The respective percentages of substandard samples for the previous year were 59 per cent, 31 per cent, nil, nil, and 37·5 per cent.

Out of more than 100 towns in the Mysore State 32 towns contributed samples of food articles for analysis under the food adulteration Act. This is shown in Table X.

The Table No. XI shows the places from which water and sewage were received for analysis.

A study of the natural purification of sewage by certain protozoa started several years ago in collaboration of the Indian Institute of Science, Bangalore was continued this year.

Table IX.

Statement showing the number of samples received and examined in the analytical section during 1954 classified into different categories.

	Nature of samples		Total Number	Number standard	Number sub-standard	Per cent sub-standard samples
1	Milk	...	380	207	173	45·5
2	Butter and Ghee	...	131	85	46	35·0
3	Oil	...	62	58	4	6·5
4	Coffee and Tea	...	18	13	5	28·0
5	Other Food articles	...	115	89	26	22·6
6	Water	...	88	...	...	...
7	Water for residual chlorine	...	828	...	...	...
8	Sewage	...	96	...	...	...
9	Excise Samples	...	183	...	...	...
10	Biochemical analysis	...	30	...	...	...
11	Miscellaneous	...	147	...	...	...
	Total	...	2,078	...	...	...

Table XI.

Statement showing places from which water and sewage were received and examined during the year 1954.

Sl. No.	Place	Water for industrial and sanitary analysis	Water for residual chlorine	Sewage
1	Bangalore	7	828	96
2	Krishnarajapura	1	...	...
3	Yelahanka	1	...	...
4	Nandi hills	10	...	...
5	Manchenahalli (Chickballapur) ...	1	...	...
6	Chintamani	5	...	...
7	Kolar	4	...	...
8	Bangarpet	1	...	...
9	Chickballapur	1	...	...
10	Gudibanda	1	...	...
11	Mulbagal	1	...	...
12	Gubbi	2	...	...
13	Chicknaikanahalli	3	...	...
14	Chitaldrug	1	...	...
15	Hosadurga	1	...	...
16	Challakere	1	...	...
17	Molakalmuru	2	...	...
18	Banavara	3	...	...
19	Birur	3	...	...
20	Tarikere	4	...	...
21	Sakrepatna	1	...	...
22	Arasikere	6	...	...
23	Sakalespur	6	...	...
24	Jog	2	...	...
25	Sagar	1	...	...
26	Thirthahalli	1	...	...
27	Mysore	2	...	...
28	Saligrama	1	...	...
29	Bellary	1	...	...
30	Hagari Bellevl	2	...	...
31	Chellagarki (Bellary District) ...	1	...	...
32	Kamalapura, Bellary District ...	1	...	...
33	Mercara	2	...	...
	Total ...	81	828	96

PART II—Pyrethrum Section.

Due to the non-availability of raw pyrethrum as also due to the fact that pyrethrum extract is not being used for mosquito control measures on a large scale now, since it is replaced by DDT., the staff of this section was utilised for work in other direction. Wall scrapings that are being continuously received from all over the State for analysis for residual DDT content formed the major work of this section. In addition medicinal preparation needed by the Rural eye clinics held in different centres periodically were prepared by this section. Some of the staff in this section actively participated in rendering help and assistance in these clinics. Table No. XII summarises the work done in this section in comparison of work done during the previous year.

TABLE XII.

Statement showing the work of the Pyrethrum section during 1954.

Sl. No.	Item	Work done	
		1954	1953
1	Wall scrapings for residual D.D.T. content.	3,057 samples.	1,542 samples.
2	Technical D.D.T. for P.P. Isomer content.	5 ,,	8 ,,
3	Potatoes for D.D.T. content ...	27 ,,	...
4	Medicinal preparations for eye clinic (ointment).	12 lbs.	...
5	Medicinal preparations for eye clinic (solutions).	29½ glns.	...

For various reasons, increase of work being one proposals were submitted for an adequate increase of the staff in the Chemical Section with the result that a Gazetted post of a Chemist on Rs. 300—25—600 was created by Government in their Order No. M. 13796-98—P.H. 67-52-6, dated 1st December 1953 and the appointment of a suitable candidate was considered.

Budget.

The following is the budget and expenditure for 1954-55.

(*a*) Chemical Section		Budget Head 38. Medical, (e) Chemical Examiner					
Item		Grants			Expenditure		
		Rs.	a.	p.	Rs.	a.	p.
1 Pay of Officers	...	13,700	0	0	10,024	0	0
2 Pay of Establishment	...	4,555	0	0	4,525	8	0
3 Travelling Allowance	...	200	0	0	100	3	0
4 H.P.A. and D.A.	...	3,216	0	0	2,682	14	0
5 Contingencies	...	1,329	0	0	1,197	12	9
6 Apparatus and Chemicals	...	3,000	0	0	757	5	6
Total	...	26,000	0	0	19,287	11	3

(*b*) Pyrethrum Section		39. Public Health, (*e*) P.H. Establishment, B. District Charges					
		Rs.	a.	p.	Rs.	a.	p.
1 Pay of Establishment	...	2,722	0	0	2,357	0	0

Revenue.

The following statement shows the demand, collection and balance pertaining to the Chemical Examiner's office for 1954 as compared with the figures for the previous year 1952 and 1953 :—

Year	*Demand*			*Collection*			*Balance*		
	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.
1954 ...	3,482	8	0	1,121	0	0	2,361	8	0
1953 ...	2,290	0	0	1,588	0	0	702	0	0
1952 ...	1,786	0	0	675	0	0	1,111	0	0

A major portion of the arrears during 1952 and 1953 was due from the Davanagere Municipality. Every attempt was made for recoveries of the arrears by sending frequent reminders for adjustment or payment.

TABLE X.

Statement showing places which contributed for food samples under the food adulteration Act during 1954.

Sl. No.	Name of Place	Milk			Butter and Ghee			Oil			Coffee			Other food atricles			Grand total
		Standard	Sub-Standard	Total	Standard	Sub-Standard	Total	Standard	Sub-Standard	Total	Standard	Sub-Standard	Total	Standard	Sub-Standard	Total	
1	Bangalore Hospitals ...	43	45	88	3	1	4	4	...	4	...	...	...	5	5	10	106
2	Bellary Municipality ...	45	35	80	18	10	28	17	3	20	5	1	6	2	...	2	136
3	Bellary Sanatorium ..	10	...	10	19	...	13	23	1	24	...	...	...	50	1	51	98
4	Hospet Municipality ...	28	18	46	1	4	5	14	...	14	6	1	7	19	5	24	96
5	Harapanahalli ...	24	10	34	8	...	8	...	...	...	...	...	...	...		...	42
6	Shimoga ...	25	47	72	19	1	20	...	...	...	...	...	...	...	...	...	92
7	Davanagere ...	10	1	11	7	20	27	...	...	...	...	1	1	...	...	...	39
8	Mandya ...	2	2	4	...	...	...	...	...	...	...	...	...	...	...	...	4
9	Maddur ...	5	...	5	...	...	...	...	...	...	...	...	...	...	...	...	5
10	Mysore ...	6	4	10	...	...	...	...	...	...	...	...	...	...	...	...	10
11	Hassan ...	4	2	6	...	...	...	...	...	...	...	...	...	2	...	2	8
12	Sakalespur ...	...	1	1	...	...	...	...	...	...	...	...	...	2	...	2	3
13	Chickmagalur ...	...	2	2	...	...	...	...	...	..	...	...	...	...	...	...	2
14	Tarikere ...	1	...	1	...	...	..	...	...	...	...	...	...	...	...	...	1
15	Tumkur ...	1	1	2	...	...	...	...	...	...	...	...	...	...	...		2
16	Ranganathapur ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
17	Ajjampur ...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1
18	Kolar ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
19	Nagemandra ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
20	Bhadravathi ...	...	...	...	3	2	5	...	...	...	...	...	...	...	...	...	5
21	Shikaripur ...	...	...	...	8	2	10	...	...	...	...	...	...	..	...	...	10
22	Thirthahalli ...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	1
23	Shiralkoppa ...	..	...	...	...	1	1	...	...	...	...	...	...	...	...	...	1
24	Nelamangala ...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	2
25	Anekal ...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1
26	Srirangapatna ..	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1
27	Chitaldrug ...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	3
28	Channarayayatna ...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1
29	Devanahalli ...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	3	3
30	Chellakere ...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	2
31	Hiriyur ...	...	...	...	..	...	...	...	...	...	...	...	...	...	3	3	3
32	Hosadurga ..	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	2
33	Coorg ...	...	4	4	4	5	9	...	...	...	2	2	4	5	1	6	23
	Total ...	207	173	380	85	46	131	58	4	62	13	5	18	89	26	115	705

BACTERIOLOGICAL SECTION

SRI S. ANANTHASWAMY, B.SC., M.B.B.S., M.P.H., D.P.H.,
Superintendent of Laboratories.

Sri S. Ananthaswamy, Superintendent of Laboratories was in charge as the post of the Bacteriologist remained vacant. Dr. C. Cheluvarayan continued as Health Officer, Vaccine Section throughout the year.

PART I—Diagnostic and Serological Section.

A total number of 15,654 samples were received for examination during the year as against 13,515 samples during the previous year. These were for diagnostic tests, and the details are given in Table No. I.

Work related with the isolation of cholera vibrios and determination of their serological type which was started several years ago, was continued It was observed that the cholera vibrios isolated in this laboratory from samples received during this year from all over the State was preponderatingly of the *Ogawa type*. Assessment of the titre of agglutins in the sera of convaloscents from cholera was continued. A total number of 24 sera were examined. A study of the bacterial incitants other than cholera vibrios in the stools of cases of gastroentoritis resembling cholera was also continued.

Samples of human sera from cases of continuous fever, suspected to be enteric, were also analysed for Well Felix reaction using suspensions B. Proteus X19, X2, and XK, with the object of detecting clinical errors in differentiating between typhus and typhoid and also with the object of detecting the degree of non-specific agglutinin response of these sera to antigens of the Proteus group of organisms.

The method followed till now in this laboratory for conducting Wassermann reaction was modification of the Method No. 4 of the British Medical Research Council. In the method as was practised in this laboratory the unit volumes were delivered with Wright's capillary pipettes. This method of delivery of volumes was changed over to "Donald's droping method ", which is followed in many important laboratories in India. The advantage of this method consists in eliminating errors due to fatigue of the worker, elimination of personal errors and errors due to pipettes used.

Attempts were made to change the method of Bacteriological analysis of water to the method described by the British Ministry of Health. The necessary equipment, apparatus and forms for reporting are under preparation.

A total number of 191 persons were inoculated with anticholera and T.A.B. Vaccines and International Certificates issued.

PART II—Vaccine Section.

During the year under review the demand for cholera vaccine was very high as compared with the demand for the previous year. Fourteen lakhs seventy-seven thousand and three hundred ccs. of Cholera vaccine, 1,50,000 ccs. of Plague vaccine and 21,740 ccs. of Typhoid vaccine were manufactured as against 13,94,270, 1,56,750 and 37,900 ccs. respectively during the previous year. Details of the three vaccines manufactured and issued are shown in Table No. II. It is observed that the demand for the vaccines was high during the year and every attempt was made to meet this demand with the co-operation of the existing staff of the Vaccine Section.

PART III—Supply of Equipment and Reagents to the District Health Offices and Health Centres.

A total quantity of 196 lbs. of various stains, such as J.S.B. Stain, Geims's stain, Carbol-gentian violet, etc., and 160 litres of Buffer solution and other reagents were supplied. A large quantity of culture media, such as alkaline peptone water, tetra-thionate broth etc., were sent to the District Health Offices for the purpose of collection of material to be despatched to the laboratory for examination. Details regarding these supplies are shown in Table No. III.

PART IV—Media Section and Animal Room

A total quantity of 5122·4 litres in bulk and 1,450 tubes of culture media was prepared and issued for the use of the vaccine and Baceteriological sections and cut-stations. The quantity prepared is large due to heavy demand for cholera vaccine. The quantities of the various media prepared is shown in Table No. IV (*a*).

At present the media room is housed in a limited space and the need for greater accommodation was keenly felt. Proposals were being submitted for making the room, which houses the old equipment used for preparing pyrethrum extract, available for this purpose.

At present about 900 mice on an average are maintained for use for experimental work. These as needed for virulence and potency tests of plague cultures and plague vaccine, biological tests performed in the medico-logical room, and for pathogencity tests done in the bacteriological room. Table No. IV (*b*) shows details of the number of animals issued for use of the Laboratory.

PART V—Training of Public Health Laboratory Personnel.

During the year under report four Health Probationers were posted for a learning work for one week.

Six Junior Health Inspectors were posted for training in laboratory echni que, so that they may be posted to istrict Health laboratories when necessary.

EXPENDITURE

Bacteriological Section

		Rs.	a.	p.
1	Pay of Officers	...		
2	Pay of establishment	4,786	10	0
3	Travelling allowance	21	1	0
4	H.P.A. and D.A.	2,810	0	0
5	Contingencies	10,649	2	9
6	Apparatus and Chemicals ...			

Vaccine Section

		Rs.	a.	p.
1	Pay of Officers	2,942	9	0
2	Pay of Establishment	5,833	5	0
3	Travelling allowance	...		
4	H.P.A. and D.A.	4,695	10	0
5	Contingencies			
6	Apparatus and Chemicals ...	39,677	6	0

Revenue.—The following statement shows the demand, collection and balance pertaining to this section for 1954 as compared with the figures for the previous years 1952 and 1953.

Year	Particulars	Demand	Collection	Balance
		Rs. a. p.	Rs. a. p.	Rs. a. p.
1954...	Charges for Bact. Examn.	1,287 12 0	1,294 2 0	Nil*
	Sale of vaccines ...	29,667 6 0	17,807 11 0	11,859 13 0
	Other charges ...	*	*	*
1953...	Charges for Bact. Examn.	1,520 8 0	1,416 8 0	104 0 0
	Sale of vaccines ...	1,986 3 0	253 15 0	1,732 4 0
			+8,575 14 0 (old balance).	
1952...	Other charges ...	...	73 8 0	...
	Charges for Bact. Examn.	1,467 8 0	1,760 0 0	...
	Sale of vaccines ...	35,415 1 0	28,016 3 0	7,398 14 0

*Collection exceeds demand due to arrears collected.

TABLE I

Samples examined in the Diagnostic and serological sections during 1954.

Sl. No.	Particulars	Total Number	Number Positive	Number Negative	Received Broken
1	Blood samples for Wassermann reaction.	11,676	2,436	9,127	113
2	Blood samples for widal reaction ...	811	398	412	1
3	Blood samples for weil Felix reaction.	42	12	29	1
4	Blood samples for Differential count ...	26	...	...	...
5	Blood samples for absolute count ...	12	...	...	...
6	Blood smears for malaria parasites ...	400	28	372	...
7	Blood Cultures ...	...	...	...	...
8	Smears for diphtheria bacilli ...	18	2	16	...
9	Smears for Lepra bacilli ...	904	295	609	...
10	Smears for B. pastis ...	40	1	39	...
11	Smears for Gonococci ...	23	6	17	...
12	Sputum for T.B. ...	142	40	102	...
13	Sputum for Culture ...	...	...	...	...
14	Urine for qualitative and Micro Examn.	50	...	...	...
15	Urine for Culture ...	22	...	...	...
16	Pleural effusion for culture ...	...	...	...	...
17	Motion and Vomit for Cholera ...	524	59	463	2
18	Motion for Ova and amoebae ...	14	2	12	...
19	Motion for Culture ...	...	...	...	...
20	Water samples for bacteriological examination.	832	...	...	...
21	Water samples for Typhoid, cholera etc.	3	...	3	...
22	Water samples for Cyclops ...	26	7	19	...
23	Vaccine Lymph for examn. ...	53	...	...	...
24	Rideal Walker test ...	...	...	...	...
25	Dead rates for Plague ...	2	...	2	...
26	Autovaccines ...	6	...	...	...
27	Biopsy material ...	3	...	...	...
28	Blood for agglutination tests for cholera.	24	18	6	...
29	Pathogenicity test ...	1	...	...	...
30	Other examinations ...	...	...	...	...

TABLE II

Quantity of various vaccines manufactured and issued during 1954.

Sl. No.	Particulars	1954		1953	
		Quantity manufactured	Quantity issued	Quantity manufactured	Quantity issued
		ccs.	ccs.	ccs.	ccs.
1	Anti-cholera Vaccine.	14,77,300	14,29,000	13,94,270	15,16,920
2	Anti-plague vaccine...	1,50,000	1,22,600	1,56,750	65,400
3	T.A.B. vaccine ...	21,730	37,182	37,900	30,050

TABLE III

Quantity of stains and Reagents supplied during 1954.

Particulars	Quantity
Stains	192 lbs.
Reagents (Buffer solutions)	160 litres.
Culture media—(*a*) Tubes, (*b*) Litres (Vaccine Instt.) ...	...

TABLE IV(*a*)

Culture media prepared in media room during 1954.

Particulars	Quantity
Agar bottles	1123·7 litres.
Broth for plague vaccine...	191·0 litres.
Other media	1,450 tubes.
Saline	2314·5 litres.

TABLE IV(*b*)

Number of mice issued for tests during 1954.

Particulars	Number of animals
Virulence tests	20
Potency tests	45
Superintendent, Vaccine Institute	28(pups).
Medicolegal room and other tests	52
To indentors	24
Total	169

Nutrition Survey Section.

The section continued as per Government Order No. M. 17501-502—P.H. 66-53-6, dated 8—13th January 1954.

The sanctioned and existing establishment of the section during the year was as follows :—

	Sanctioned	*Existing*
1.	One Health Officer II Class.	One Health Officer I/c.
2.	One Chemist.	Vacant.
3.	Two Senior Laboratory Technicians.	Two Sr. Lab. Technicians.
4.	Two peons.	Two peons.

Dr. K. Krishnamurthi Rao B.Sc., M.B.B.S., D.P.H., Assistant to the Chemical Examiner was in charge of the section till 30th October 1954 and handed over charge to Dr. S. Ananthaswamy, B.Sc., M.B.B.S., D.P.H., M.P.H., Chemical Examiner to the Government of Mysore and Superintendent of Laboratories on the afternoon of 30th October 1954 consequent on his deputation to Madras for training as per Memo No. C. 6-76, dated 29th October 1954 of the Director of Public Health in Mysore, Bangalore.

Field Work.

Withdrawal of assistance from the Rockefeller Foundation from 1st January 1954 and absence of a full time Health Officer for the section, made field survey not possible during the year. However the assistance of the section was utilised by the Health Officer, Health Training Centre, Ramanagaram, in conducting Helminthic survey in a few villages of the Health Centre area. About 400 samples of fæces were examined for helminthic Ova and the results of analysis were sent to the Health Officer, Health Training Centre, Ramanagaram.

Laboratory Studies.

A study on the comparative nutritive values of Cereals grown in Malnad and Maidan parts of Mysore State was undertaken during the year and 9 samples have been used for feeding albino rats. The study was under progress.

Chemical analysis of the soil on which the cereals were grown is being conducted.

VACCINE INSTITUTE.

Dr. V. N. Krishnamurthy, M.D. (Munich).

Superintendent.

(Figures in the Brackets, represent the figures for the preceding year, *i.e.*, 1953.)

Dr. V. N. Krishna Murthy continued to be in charge of the Institute during the year.

Supply of Calves.—Calves required for the Institute during the year under report were as usual, supplied by an approved Contractor till the end of the year. Six (nil) calves remained on 1st January 1954 and 40 (30) calves were

purchased during the year under report making in all 52 (30) calves of which 44 (23) were buffalo calves and the rest 8 (7) cow calves. All the calves after vaccination and collection of 'Pulp' were sold as "Done Calves". Eighteen (6) calves remained waiting at the end of the year.

Cost of Calves.—The gross cost of the calves purchased during the year under report was Rs. 2,140. The net cost of the calves purchased after deducting the Sale Proceeds of the "Done Calves" was Rs. 1,912 giving an average cost of Rs. 47-12-0 per calf.

Vaccination of Calves.—Thirty (17) Buffalo calves and 4 (7) Cow calves were vaccinated during the year under report, quantity of Pulp collected was 16,519 grs. (8,314 grs.) which according to the present rate of dilution would be about (2·5 million) 1·5 million cases.

Laboratory Tests.—Streptomycin-Terramycin treatment Technique was used in the purification of all samples that have been produced for issue in the Institute; Only "Seed" lymph was treated with chloroform.

TEST OF VACCINE LYMPH

1. *Laboratory.*—

Sterility Test	...	237 (107)	smaples were tested.
Haemolytic Test	...	201 (90)	do
Anaerobic Test	...	40 (46)	do
Pathogenicity Test	...	27 (24)	do
Potency Test	...	434 (118)	do
B. Coli Test	...	29 (48)	do

2. *Clinical.*—Seventy-seven (45) purified and Bacteriologically tested lymph samples fit for issue were tried 125 (91) times on 2,016 (1,333) children in the Model Range.

Vaccination.—In the Model Range Villages 2,016 (1,333) Primary Vaccinations were done during the year under report. Out of these, only such of the samples of lymph which gave 100 per cent success rate were released for general use in the field.

A 1,867 (2,832) vaccination were conducted at the Institute premises during the year. Re-vaccination certificates were granted on request.

Issue of Lymph.—A total quantity of lymph enough for 14,57,880 (13,94,950) cases were issued during the year.

The demand for vaccine lymph from several indenting officers in the State including Civil Station, Bangalore, Malaria Officer, Coorg and Bellary District was complied with in full.

3. *Health of Calves.*—The health of calves during the year under report was on the whole satisfactory.

Sale of Done Calves.—Thirty-four (24) calves were sold as "Done Calves" during the year 1954. The amount realised therefrom as per accepted tender rate was Rs. 228 (Rs. 225) the average cost per calf is Rs. 6-12-0 (Rs. 9-6-0). Arrangements for the removal of Done Calves from the Institute premises by the accepted Contractor as and when available were continued during the year under report.

Income and Expenditure.—The following statement shows the income and Expenditure for the calendar year 1954 as compared with that of the last year *i.e.* 1953.

Items	1954	1953
	Rs. a. p.	Rs. a. p.
Income Realised—		
1. Sale of Vaccinated calves ...	228 0 0	225 0 0
2. Sale of vaccine lymph ...	91,101 0 0 (Including arrears)	17,141 13 0
3. Other receipts (Sale of done experimental animals etc.)	99 8 0 (collection during 1954)	105 8 0
Income to be Realised—		
Sale of vaccine lymph ...	149,539 14 8	56,247 4 0
Includes collection towards arrears ...	...	73,714 14 0

Items	1954	1953
	Rs. a. p.	Rs. a. p.
Expenditure—		
1. Salaries (Pay of officer) ...	4,735 0 0	4,428 3 0
2. Establishment Pay ...	11,719 0 0	10,029 15 0
3. Travelling allowance ...	443 0 0	141 14 0
4. Fixed Travelling allowance ...	199 6 0	180 0 0
5. High Price and D.A. ...	7,079 0 0	6,164 0 0
Contingencies—		
(*a*) Cost of calves and other experimental animals.	1,660 0 0	959 11 9
(*b*) Feeding Charges ...	6,763 14 0	6,163 2 7
(*c*) Contingencies ...	19,824 1 6	9,408 2 3
(*d*) Postal charges ...	7,400 0 0	6,480 0 0
	59,823 5 6	43,955 5 7

Cost of Vaccine Produced.—The cost of vaccine lymph produced during the year under report works out to Re. 0-0-4 per case.

Vaccination Training.—The usual course of lecture demonstration in vaccination work was delivered to the Final M.B.B.S. and Final L.M.P. students of the Medical College and Medical School respectively. The Pupil Compounder of the Medical Department were given the necessary training vaccination during the year.

Research Activity.—Investigation on 'Immunity studies' are being continued.

In view of the reported incidence of Virus Encephalitis in certain parts of India, a Virus Committee was formed with the Director of Public Health

as the Chairman. The Superintendent, Vaccine Institute was asked to undertake the work. With the limited facilities available at the Vaccine Institute and Public Health Institute, materials from patients from Bellary and Mysore were examined for the Viral Aetiology but with negative results. The Government in their letter No. M. 17050-52—PH. 96-54-2, dated 25th November 1954 kindly sanctioned deputation to the Superintendent, Vaccine Institute, to the Virus Research Centre, Poona, in order to study and discuss the activities of that Institute which could help the Virus enquiry in our State.

General.—Elphor Apparatus (Paper Electorphoresis apparatus) Warburg apparatus and freez dry equipment for seriological studies and diagnosis of Virus diseases were purchased.

Though the work of the Institute is on modern lines, the necessity for more equipment and a modern building to house the laboratory and experimental animals is keenly felt in view of the progressive increase in demand for vaccine Lymph year after year and investigations on viruses.

BUREAU OF EPIDEMIOLOGY

Dr. E. ANANTHA RAO, B.SC., M.B.B.S., D.P.H.,
Superintendent.

Dr. S. Seshagiri Rao continued to be the Superintendent up to 14th October, when Dr. E. Anantha Rao took charge of the Bureau and continued to be the Superintendent during the remaining part of the year.

The Superintendents were on tour for 48 and 24 days respectively in connection with the control of epidemics and routine inspections.

Personnel.—The staff sanctioned to the Bureau under the "Cyanogas Unit" remained the same as in the previous years.

The Junior Health Inspectors attached to the Cyanogas Unit were as usual deputed to work in several districts according to the needs, and continued to work under the respective District Health Officers. Recommendations have been made for the continuance of the Unit from 1st July 1955 for a further period of two years.

Epidemic control.—Measures for the control of epidemic diseases, *viz.*, Plague, Cholera and Small pox were undertaken in all the infected areas with the help of the District Health Officers, District Medical Officers, the Medical Officers of Health of Units, Assistant Surgeons in charge of L,F. Dispensaries and the special duty Assistant Medical Officers of Health, the Special Health Inspectors of the Bureau, and the District Board Health Inspectors.

Plague.—Three hundred and two attacks with 111 deaths from Plague were reported from 4 Districts of the State, *viz.*, Kolar, Mysore, Hassan and Bangalore, and the other 6 districts remained free from the infection, as against 128 attacks with 58 deaths in the previous year. Of the four districts, only Kolar District reported heaviest incidence. As per Statement "A" 75 villages and 2 towns have reported plague infection against 38 villages and 4 towns during the previous year.

STATEMENT 'A'

Three years Statement of Plague.

Districts	Year	Attacks	Deaths	Towns	Villages	Inoculations	Quantity of Vaccine supplied by Public Health Institute
Bangalore Corporation.	1952	1	1	1	0	3,828	0
	1953	0	0	0	0	826	
	1954	0	0	0	0	0	0
Mysore City	1952	1	1	1	0	0	
	1953	0	0	0	0	0	
	1954	0	0	0	0	0	2,000 c.c.
Kolar Gold Fields	1952	2	0	1	0	0	
	1953	0	0	0	0	0	
	1954	3	6	1	0	4,922	13,000 c.c.
Bangalore	1952	26	4	0	8	1,734	
	1953	2	2	0	2	0	
	1954	4	0	0	1	315	0
Chitaldrug	1952	0	0	0	0	0	
	1953	0	0	0	0	0	
	1954	0	0	0	0	0	10,000 cc.s.
Hassan	1952	59	20	1	12	22,202	
	1953	9	6	0	2	707	
	1954	2	1	0	1	678	8,000 cc.s.
Chikmagalur	1952	0	0	0	0	0	
	1953	0	0	0	0	0	
	1954	0	0	0	0	0	0
Kolar	1952	78	36	0	21	2,494	
	1953	39	19	0	9	3,205	
	1954	258	100	1	70	25,359	62,000 cc.s.
Mandya	1952	18	9	0	6	1,380	
	1953	2	0	0	2	359	
	1954	0	0	0	0	162	0
Mysore	1952	389	181	2	104	24,346	
	1953	75	33	3	23	4,800	
	1954	7	4	0	3	102	0
Shimoga	1952	0	0	0	0	0	
	1953	1	0	1	0	2,300	
	1954	0	0	0	0	0	20,000 cc.
Tumkur	1952	13	3	0	6	0	
	1953	53	0	0	0	0	
	1954	0	0	0	0	0	0
Bellary	1952	0	0	0	0	0	
	1953	0	0	0	0	0	
	1954	0	0	0	0	315	5,700 cc.
Total for the State...	1952	587	255	6	157	55,999	
	1953	123	58	4	38	11,371	
	1954	302	111	2	75	31,853	1,20,700 cc.

The four taluks, Srinivasapur, Bangarpet, Malur and Mulbagal of Kolar District which border the Madras Province appear to be the pockets of plague infection. It is also observed that those small areas of Kolar District which receive their routine anti-malarial D.D.T. spraying under the N.M.C. programme are free from Plague infection. As such, intensive indoor D.D.T. or Gammexene spraying is considered as the efficient anti-plague measure in the above 4 taluks, at a total estimated cost of Rs. 47,950.

One thousand six hundred lbs. of Cyanogas dust was indented for use throughout the State as against 1,900 lbs. in the previous year. Of late, cyanofumigation, however, is not employed for prevention of plague since in its place in door residual spraying with D.D.T. has been taken up for plague control, The Distrct Health Officers were requested to undertake D.D.T. spraying in all the villages that reported either the incidence of rat-fall or human cases, in their districts.

During the year under report, 31,853 anti-plague inoculations were done as against 11,371 in the previous year.

The ectoparasite survey was continued with a view to ascertain the potency of the residual D.D.T. in the areas treated with D.D.T. as a plague control measure. Rodent ectoparasites were collected both from sprayed and non-sprayed areas in Gundlupet, Terakanambi, Hangala Heggaddevankote. Hampapura, Nisna and Saragur of Mysore District and were examined in the entomological laboratories of the Malaria Training Centre, Mandya. The rodents and fleas thus collected were assayed in respect of their species and the indicies were worked out.

Of the fleas collected 34·25 per cent formed Xenopeela Cheopis 48·6 per cent of X astia and 17·1 of X per cent forazilienst so that X astia happens to be the dominant rodent flea in the area. The period from October to end of December was marked by a low prevalence of fleas.

Cholera—Cholera which prevailed during 1953 continued in a more extensive and severe form, more or less in all the districts of the State with the exception of Kolar, Hassan and Bangalore with their minimal incidence.

Three thousand Nine hundred and three Attacks with 2,073 deaths of Cholera were reported against 3,236 attacks with 1,570 deaths in the previous year. Twenty-seven Towns and 689 villages reported infection, as against 24 towns and 490 villages during 1953. Chikmagalur, Chitaldrug, Shimoga, Mandya and Mysore, reported heavy incidence. Five lakhs eighty-nine thousand and ninety-seven persons were protected as against 9,00,169 in the previous year.

All the villages which have reported infection and a belt of 5 miles around them were taken up for anti-cholera work. A number of Assistant Surgeons, Assistant Medical Officers of Health and Health Inspectors were drafted from non-infected areas to the places of infection and also to the jatras where anti-cholera measures required to be taken on special duty to supplement this staff. Prophylactic inoculations were also undertaken in many of the non-infected villages in the neighbourhood of infected villages, as a precautionary measure.

Nearly all the jatras scheduled to take place were conducted, though many of them were initially advised to be prohibited, in view of the existing cholera infection in the surrounding areas, but later permitted by Government on the advice of the Department who instituted all necessary steps in the matter of maintaining adequate sanitary requisites mass protection by

anti-cholera inoculations, closure of all public resorts in proportion to the needs of the respective local conditions for periods ranging from 2 to 8 weeks, which have eventually resulted in keeping these congregations free from any incidence of cholera. Seventy jatras, both of major and minor type, have taken place in the State and 13 of them were prohibited as shown below :—

STATEMENT 'B'

Statement of Cholera during 1952 to 1954 (Calendar Years).

Districts	Year	Attacks	Deaths	Towns	Villages	Inoculations	Quantity of Vaccine supplied by Public Health Institute
Bangalore Corporation.	1952	9	2	1	0	2,589	
	1953	83	14	1	0	204,762	
	1954	4	0	1	0	11,800	23,300 cc.
Kolar Gold Fields ...	1952	31	9	1	0	0	
	1953	31	15	1	0	0	
	1954	11	6	1	0	6,551	0
Mysore City ...	1952	0	0	0	0	6,389	
	1953	5	1	1	0	4,783	
	1954	14	4	1	0	18,578	61,800 cc.
Bangalore District...	1952	318	158	3	75	36,886	
	1953	634	294	10	118	123,095	
	1954	185	103	2	47	11,536	
Chitaldrug ...	1952	16	7	1	3	0	
	1953	142	70	2	30	5,025	
	1954	622	343	3	112	33,878	1,73,500 cc.
Hassan ...	1952	87	49	2	28	18,548	
	1953	101	92	2	34	142,126	
	1954	107	56	2	19	23,068	45,000 cc.
Chikmagalur ...	1952	114	61	2	36	13,222	
	1953	108	61	1	21	20,676	1,05,000 cc.
	1954	730	369	5	85	100,332	
Kolar ...	1952	432	227	4	87	29,377	
	1953	903	446	5	117	91,200	
	1954	22	16	0	8	1,955	0
Mandya ...	1952	204	109	2	47	44,192	
	1953	357	194	1	54	67,498	
	1954	606	357	5	120	115,423	1,15,000 cc.
Mysore ...	1952	347	145	5	61	47,757	
	1953	362	162	4	84	116,193	
	1954	373	219	4	67	72,480	2,35,000 cc.
Shimoga ...	1952	265	94	3	22	86,714	
	1953	20	6	0	3	6,911	
	1954	616	294	5	118	130,861	
Tumkur ...	1952	11	8	0	3	1,618	
	1953	149	76	2	29	46,880	
	1954	246	125	1	50	37,928	1,26,000 cc.
Bellary ...	1952	...	...	...	...	...	
	1953	341	139	4	29	71,020	...
	1954	367	181	0	63	24,706	61,800 cc.
Total for the State...	1952	1,834	869	22	362	280,292	
	1953	3,236	1,570	24	490	900,169	
	1954	3,903	2,073	27	689	589,097	11,84,800 cc.

Statement of Jatras during 1954

	Jatras conducted	*Jatras prohibited*
Bangalore	10	1
Chitaldrug	6	...
Hassan	8	...
Chikmagalur	5	5
Kolar	5	...
Mandya	4	5
Mysore	10	...
Shimoga	5	2
Tumkur	9	...
Bellary	8	...
Totals for the State ...	70	13

Bacteriological Reports of Infective Motion and Vomitus samples during 1954

District	Number of Samples	Morphologically		Culturally		Remarks
		Positive	Negative	Positive	Negative	
	(Tested)					
1. Bangalore ...	190	5	185	24	163	*
2. Chitaldrug ...	13	0	11	3	10	
3. Hassan ...	24	3	19	1	16	
4. Chikmagalur ...	70	6	57	11	48	
5. Kolar ...	3	0	3	0	3	
6. Mandya ...	38	1	34	4	30	
7. Mysore ...	36	2	30	5	24	
8. Shimoga ...	100	1	91	11	61	
9. Tumkur ...	23	1	21	4	19	
10. Bellary ...	12	2	10	2	10	
Total ...	509	12	461	65	384	

*The difference between the total and Morphological and cultural reports being due to some of the reports not being received.

Other specific conditions as the bacteriological quality of water, and local carrier conditions and other allied factors which definitely favour recurrence of cholera outbreak in certain pockets is under careful study of the Bureau. As per reports received, 509 samples of infected materials as motions and vomits from patients were analysed in the Public Health Institute, Bangalore and the details of which are furnished in the above statement.

Small-pox.—One thousand and eighty-five attacks with 288 deaths from Small-pox were reported during the year, as against 1,597 attacks with 259 deaths in the previous year. One lakh eighty-four thousand seven hundred and thirty-five persons were protected against small-pox during the year as against 9,16,264 in the previous year. Incidence of smallpox was reported from 13 towns and 137 villages, and prompt action was taken to check the infection by protecting the persons in all the villages and towns and their surrounding areas.

Under the mass vaccination drive taken up in the districts, a total of 5,92,850 vaccinations were done. Of these, 1,80,833 were primary and 4,12,017 re-vaccinations against previous year total of 6,21,123 of which 1,82,778 were Primary and 4,38,345 re-vaccinations. The following Statement furnishes the details vaccinations conducted in the State—

3 Years Statement of Smallpox (Calendar Years).

Districts	Year	Attacks	Deaths	Towns	Villages	Vaccinations	5-year Scheme Mass Vaccination Drive	
							Pri.	Re.
Bangalore Corporation	1952	305	101	...	0	1,91,518	...	...
	1953	313	60	1	0	1,45,971	...	...
	1954	51	16	1	0	1,15,504	...	...
Mysore City ...	1952	57	12	1	0	49,783	...	...
	1953	7	5	1	0	20,267	...	...
	1954	0	0	0	0	20,799	...	...
Kolar Gold Fields.	1952	55	14	1	0	...	...	...
	1953	23	2	1	0	47,056	...	...
	1954	6	1	1	0	29,813	...	...
Bangalore District.	1952	202	43	2	28	22,245	...	...
	1953	172	34	2	36	125,094	...	...
	1954	84	10	3	12	1,060	40,345	51,283
Chitaldrug ...	1952	214	72	1	13	...	...	...
	1953	78	13	0	13	7,814	...	...
	1954	312	73	0	27	3,532	1,937	9,450
Hassan ...	1952	28	12	1	7	43,137	...	...
	1953	61	12	1	12	39,946	...	...
	1954	83	12	2	21	6,070	14,081	29,201
Chikmagalur ...	1952	124	64	2	36	49,922	...	...
	1953	219	32	2	44	87,848	...	...
	1954	23	1	1	9	1,854	20,637	61,035
Kolar ...	1952	485	87	3	34	81,172	...	...
	1953	211	40	1	28	1,14,884	...	...
	1954	177	59	0	19	1,965	30,619	76,768
Mandya ...	1952	268	41	1	32	43,729	...	...
	1953	407	43	6	61	1,01,190	...	...
	1954	74	20	0	11	2,545	10,349	37,676
Mysore ...	1952	46	8	2	13	1,230	...	...
	1953	30	3	0	11	1,06,117	...	...
	1954	12	1	0	4	...	34,134	71,638
Shimoga ...	1952	105	13	3	16	44,206	...	...
	1953	18	1	3	6	82,190	...	...
	1954	88	6	2	12	1,538	27,776	70,790
Tumkur ...	1952	106	55	3	3	5,018	...	...
	1953	58	14	1	6	37,907	...	...
	1954	10	1	0	3	55	855	3,176
Bellary ...	1952	...	...	...	...	...	...	...
	1953	...	...	...	...	...	...	...
	1954	165	28	3	19	...	(Not received.)	
Total for the State.	1952	1,995	522	20	184	5,30,936	...	...
	1953	1,597	259	16	217	9,16,284	...	...
	1954	1,085	223	13	137	1,84,735	1,81,833	4,12,017

Blind Relief Work in Rural Areas.—The Mysore State Ophthalmological Society in co-ordination with this Bureau undertook active curative and preventive mass treatment regarding the various Eye diseases. During the year under report, two eye clinic camps were conducted at Konanur, Arkalgud Taluk, in Hassan District during April 1954 and at Tirthahalli in Shimoga District during October 1954. The Department having given its initial advice in the matter, extended its co-operation by supplementing technical men, materials in addition to the administrative help required during the working of these camps. The Deputy Director of Public Health and the Superintendent, Bureau of Epidemiology paid visits to the camps to review and watch the progress.

One thousand eight hundred and sixty-five persons suffering from various eye diseases were seen, advised and treated. Four hundred and eighty-eight cases from this group were chosen for operative treatment, showing thereby about 26·1 per cent of the group required operative treatment. The following statement furnishes the details of cases coming under operative treatment :—

Statistics of Treatment in Eye Clinic Camps (1954).

Serial No.	Operations and Treatments	Konanur			Thirthahalli		
		No. Examd.	No. Operated	Total	No. Examd.	No. Operated	Total
1	Cataracts ...	135	109	244			
	,, Extra Capsular ...	...	...	...	54	54	54
	,, Intra Capsular ...	...	...	...	53	53	53
	,, Juvenile ...	...	...	...	9	9	9
	,, After cataracts ...	...	...	...	6	6	6
2	Chronic Dacryocystitis ...	39	16	55	18	18	18
3	Adherant Leucoma ...	53	15	68	48	48	48
4	Staphyloma ...	3	1	4	...	...	...
5	Peterygeum ...	2	4	6	3	3	3
6	Tumours ...	4	4	8	4	4	4
7	Entropions ...	3	3	6	1	1	1
8	Chalazion ...	2	3	5	1	1	1
9	Ulcers & Injuries ...	13	1	14	1	1	1
10	Foreign Bodies ...	1	1	2	1	1	1
11	Refractive Errors ...	59+ 151	...	59+ 151	...	...	...
12	Epiphora ...	31	...	31	...	...	...
13	Aphakia ...	17	...	17	...	...	...
14	Glancoma ...	10	...	10	...	...	...
15	Phthisis Bulbi ...	26	...	26	5	5	5
16	Coloboma of iris and choroid ...	15	...	15	...	...	...
17	Chromic Iriocyclitis ...	24	...	24	...	...	...
15	Retinitis pigmentoss ...	5	...	5	...	...	...
19	Nutritional diseases ...	47	...	47	...	...	...
20	Chronic gramular Ophthalmia ...	93	...	93	...	...	...
21	Chronic conjunctivities ...	75	...	75	...	...	...
	Total ...	808	157	965	204	204	204

Guineaworm Control.—The Senior Health Inspector of this Bureau continued to be in charge of the Guineaworm control work in Chitaldrug District, under the supervision and direction of the District Health Officer, Chitaldrug, as in the previous years. He was assisted by two peons. The Health Inspector was on tour for 90 days, visited 90 villages, examined 77 step wells, re-stocked them with fish and chlorinated all the wells. The infection was reported from 33 villages, *vide* statement below :—

District	Taluk	No. of Villages	No. of cases seen	No. of cases treated	Remarks
Chitaldrug ...	Jagalur ...	1			
	Malebennur ...	1			
	Davanagere ...	1	All		
	Molkalmur ...	1			
Shimoga ...	Sorab ..	15	132	132	Good
	Shikaripur ...	14	59	59	do
	Total ...	33	*...	191	Good

*All cases of Chitaldrug+191.

All Guineaworm patients were treated by the District Health Officer, Chitaldrug successfully by applying Ficus Bengalensis treatment, and also experimental treatment with Hetrazar Tablets. Recommendations have been sent for permanent measures for conversion of step wells into draw wells.

Leprosy Control.—Dr. D. A. Lakshmana Rao took charge on 24th April 1954 and continued to be the Senior Leprologist of the Public Health Department and Medical Officer in charge of the Central Leprosarium, Bangalore, during the period under report. He was assisted by the Junior Leprologist in the implementation of the Leprosy Control Programme in the State. A proposal for expansion of Leprosy Control operations in the State has been submitted to Government for sanction. Three Doctors of this Department were deputed for Leprosy training at Calcutta during September 1954. Two Health Inspectors from Bellary District who were trained in Leprosy work in the Central Leprosarium, Bangalore, continue to work in their respective places in the District.

The Senior Leprologist was on tour for 28 days and visited 24 villages from where reports of existence of Leprosy were received. During these visits, 78 patients were examined, advised and treated.

B.C.G. work.

Year	Total Tested	Positives	Negatives	B.C.G. Vaccinated	Absentees
1954 ...	6,45,366	1,90,625	2,84,586	2,82,901	1,70,095

During the year under report, a total of 6,45,366 persons were tested of which 1,90,625 were positives and 2,84,586 negatives. Two lakhs eighty-two thousand nine hundred and one persons were B.C.G. vaccinated and 1,70,095 were absentees.

Special Activities—Handflush Latrines.—Two thousand four hundred and fifty-seven hand-flush latrines were introduced in the State as shown below in order that the rural health level may be stepped up as a means of minimising incidence of Fly Borne Diseases in the Rural Areas. This was found to be most economic way to improve the sanitation of the rural areas and to raise the rural health level.

Hand Flush Latrines 1954.

Sl. No.	*Districts*	*No. of Hand-flush Latrines completed.*
1	Shimoga	998
2	Chickmagalur	534
3	Mysore	267
4	Hassan	258
5	Mandya	244
6	Bangalore Ramanagaram	65
7	K.G.F. Area	52
8	Chitaldrug	37
9	Tumkur	2
	Total ...	2,457

Other Activities.—Demonstrative Health Propaganda was undertaken during the Congress Exhibition at Bangalore during April 1954 and Dasara Exhibition at Mysore, during September 1954 and also during various Jatras in the State.

B. C. G. VACCINATION SCHEME

SRI B. A. SRINIVASA IYENGAR, M.B.B.S., D.P.H., M.P.H.,
Supervising Medical Officer.

Sri B. S. Ramanna, B.SC., M.B.B.S, held charge of the Office of the Supervising Medical Officer, B. C. G. Vaccination Scheme till 2nd August 1954 when Sri B. A. Srinivasa Iyengar took over charge from the officer. This change was the outcome of transfer of B.C.G. work from the Medical to the Public Health Department.

Field work.—This consisted of Planning, propaganda in all stages of work, testing with Tuberculine and protecting with B.C.G. Vaccine such of those who were negatives, *i.e.*, those showing induration (after intra-dermal tuberculin injection) of less than 5 m.m. diameter.

During August 1954 it was observed that the old system of three technicians working in rotation, *i.e.*, a tester, a reader and a vaccinator was not very efficacious inasmuch as there was waste of man power affecting

progress and output of work. After careful study of individual's work it was proposed to entrust each technician with the job of testing, reading and vaccination. The factors considered were :—

1. Each technician had enough confidence to carry out work independently.

2. Voluntary help was forthcoming in almost all the villages.

3. The reader could easily perform the vaccinations unless there was huge rush at the centres.

4. There would be healthy competition among the workers.

5. Each technician could be assessed well.

6. Each could do health education as well.

Therefore in view of the obvious advantages the system of rotation was stopped and 'single technician centres' were adopted. This resulted in output of work without sacrificing efficiency and the target set by the Central B.C.G. Organisation was nearly reached during the months of September, October and November and it was exceeded during the month of December.

The monthwise progress is given below.

Month	Tested	Positives	Negatives	Vaccinated	Absent
January ...	33,918	5,810	15,924	15,766	12,184
February ...	25,691	5,022	11,996	11,866	8,673
March ...	18,298	3,654	9,901	9,715	4,743
April ...	16,564	3,212	9,424	9,340	3,928
May ...	75,428	27,954	30,929	30,828	16,545
June ...	104,120	38,793	41,802	41,652	23,525
July ...	16,023	3,488	5,796	5,776	6,739
August ...	42,888	10,087	17,881	17,715	13,920
September ...	98,389	30,999	44,220	43,998	23,170
October ...	91,287	25,864	40,803	40,548	24,620
November ...	6,534	1,800	3,042	3,036	1,692
December ...	116,227	32,017	52,905	52,678	30,305
Total ...	645,367	234,700	284,623	282,918	170,044

Population covered during 1954	...	12,29,041 (1951 census)
Total tested	...	6,45,367
Percentage of tested	...	52·5
Percentage of vaccinated against tested	...	43·8
Percentage of positives against completing test		36·2
Percentage of absentees as against tested	...	26·3

The mass campaign covered the entire district of Shimoga, parts of Chikmagalur, Kolar and Mysore Districts during the year under report.

Special Activities.—The teams went on invitation to Coimbatore during the month of November having obtained permission from the State Government and participated in the Demonstration *cum* Conference Mass campaign.

The Mysore State Teams stood first among the various teams in the performance of work. The tests, etc., were as under :—

Total No. tested 85,262 : among whom 44,944 were positives and 28,213 were negatives.

Total No. vaccinated ... 28,062

Transport and other maintenance.—This was the worst problem of the whole scheme, in that the number of breakdowns were abnormal.

There was the difficulty to obtain spare parts. This was partly overcome by indenting for the parts through the Department. The list supplied by the UNICEF is not complete and moreover it has not taken to account the various models of jeeps and station wagons loaned to the States. The Superintendent, Bureau of Malariology did a great job in getting many of our vehicles roadworthy in spite of short notice and heavy engagements at the workshop. The real answer seems to be that each technician develops the 'Owner feeling' and this is now being slowly inculcated into the minds of the staff.

Public Speaking Equipment.—The types of microphones, University speakers and the amplifiers supplied do not stand the tropical conditions. This was the general complaint at the Conference at Coimbatore. Planning must be accompanied with effective propaganda at all stages and good results depend upon this. Of course, group talks are equally important but these come in probably as a second stage in consolidation of the results. The post of Propagandist having not been filled in, the responsibility of the team leaders are increased. It is extremely necessary to conduct film shows in bigger villages, towns and schools. The Bureau of Health Education cannot answer the demands of the Mass campaign as the staff and the vehicle have to tour all over the State. This is all the more felt increasingly important nowadays due to the hot controversy raging. The B.C.G. Mass campaign should have its own propaganda Unit. It is learnt that the UNICEF are prepared to allot a vehicle if a propagandist is appointed and they are informed. The advantages of such an appointment are many considering the probability that the States would be finally owning all the equipment now loaned to them. At present, in the reorganisation the two posts of Senior Health Inspectors *cum* team leaders could as well be called Propagandists without extra cost to the Government; the equipment could be used in the areas.

Expenditure.—During the year under report a total amount of Rs. 1,09,598-5-6 was spent; this included Officers' Pay, T.A., Pay of Establishment, T.A., contingent and other expenditures.

Per capita cost on the basis of actual tests conducted was Re. 0-3-4. This cost per tuberculin test should have been much less if the progress of work had been more uniformly high throughout the year.

B.C.G. Vaccine and Tuberculin.—As before, the Kings' Institute, Guindy, Madras continued to supply these on free issue basis but transport cost paid by the State Government. During the year a total quantity of 1,84,000 c.c. of purified Protein Derivative Tuberculin and 1,20,000 c.c. of B.C.G. Vaccine were received. Compared to the number of tests and vaccinations done, there is a big waste. Wastage was due mostly to time-barring of the preparations which again was due to numerous breakdowns of vehicles—at

times these have forced postponement of work for varying periods of 2 to 4 weeks at a time. Nowadays this is being taken care of by informing the Director, B.C.G., Lab. not to supply the standing quota. One of the main problems connected with the preservation of tuberculin and B.C.G. Vaccine is refrigeration under conditions recommended by the W.H.O./UNICEF authorities. Ice in sufficient quantities as demanded will not be available at all places. Wherever there was a refrigerator at the District headquarters, this was used after requesting the authorities, sometimes hotel proprietors were requested to keep our articles in their refrigerators. However, I would state that these temporary measures do not answer our problems. The real answer would be issue of Freeze dried B.C.G. Vaccine but then we will have to wait till it is produced ; the next solution would be small refrigerators be supplied to the teams when the ice demand would be reduced to a minimum because ice would still be required for use in the actual field where the tuberculin and B.C.G. Vaccine have to be carried in the thermometers. Our department should supply the refrigerators as effective immunisation can only be expected when standards are adhered to.

Building.—The Office of the B.C.G. Vaccination Scheme is still in the premises of the Minto Ophthalmic Hospital due to want of accommodation at the Central Public Health Offices. Whereas the present building is satisfactory, one has to think of shifting the office as the building is being demanded for patients.

Research Studies.—During the year the Tuberculosis Research Office Team from Copenhagan, Denmark, visited the State and conducted RETESTS of the groups covered by the Mass campaign. The work was done in Bangalore, Davanagere and Mysore Cities and Nanjangud Town. Of these, the study at Davangere is said to have indicated that the findings were below standard compared to Indian conditions.

Visitors

The following visited the B.C.G. Office :—

1. Dr. Johannes Mejjer, Senior Adviser, South-East Asia, T.E.O., Denmark.
2. Miss Solveig Midtgaad, Public Health Nurse.
3. Miss Ingrid Clausen.
4. Dr. Halfden Mahlar, Senior B.C.G. Adviser, South-East Asia.
5. Miss Inger Peterson Mundt, Public Health Nurse.
6. Dr. Lydia Edward, Chief Tuberculosis Research Office, Copenhagan.
7. Mr. Gyorgeon, Nyboe Statistician, W.H.O. Research Office, Copenhagen.
8. Mr. Samson, UNICEF Transport Officer.

Trainees

Officers from Andhra State were sent for training :—

1. Dr. Somiah, Snpervising Medical Officer, Andhra State.
2. Dr. Sundar Rao.
3. Dr. Krishna Murthy.
4. Dr. Sharma.
5. Dr. Narasiah, Publicity Officer, B.C.G. Vaccination, Health Probationers from the Department.
6. Dr. Riaz Ahamed.
7. Dr. Sivanna.

THE CENTRAL LEPROSARIUM, BANGALORE

SRI D. A. LAKSHMANA RAO, M.B.B.S.
Senior Leprologist.

During March 1954, Government ordered the conversion of the former Combined Isolation Hospital (comprising of Leprosy Section and E.D. Section) into the Central Leprosarium meant only for Leprosy patients, from the Medical Department. The administrative control was also transferred to the Public Health Department. The entire E.D. Section along with certain staff was shifted on 4th August 1954 to the Civil Station Isolation Hospital, thereby releasing accommodation to house 200 Leprosy Patients. Two full-time Gazetted Officers, one Senior Leprologist and Medical Officer and the Other Junior Leprologist and Resident Medical Officer, were appointed and they reported to duty on 23rd April 1954 and 2nd July 1954, respectively. The Senior Leprologist was in overall charge of Leprosy work in the State in addition to being the Medical Officer of the Central Leprosarium. He toured for 10 to 12 days in a month and in his absence the Resident Medical Officer, was in charge.

Proposals for the upgrading Central Leprosarium by arrangements, the staff, constructing of administrative block, O.T. Laboratory, Dormitories, etc. are before Government. A sum of Rs. 50,000 has been allotted for construction of buildings this year and plans and estimates were under preparation.

In-patients.—There were 138 patients remaining at the end of 1953. Two hundred and forty-one patients were admitted during the year making a total of 379. Of these, 364 were Hindus, 9 Muslims and 6 others. Forty-eight were cured (arrested) 30 improved, 93 discharged otherwise, 21 died and 204 remained under treatment.

Out-patients.—

Men	...	...	...	838
Women	...	...	...	481
Children	...	...	...	123
		Total	...	1,442

Average Daily 3·95

E.D. Section till 4th August 1954.

In-patients.—

Men	...	...	...	402
Women	...	...	...	147
Children	...	...	...	18
		Total	...	567

Average Daily 24·8

Out-patients.—

Men	...	...	...	860
Women	...	...	...	550
Children	...	...	...	303
			Total ...	1,713

Average Daily 7·9

Laboratory Work.—

Smears taken for B. Leprae Examination	...	371
Smears taken for W.R.	...	45

Board of Visitors.—Two meetings of the Board of Visitors were held and the members were pleased with the work conducted in the Institution.

Occupational Therapy.—Such of the patients who are not confined to bed, are engaged in poultry-keeping, etc.

Feasts.—Seven important Hindu, Muslim and Christian feasts were observed and the patients were given special diet on these days, the expenditure being met from the Hind Kusht Nivaran Sangh Funds. Occasionally, fruits and sweets were distributed to the patients by philanthropic gentlemen. The TOCH conducted an annual sports for the patients and gave the patients gifts of clothes and other articles.

Recreation and Library.—There is a well equipped Library for patients, housed in the Recreation Hall, which contains equipment for indoor games such as table tennis, carrom, chess, etc. There is also a radio to provide entertainment and enlightenment to the patients. The "Hindu" is being donated freely by the Editors.

Income and Expenditure.—The income from Ward charges is nil, as there are no special wards in this institution and most of the patients admitted are poor.

The expenditure on establishment during 1953-54 was Rs. 36,395. Diet, contingencies, etc., was Rs. 77,857 and the average cost of diet per in-patient per day works out to Re. 0-14-3.

BUREAU OF MALARIOLOGY

DR. S. R. BHOMBORE, M.B.B.S., D.P.H., M.P.H.,
Superintendent.

(*a*) *Administration.*—Dr. S. R. Bhombore was in charge of the Bureau of Malariology during the year under report. He was on tour for 106 days and visited 263 places in all the ten Districts of the State, in connection with periodical inspections of the Health Units, D.D.T. spraying under the National Malaria Control Programme. He attended meetings of the several Committees like K.R.S. Health Committee, Marconahalli Reservoir Irrigation Development Committee and Nugu Project Committee.

He delivered lectures on Malariology and arranged for demonstrations in the field to the students of the University Medical College, Mysore and the students of the University Medical School, Bangalore. He also gave lectures on "Irrigation malaria" to four batches of trainees of the Malaria Training Centre, Mandya. He also gave lectures on "Malaria Control in Town Municipalities" to the Executive Officers of the Local Self-Government Department, who underwent a brief training in the department. He availed of the opportunity of delivering a lecture on "the role of Engineer in Malaria Control" at the Engineering College, Davangere during his itinerary.

He inspected the villages under Tungabhadra Project area in Bellary District, in connection with starting anti-malaria measures and also Hospet and Bellary Towns in connection with anti-larval measures adopted there.

He visited Gayathri Project and Narayanapura Project in Hiriyur and Challakere taluks, in connection with the reported incidence of malaria in the labour camps.

He toured in Kolar District, Arsikere Taluk and Chitaldrug and Tumkur districts, in connection with malaria epidemic control measures.

He was on deputation to Baroda to attend the meetings of the Malaria Advisory Board, held under the auspices of the Indian Council of Medical Research.

The Director of Public Health and the Superintendent, Bureau of Malariology continued as Chairman and the Secretary of the Health Standing Committee respectively and during the year two meetings of the Committee were held. The Superintendent inspected several villages along with the members of the Health Standing Committee, in connection with petitions regarding the possibility of allowing wet cultivation in those villages and other activities relating to the Health Standing Committee.

He continued as a member of the Marconahalli Reservoir Irrigation Development Committee and Nugu Reservoir Committee and attended the Committee meetings.

Itineration of the Staff.—The Reserve Health Officer, the Assistant to the Superintendent, the Surveyor, the Malaria Supervisor toured for 91 days, 114 days, 36 days and 21 days, respectively, during the year under report.

1. The Reserve Health Officer attended to Malaria surveys in Bellara Gold Mines (Sira taluk) in the villages of Dharmapura Hobli of Hiriyur Taluk and in a few villages of Tumkur, Koratagere and Madhugiri taluks. He conducted also malaria surveys in Kapila Valley in Mysore District and Kanva Project in Bangalore District by assisting the Assistant Malariologist, Malaria Investigation Centre, Saklespur, who undertook malaria investigation in these areas. He was in charge of a team of workers in connection with prevention of malaria epidemic in Kolar District and in Arsikere Taluk of Hassan district.

2. The Assistant to the Superintendent was on special duty in connection with Cholera epidemic in several parts of the State. He conducted

spleen surveys in Mysore District in the later part of the year. He was also in charge of anti-malaria operations in Kolar District and Arsikere Taluk in connection with malaria epidemic.

3. The Malaria Supervisor inspected the work of the N.M.C. Sub-Unit office at Chitaldrug and Hassan. He attended to the arrangements made in the Health Exhibitions that were arranged in Shimoga under the auspices of All India Malnad Conference and at Tumkur in connection with Health Exhibition and Baby Week.

4. The Senior Laboratory Technician accompanied the investigation party to Bellara Gold Mines, Tumkur and Kanva area and assisted them in conducting dissection work and parasitological work.

The Central Laboratory. (a) *Examination of blood smears for M.P.*— Routine examination of blood smears were continued and during the year under report 9,706 smears were examined. (Statement No. 1).

Blood smears taken in different units in the State have been examined in the Central Laboratory attached to the Bureau. The smears of Bangalore and Mysore N.M.C. Units were also examined.

Blood smears taken in the epidemics of Kolar District and Arsikere Taluk were also examined in the laboratory attached to the Bureau.

Entomological examinations.—The adults collected and sent by the N.M.C. Units to the laboratory were identified and the results were communicated to the concerned offices.

D.D.T. content.—The staff employed for the preparation of Pyrethrum extract was drafted to work under the direction of the Chemical Examiner to the Government of Mysore, Bangalore. They were engaged in estimation of para contents of several samples of D.D.T. scrapings received from different parts of the State. A total number of 3,089 samples of D.D.T. scrapings from different Units in the State were examined at the Public Health Institute, Bangalore.

Surveys.—1. Malaria investigations were made in the villages of Dharmapura Hobli of Hiriyur Taluk and in the villages of Madhugiri, Koratagere and Tumkur taluks and in Bellara Gold Mines area.

2. Special malaria surveys with a view to account for the low indemicity of malaria in Kanva Project area in Bangalore District and Kapila Valley in Nanjangud Taluk of Mysore District were made.

3. Spleen surveys were done in the epidemic villages of Kolar District and in Arsikere Taluk.

4. Malaria survey was done in "Gayathri Project" and "Narayanapura Project area" in Hiriyur taluk before the areas were included for D.D.T. spraying.

Workshop.—Servicing of Lorries, Jeeps and pick-up vans of the Bureau and of the Department was attended to by the workshop attached to the Central office.

Statement showing the details of blood smears examined at the Central Laboratory, Bureau of Malariology, Bangalore during the year 1954.

District	Total smears examined	Infant Smears			Adults and Clinically diagnosed smears		
		No. examined	No. of positive	Parasite rate	No. examined	No. positive	Parasite rate
1. Shimoga ...	1,875	1,661	2	0·1	214	6	2·8
2. Hassan ...	15	15	...	0·0	...	...	...
3. Chickmagalur ...	190	157	...	0·0	33	12	36·4
4. Mysore ...	1,906	1,901	4	0·2	5	...	0·0
5. Chitaldrug (Hiriyur).	1,296	...	...	...	1,296	351	27·1
6. Epidemic areas and special surveys	4,424	...	...	...	4,424	1,526	34·4

Details of work done at the workshop were :—

1. General check up of the vans, adjustments of brakes, refitting of certain parts :—

(i) replacement of spring blades ;

(ii) refitting with new clutches bearing ;

(iii) Repairs of electric horn ;

(iv) Welding steping tyre bracket, adjustment of clutch assembly;

(v) Repairs and adjustment of fan and generator belts ;

(vi) Refitting with king pin assembly and steering connecting rods ;

(vii) Overhauling Delco system, etc., were also attended to the vehicles in the State working under the Department.

2. Fitting up angle iron top with zinc sheet cover to all the 20 N.M.C. vehicles.

3. Manufacture of 10 mouse traps for Vaccine Institute.

4. Manufacture of Wassermann racks for Public Health Institute with brass sheets.

5. Manufacture of 35 four-gallon buckets and 60 one-gallon measures.

6. Fitting up flat iron clamps to pressure tanks of 24 Dobbins pressure sprayers.

7. Repairs to N.P. Sterilizer of the Public Health Institute.

8. Manufacture of distilled water storage drums to the Public Health Institute and 4 townets to the District Health Officer, Mandya.

9. Manufacture of petrol tanks to the N.M.C. vehicles.

10. Manufacture of stencils D.D.T. letter plates = 125

Do L. do = 125

Do R. do = 125

Manufacture of stencils 2 inches square plates for collection of	DDT scrapings	=	50
Do	1 inch square scraper	=	50

11. Repairs to office cycles, electric fans.

12. Other petty repairs and packings in the office.

Special Activities relating to Malaria Control.—Studies in connection with duration of residual effect against mosquitoes by applying DDT were continued during the year both in Mandya and Sakalespur area. The application of DDT dosage to 100 m. gms. per sq. ft. has been standardised and was found economical in the rural parts, the spraying being repeated once in 6 months. This has been done systematically according to a scheduled programme under the N.M.C. Programme in all the malarious tracts of the State.

I. Malaria Investigation Centre, Mandya.—Entomological evaluations in connection with DDT spraying as an indoor spray by periodical collection of mosquitoes and larval collections in selected villages and recording the density, species, condition of abdomen and wings, etc., were studied in respect of anopheline mosquitoes in general and A.culicifacies and A.fluviatilis in particular. Rodent ecto-parasite work was conducted in the Entomological Section on the rat fleas collected from different stations in Mysore District.

II. Malaria Investigation Centre, Saklespur.—The following scientific papers were published in the year—

Name of the paper	*Name of the author*	*Published in*
(1) A first record of Anopheles Theobaldi Gilds 1901 from Mysore State.	Dr. Bhombore, S. R., Sri Sitharaman, N. L., and Dr. Achuthan, C.	Indian journal of Malariology, Vol. VIII, No. 1, March 1954 issue.
(2) Seasonal prevalence of Anophelines in Western Hill tracts of Mysore State.	Dr. Bhombore, S. R., Sri Sitharaman, N. L., and Brookworth, C.	Do
(3) Effect of lime on residual activity of DDT.	Dr. Bhombore, S. R., Sri Sitharaman, N. L., and Dr. Nanjundaiah, K. S.	Do
(4) Wing grade composition as an index for judging the effectiveness of residual toxicity of insecticide deposits.	Dr. Bhombore, S. R., Sri Sitharaman, N. L., Dr. Nanjundaiah, K. S.	Do June 1954.

III. Malaria Training Centre at Mandya.—The Malaria Training Centre was opened at Mandya on 7th April 1952 to train the personnel of the department in malaria control work. The duration of the course is six weeks and the number trained in 13 batches so far is as follows :—

1.	The Medical Officers of Health ...	...	18
2.	The Assistant Medical Officers of Health	...	54
3.	Senior Health Inspectors ...	...	64
4.	The Junior Health Inspectors ...	...	111

The Mysore Sugar Fund Committee donated a lakh of rupees towards the construction of the buildings for Malaria Training Centre at Mandya and the first stage of construction of the building was completed. The second and third stage works have to be taken up. The training centre moved into the new building in November 1954.

Eqidemic Malaria.—Broadly speaking, the malarious tracts are confined to the Western parts of the State with patches of malarious areas under the irrigation tract, the eastern part being free from malaria. But these have been, however, potentially malarious and prone to epidemics during heavy precipitation years. Due to unusually heavy rainfall in 1953, it was forecasted by the department that there would be an epidemic of malaria in 1954 and it became true in the districts of Bangalore, Kolar, Tumkur and Chitaldrug and the uncovered portion of Arsikere Taluk in Hassan District.

Necessary funds were made available by the local bodies for purchase of anti-malarials and residual insecticides and to meet the emergency.

1. *Kolar Epidemic.*—Malaria appeared in a virulent form and special epidemic survey was conducted by the staff of the Bureau.

In 83 villages 3,385 children were examined, of whom 1,590 showed enlargement of spleens with a spleen index of 47 per cent. One thousand six hundred and forty-six blood smears were taken of which 782 showed malaria parasites. Of these, 364 were plasmodium vivax, 327 of plasmodium falciparum and 14 of P. malariae and 77 of mixed infection. The parasite rate was 47·5 per cent.

Residual insecticidal spraying with DDT. was immediately taken up on an intensive basis to bring the epidemic under control. The Director, Malaria Institute of India, Delhi, was apprised of the situation of the epidemic and 10 tons of DDT was immediately made available by him for the purpose. The Deputy Commissioner, Kolar was kind enough to contribute an amount of Rs. 10,000 from the District Board funds and Rs. 1,400 from N.E.S. Scheme. The Government sanctioned an amount of Rs. 15,000.

1. Seven complete Sub-Units of the N.M.C. Programme with vehicles, equipment, supervising staff and labour were drafted to work in the area, with a spare lorry for supplying DDT.

2. Two extra vans were given for the 2 Health Officers to tour and inspect the operations of these Units.

3. Two Mobile dispensaries with two Assistant Surgeons and Compounders for drug distribution were posted with an assistance of 3 Junior Health Inspectors.

4. One Entomologist with Laboratory Technicians were deputed to undertake entomological studies in the area.

5. Three senior Health Inspectors and three junior Health Inspectors of the District Board were posted to render assistance to the above staff posted for special duty.

Within a week, 780 villages were covered and a population of 1,76,978 were protected against the epidemic of malaria. Thirty-nine thousand six hundred and fifteen houses were sprayed out of 41,493 houses in the villages. A total quantity of 6,253 lbs. of 75 per cent wettable powder DDT and 3,198 lbs. of 50 per cent wettable powder DDT was consumed.

In respect of entomological work that was carried on, mention may be made that the staff visited 57 affected villages and spent 51 hours and 25 minutes for collection of adult mosquitoes. A total number of 1,566 anopheline mosquitoes were caught, of which only 126 A. culicifacies were dissected. Gland infection was found in 47 of these, giving a sporozoite rate of 3·2 per cent. Five A.fluviatilis and one A. stephensi were also dissected and no infection was found in them. A total number of 1,70,000 anti-malaria tablets like Resochin and Paludrine and Mepacrine were distributed among sufferers.

2. *Arsikere Epidemic.*—The District Health Officer, Hassan, on receiving reports of malaria epidemic, urged for intensive spraying in the villages of Arsikere Taluk of Hassan District. Each of the five hoblis were placed in charge of the Medical Officers assisted by 22 Health Inspectors with 11 vans and necessary equipment, together with sufficient labour.

The spraying squad covered 456 villages and 1 town and protected a population of 1,47,868. Out of 34,706 houses in the villages, 33,746 houses were sprayed with DDT and a total quantity of 10,542 lbs. of 75 per cent wettable powder DDT was used for spraying purposes.

Spleen examinations were conducted in 181 villages and 10,496 persons were examined, of whom 6,183 showed positive for enlargement of spleens, giving a spleen rate of 58 per cent. One thousand one hundred and fifty-five blood smears were taken for examination, of which 766 were positive for M.P. 293 were for plasmodium viva, 320 were for P. falciparum and 43 for P. Malariae and 110 were for mixed infection. The parasite rate was 66·3 per cent for the taluk.

The staff of the Malaria Investigation Centre, Sakalespur, was in charge of the entomological work conducted in the area. Six thousand eight hundred and seventy-six anopheline adults were collected in 20 days and A. culicifacies was predominating. A total number of 2,384 adults were dissected, of these 1,958 were A. culicifacies, and 18 were A. stephnsi. Among A. culicifacies, gland infection was found in 8 of them which gave 0·4 per cent sporozoite rate.

In 456 villages, 25,385 persons were given 84,562 Resochin and paludrine tablets.

3. *Chitaldrug District Epidemic.*—On receiving reports of malaria epidemic in the rural parts of Chitaldrug District, an intensive survey of these villages was made and immediate relief to the sufferers was given by distributing anti-malaria drugs. In 448 villages of 6 taluks out of a total population of 2,26,737, 10,837 patients were treated with anti-malaria drugs. Fifteen thousand three hundred and seventy-five of 0·3 gms. and 17,779 of 0·1 gms. of paludrine and 6,711 tablets of Resochin were distributed free among the sufferers.

4. *Tumkur District Epidemic.*—In one taluk of Chikkanayakanahalli, 1,211 patients out of 18,065 population in 44 villages were treated with anti-malaria drugs. Two thousand nine hundred and ninety-eight of 0·3 gms. and 999 of 0·1 gms. of paludrine were freely distributed among the sufferers.

The epidemic was brought well under control in all the places in every district with the local co-operation and also from the Revenue Authorities.

Urban Malaria Control.—Malaria Control by using larvicides were continued in the following places :—

(1) Bangalore City.
(2) Mysore City.
(3) Mandya Town.
(4) Shimoga Town.
(5) Bhadravathi New Town Board.
(6) Bhadravathi Old Town.
(7) Hassan Town.
(8) Dodballapur Town.
(9) Jog.
(10) Shivasamudram.
(11) Shimshapura.
(12) T.B. Hospital areas in Bangalore and Mysore.

The technical direction of the control programme in these areas is vested in the Bureau and the following larvicides have been used.

(1) Malariol 'B'.
(2) Malariol fortified with DDT.
(3) Gammexane 420 (water dispersable).

The use of 5 per cent DDT in Malariol in Bangalore City has been continued during the year with satisfactory results, the dosage of application being 0·4 of a lb. per acre of breeding surface.

Malariol 'B' and Gammexane P. 520 are used at 15 gallons per acre. The Gammexane P. 520 water suspension is made in proportion of 10 ozs. in 3 gallons of water and sprayed at the above rate.

Dodballapur.—With occasional breakages every now and then for want of material in time, the use of Gammexane 520 as a larvicide was continued during the year. However, satisfactory results were obtained and no incidence of malaria was reported from the town during the year under report.

Mamdya Town.—Gammexane 520 was used as a larvicide during the year and 408½ lbs. of Gammexane and 756 lbs. Hexidol was also used as larvicide in place of Gammexane due to non-availability of Gammexane. Test collections of both adults and larvae were made periodically. It is observed that the maximum density of the vector species in the larvicide controlled area is 25 per cent of what was collected from villages treated with adulticides. Six hundred and twenty-seven containers and 930 wells in the town were examined and 716 wells were stocked with Gambusia fish.

3. *Shanta Bai Deva Rao Shivaram's T.B. Hospital, Bangalore.*—Gammexane 520 is used as a larvicide here also. Half mile zone around the T.B. Hospital and Mental Hospital, Bangalore, is taken up for covering all breeding places by using larvicides.

4. *P.K.T. Sanatorium, Mysore.*—Both Gammexane 520 and Malariol 'B' are used as larvicides. The work was not regularly reported. After due inspections and requests, reports were received from August 1954. A total quantity of 8½ gallons of Malariol 'B' and 63 lbs. of Gammexane were used as larvicides during the last 5 months of the year. Also, 70 lbs. of Gammexane and 10 lbs. of 50 per cent Wettable powder were used as adulticide for spraying the wards of hospital premises and dwelling quarters in the area. Thirty-five cart-loads of rank vegetation was also removed by the gangmen.

5. *Shimoga Town.*—A total quantity of 5,903 gallons of Malariol 'B' was spent during the year as a larvicide and the town was free from the incidence of malaria. The gangmen employed removed 367 cart-loads of rank vegetation also.

6. *Bhadravathi New Town.*—As malaria control measure, Malariol 'B and Gammexane 520 were used for spraying as larvicides. A total quantity of 12,232½ gallons of Malariol 'B', 471½ lbs. of Gammexane were used as larvicides. In addition, 347 lbs. of 50 per cent Wettable DDT and 315 lbs. of Hexidol and 212 lbs. of Gammexane were also used as adulticides for spraying the quarters of the New Town Board area. A total quantity of 394 gallons of 2 per cent Pyrethrum Kerosine mixture was also used as an adulticide. The gangmen were also engaged in clearing rank vegetation and jungle clearing. A total of 554 cart-loads of rank vegetation was removed.

7. *Jog, Sivasamudram and Shimshapura.*—As a result of spraying of Malariol 'B' as a larvicide, Jog, Sivasamudram and Shimshapura were free from malaria during the year.

Rural Malaria Control.—Malaria control in the rural parts of Health Units sanctioned in the State was taken up by the National Malaria Control Programme sponsored by the Government of India.

National Malaria Control Programme.—The National Malaria Control Programme that was implemented in the State during November 1953 was continued during the year under report. The Government of Mysore agreed to the scheme and 5 Units were started during 1953-54. DDT 75 per cent Wettable powder was supplied free by the T.C.A. To facilitate transhipment of material and staff, 20 trucks have been given as a gift; besides 5 jeeps, one for each Medical Officer of Health for purposes of inspection. One station wagon was made available to the Superintendent, Bureau of Malariology for directing the entire operations. The expenditure incurred on establishment, labour and other charges, however, have been met out of State Government funds.

(i) *Units and Staff.*—There were five N.M.C. Units each Unit having 4 Sub-units (20 Sub-units). Two units, *viz.*, Bangalore and Mysore were placed in charge of whole-time Malaria Medical Officers. In the other three units in Mandya, Chickmagalur and Shimoga, the respective District Helath Officers were in additional charge of the units. Full complement of 20 Senior Heath Inspectors and 20 Junior Health Inspectors were working in all the 20 Sub-units. The services of one Senior Health Inspector was spared as Reserve for each unit. There were 15 superior field workers with 150 fieldmen on permanent basis in all the five units. In addition, 100 superior field workers and 550 fieldmen were also employed on casual labour during the operational period of five months.

(ii) *Spraying.*—As per schedule spraying was done twice during the year, the first round commencing from April and the second from October and the spraying period not exceeding five months in the year. A dosage of 112 m.gms. per round is given. During the year under report, for want of supplies from the Centre, the April round of spraying was restricted to the pre-N.M.C. areas, *i.e.*, only the Health Unit areas, as approved by the Director of Public Health in Mysore, Bangalore. In October round, sufficient DDT was made available from the Government of India and all the places scheduled for spraying were taken up.

During the year under report, a total population of 37,60,299 in 24,198 villages and 65 towns were given protection against malaria by applying indoor residual insecticide in 11,42,915 houses, as against a total of 12,35,561 houses in the area covered by spraying. Thus, 7·9 per cent houses were not sprayed, as they were either locked or refused. A total quantity of 5,21,606¾ lbs. or 260½ tons of 75 per cent wettable powder for water suspension and 20,597 gallons of emulsion concentrate departmentally prepared were used for spraying. So, in all 6,13,149¾ lbs. or 306½ tons of 75 per cent wettable powder was used for spraying for the two rounds during the year under report. This works out to an average of 0·54 lbs. of 75 per cent wettable DDT per house sprayed during the year (Appendix B).

(iii) *Equipment and transport.*—Twenty-five Dobbin pressure sprayers were received as a gift to the State from the Rockefeller Foundation, New York, under the National Malaria Control Programme. These sprayers were found handy to cover thickly populated areas rapidly in urban areas. These pumps were not used in the rural parts as they could not be towed easily. Instead, 240 stirrup pumps and Hudson pressure pumps were used for spraying in the rural parts.

Power mixer devised and spared by the Rockefeller Foundation to the Department was used for preparing mixture emulsion using technical DDT with (Aromex) solvent quickly.

All the 20 trucks used for spraying under National Malaria Control Programme and 5 jeeps and 1 station wagon used by the Officers were maintained in good working condition.

(iv) *Reports and Records.*—Necessary printed forms as approved by the Malaria Institute of India, Delhi, were got printed and distributed among all the five units. Daily and weekly reports at the Sub-unit level and monthly and quarterly and annual reports at the unit level are being received. Copies of monthly, quarterly and annual reports as received from the unit offices were compiled and forwarded to the Director, Malaria Institute of India, Delhi.

Records pertaining to DDT spraying, spleen surveys, infant bloods and adult bloods examined, malaria morbidity statistics collected from several dispensaries in the area have been maintained in all the units. These were compiled at the State level and forwarded to the Director, Malaria Institute of India, Delhi.

As separate staff was not available for conducting scheduled entomological work throughout the year, as approved by the Director, Malaria Institute of India, Delhi, entomological collections were made during non-operational periods only except in Mandya, Shimoga and Chickmagalur units, where adequate staff was available for the purpose under the 81 Health units scheme. Records pertaining to the entomological data were compiled at the State level and forwarded to the Director, Malaria Institute of India, Delhi.

(v) *National Malaria Week.*—As requested by the Director, Malaria Institute of India, Delhi and the Director General of Health Services, Delhi, 'National Malaria Week' was observed from 7th June 1954 to 12th June 1954, when the services of the staff of the N.M.C. Units were utilised for lecturing in public meetings, gatherings and doing propaganda work, etc., Cinema films that were sent by the Malaira Institute of India, Delhi, were exhibited in cinema theatres and posters and brochures were also exhibited

in that connection. Twenty thousand folders in local language—Kannada—were got printed and distributed throughout the State. An article on "Malaria Control" was published in all local papers by the Bureau of Health Education. The whole programme went through successfully.

(vi) *VI Unit under the National Malaria Control Programme.*—With a view to extend N.M.C. Programme in malarious tracts, one more Unit under the programme was sanctioned by the Government in their order No. M. 4719-44—PH. 38-34-2, dated 4th June 1954. This could not be given effect to immediately, as it was not approved by the Government of India. Recently approval was accorded and the unit has been scheduled to take up the programme from this year. The transport and equipment required for the newly sanctioned unit has yet to be received. Available equipment and transport has been given now from the reserve stock of the Department.

A Brief Review of Anti-Malaria Work in the State.—In the areas, where residual DDT insecticidal spraying operations were in progress the incidence of malaria was brought well under control during the year under report, as seen from a reference to the appendices in spleen examinations and malaria morbidity.

(i) *Spleen Index.*—With a view to assess the malaria control measures, biannual spleen surveys in the villages of the Health unit areas were conducted as usual during April and October during the year. Besides this, spleen examinations were also done in non-Health unit areas under the National Malaria Control Programme. Details of examinations done in Health unit areas are furnished in Appendix 'C'. Appendix 'C' furnishes the abstract figures for several districts both for maidan and malnad parts.

It can be seen from the above appendices that there has been appreciable reduction in the splenic index during the year. The spleen rate in respect of malnad districts is 1·5 and 1·1 during April and October 1954 respectively, as against 2·7 and 2·06 during the corresponding period of the previous year 1953. In regard to maidan district, the spleen rate is 1·84 and 1·4 during April and October 1954 respectively, as against 5·14 and 3·4 during the corresponding period of the previous year 1953.

The overall spleen rate for the State is 2·04 and 1·5 for April and October 1954, respectively, as against 3·8 and 2·7 for the corresponding period of the previous year 1953.

Malaria Morbidity.—A total number of 30,101 cases in malnad and 20,548 cases in maidan were clinically diagnosed as malaria in the Health Units, dispensaries and at clinics during the year, as against 9,70,378 cases treated for all diseases in malnad and 5,15,484 cases treated in maidan districts (*Vide* Appendix E).

The morbidity rate works out to 51·6 for malnad and 33·0 for maidan for every 1,000 population in the Unit area, as against 66·4 for malnad and 43·1 for maidan in 1953.

Thus, for a total number of 14,85,862 cases treated for all diseases in the State, 50,659 cases were treated for malaria only during the year under report. The overall malaria morbidity rate for the whole State is 42·1 for the year under report, as against 53,8 for the previous year for every 1,000 population in the Unit areas. This has also revealed that the morbidity in respect of malaria incidence is on the downward trend.

Parasite Index.—A total number of 14,878 blood-smears were examined during the year under report (*Vide* Appendix G). Of these, 6,839 were taken from infants under one year of age and 4,517 were from adults. 3,522 smears were also taken from cases clinically diagnosed as malaria. (*a*) Among the 6,839 infant bloods examined only 18 showed malaria parasites, which works out to 0·3 per cent infant parasite rate for the State. (*b*) 573 out of 4,517 adult blood smears examined were positive for malaria parasite giving a rate of 12·7 per cent adult parasite rate for the State. (*c*) Out of 3,522 blood smears from clinically diagnosed malaria cases, only 475 showed positive for M.P. giving a percentage of 13·5 per cent.

The conformity blood tests on clinically diagnosed cases of malaria cases greatly reduced the malaria morbidity recorded in the hospitals.

In addition to the blood examinations made in the Health Units, they were also done in each sub-unit under the N.M.C. Programme, and their results are compiled separately under that programme.

Vital Statistics — An idea of vital events that occurred in the Health Unit areas has been furnished in Appendix F. The statement gives birth and death rates according to the Secondary Centres in each district, (1) as reported by the Revenue Patels, (2) as totals, the difference of (2) and (1) being detected by the Health Inspectors of the Health Units during their routine visits. The birth rate in Malnad is 40·0, as against 43·5 in previous year and the birth rate in maidan is 40·4, as against 30·1 in previous year. The overall birth rate for the State is 34·9 for the year, as against 38·3 in the previous year.

Similarly, the death rate for malnad was 12·6 for the year as against 12·2 in the previous year and the death rate in maidan was 10·1 for the year, as against 8·5 in previous year. The overall death rate for the State was 11·2 as against 10·2 in the previous year.

The deaths reported as due to Malaria were 18 in malnad, as against 25 in previous year and 74 in maidan, as against 92 in previous year. The total deaths due to malaria were 92 in previous year. The total deaths due to malaria were 92 for the whole State, as against 117 in the previous year.

Anti-malaria Drugs.—A statement showing the anti-malaria drugs used in hospitals and Health Units is herewith appended, *vide* Appendix H. From a perusal of the statement, it is seen that usage of anti-malaria drugs has come down. The off take in each variety of the anti-malaria drugs has decreased as compared with that in 1953.

Extending the National Malaria Control Programme for all the affected villages in Bellary District and malarious Municipalities in the State was sanctioned by Government and approval was accorded by the Government of India to start the Unit.

Visitors.—The following gentlemen visited the State and they were apprised of the activities of the Bureau in the State :—

1. Dr. M. C. Balfour, Regional Director, Rockefeller Foundation, Delhi—March 1954.
2. Mr. Knipe, Malaria Institute of India, Delhi—April 1954.
3. Dr. V. Tain Sein, Malariologist, Burma—May 1954.

4. Dr. Taylor and Dr. Rice—August 1954.
5. Dr. L. J. Bruce Chwatt, Senior Malariologist, Nigeria—October 1954.
6. Dr. B. Ananthaswamy Rao, Deputy-Director, Malaria Institute of India, Delhi—May 1954 and December 1954.
7. Dr. Premdoss, Corporator, Colombo-Ceylon—November 1954.
8. Students of M.B.B.S., Class with the Professor of Hygiene, and Assistant Professor of Hygiene, Medical College, Mysore—June 1954.
9. Students of L.M.P. Class of the Medical School, Bangalore—March 1954.
10. Executive Officers of the Local Self-Government Department—July 1954.

Special Activities.—The Bureau participated in the Health Exhibitions conducted at Shimoga under the auspices of the All-India Malnad Conference and at Tumkur in connection with the Health Exhibition and Baby Week and at Mysore in connection with Dasara Exhibition held during the year.

The staff of the Bureau took active part in a State-wide publicity week under the National Malaria Control Programme at the instance of the Central Government.

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Secondary Centre	Primary Centre	Population	1950				1951			
			April		October		April		October	
			SR	AES	SR	AES	SR	AES	SR	AES
1	2	3	4	5	6	7	8	9	10	11
		SHIMOGA DISTRICT								
Thirthahalli ...	Thirthahalli ...	5,533	7·62	1·92	...	...	...	...	...	...
	Agumbe ..	4,113	30·98	2·25	12·5	2·40	13·2	1·5	9·7	1·13
	Megaravalli ...	5,444	23·8	1·84	13·14	1·32	8·5	1·52	4·4	1·1
	Malur ...	6,270	16·06	2·48	10·7	1·6	2·3	1·4	7·5	1·1
	Devangi ..	6,215	7·47	2·33	3·9	2·16	3·12	1·92	.	...
	Mandagadde ...	3,751	...	...	...	...	...	...	...	...
	Shedgar ...	...	...	...	...	...	...	...	...	...
	Arehalli ...	...	...	...	...	...	...	...	...	...
	Venkanahalli ...	...	...	..	...	...	...	...	...	...
	Konandur ..	4,481	...	...	...	...	...	...	...	...
	Aralasurli ...	1,996	...	...	...	...	...	...	...	...
	Salur ...	..	...	...	...	...	...	...	...	...
	Araga ...	3,721	...	...	...	...	...	...	...	...
	Total ...	41,524	11·4	1·9	10·6	1·8	7·7	1·7	6·8	1·1
Sagar ...	Sagar ...	9,373	13·05	1·46	...	...	8·66	1·34	0·98	1·4
	Talaguppa ...	4,097	15·17	1·49	...	...	10·03	1·46	...	..
	Hirenallur ..	...	19·78	1·22	...	...	6·06	1·23	...	...
	Avinahalli ...	772	34·4	1·82	..	...	14·4	1·76	...	...
	Tumari ...	2,407	20·49	1·58	...	...	12·3	1·35	...	...
	Aralagodu ...	164	33·74	1·6	...	...	22·29	1·4	...	...
	Hirebhasgar ...	3,021	33·3	1·3	...	...	24·4	1·2	5·9	·7
	Channagiri ...	...	...	...	...	...	...	...	...	...
	Maravangi ...	...	...	...	...	...	...	...	...	...
	Tavarekere ...	...	...	...	..	...	...	...	...	...
	Nallur ...	...	...	...	...	...	...	...	...	...
	Basavapatna ...	...	...	...	...	...	...	...	...	...
	Total ...	19,834	...	...	...	...	...	...	2·6	1·6
	Jog Colony ...	2,750	1·9	2·5	1·4	2·33	2·3	2·0	0·6	2·0
		CHICKMAGALUR DISTRICT								
Chickamagalur	Chickmagalur ...	1,447	...	...	0·44	1·91	7·3	1·7	3·4	1·8
	Attigundi ...	551	...	...	...	...	...	...	...	...
	Kalasapura ...	1,750	...	...	...	...	...	...	...	...
	Sakrepatna ...	7,390	19·8	2·4	11·28	2·1	8·1	2·0	6·1	2·0
	Malandur ...	6,191	...	...	4·2	2·16	1·3	1·41	0·62	1·5
	Aldur ...	6,726	3·5	1·5	11·3	2·1	7·2	2·0	1·27	1·25
	Lakhya ...	..	...	...	...	...	...	...	...	...
	Bendiga ...	...	...	...	...	...	...	...	...	...
	K. R. Pet ...	...	...	...	...	...	...	...	...	...
	Janakanahalli ...	...	...	...	...	...	...	...	...	...
	Shiravasa ...	...	...	...	...	...	...	...	...	...
	Total ...	24,065	14·1	2·2	8·0	1·9	5·3	2·5	3·6	1·7
Mudigere ...	Mudigere ...	6,539	4·3	1·3	2·8	1·7	11·3	1·6	6·0	1·0
	Banakal ...	7,191	...	..	...	...	...	...	10·28	1·4
	Conibidu ...	5,578	27·32	1·49	...	...	3·6	2·5	2·94	1·5
	Nandipura ...	3,773	...	...	...	...	...	...	...	...
	Kanchur ...	2,122	...	...	...	...	...	...	...	...
	Total ...	25,203	15·7	1·5	...	...	...	...	...	...
Kalasa ...	Kalasa ...	4,166	...	...	4·08	1·6	6·16	1·2	15·2	1·0
	Niduvalc ...	4,140	3·2	2·7	...	...	...	...	13·5	1·13
	Javali ...	3,882	...	...	23·3	1·1	17·5	1·0	24·2	1·0
	Thanudi ...	...	...	...	...	...	...	...	...	...
	Hirebyle ...	4,975	...	...	...	...	...	...	...	...
	Total ...	17,113	3·2	2·7	14·6	1·2	11·0	1·8	9·0	1·0

DIX—A.

1952				1953				1954			
April		October		April		October		April		October	
SR	AES	SR	AES	SR	AES	SR	AES	SR	AES	SR	AES
12	13	14	15	16	17	18	19	20	21	22	23
...	...	...	...	1·5	1·0	...	...	...	...	1·2	1·0
5.48	1·07	...	...	...	...	3·2	2·1	2·62	1·0	1·78	1·0
2·85	1·03	1·4	1·2	0·2	1·0	0·2	1·0	0·11	1·0	0·7	1·3
1·6	1·3	3·8	1·3	3·0	1·4	2·4	1·2	0·8	1·2	1·7	1·4
1·76	1·28	1·2	1·4	0·66	1·0	0·73	1·10	0·5	1·3	0·8	1·0
...	...	...	..	1·3	1·5	1·21	1·2	...	...	0·3	1·7
...	...	...	...	...	...	...	...	...	...	...	..
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	..	...	...	...	...
...	...	...	...	...	...	...	...	0·6	1·0	1·5	1·0
...	...	...	...	...	...	...	...	1·2	2·5	...	...
...	...	...	...	...	...	...	...	...	...	1·2	1·0
...	...	...	...	...	...	...	...	0·31	1·0	...	...
2·4	1·1	1·9	1·26	1·2	1·4	1·3	1·4	0·55	0·82	1·02	1·1
...	...	1·08	1·2	0·25	1·75	0·2	1·33	...	...	0·15	2·0
13·25	1·29	...	...	...	...	...	...	...	...	2·8	1·07
14·91	1·31	...	...	1·4	1·5	...	...	...	...	0·9	1·5
4·4	1·57	...	...	1·22	2·0	1·38	2·0	...	...	...	...
9·48	1·23	...	...	2·08	2·5	...	...	...	...	...	...
16·16	1·00	...	..	...	...	...	...	...	..	...	...
19·38	1·3	5·7	1·5	1·14	2·2	1·43	3·33	0·26	1·0	...	...
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	..	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	..	...
...	...	...	...	...	...	...	...	...	...	...	...
5·76	1·31	2·07	3·5	1·43	1·82	1·1	1·66	0·26	1·0	0·5	1·2
0·3	2·0	0·4	1·5	0·17	1·0	0·18	1·0	0·37	1·0	0·5	1·0
0·13	1·0	6·4	1·7	5·9	2·0	...	...	...	...	...	..
1·2	1·0	2·5	1·5	4·5	1·25	...	...	...	...	1·5	1·0
7 9	2·2	4·9	1 5	8·6	1·5	...	...	...	...	...	...
6·2	1·92	4·9	1·9	6·6	1·8	4·8	1·68	4·2	1·52	2·2	1·7
0·27	2·0	0·3	1·0	5·4	1·0	0·3	1·0	0·24	2·0	...	...
2·1	1·7	1·3	1·4	0·5	1·75	0·9	1·75	0·81	1·6	3·05	1·49
...	...	...	...	...	...	...	..	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	1·6	1·0
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
2·3	1·0	2·7	1·79	5·3	1·6	2·3	1·6	1·75	2 32	2·3	1·5
4·2	1·23	3·2	1·9	5·3	1·6	4·6	1·33	6·2	1·4	3·0	1·3
0·41	1·75	1·6	2·3	1·2	1·2	0·3	1·0	0 11	4·0	0·09	3 0
6 5	1·24	6·2	1·3	5·4	1·6	3·7	1·2	2·7	1·2	2·5	1·2
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	4·2	1·6	4·2	1·44
8·18	1·32	3·6	1·4	4·1	1·6	2·38	1·11	2·64	1·6	1·9	1·2
6·0	2·0	0·2	1·0	0·2	1·5	1·6	1·0	0·1	1·0	...	...
11·5	1·0	10·2	1·11	14·1	1·2	7·75	1·3	4·4	1·06	2·3	1·0
7·6	1·0	4·6	1·0	3·7	1·06	3·3	1·08	2·16	1·0	2·4	1·4
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
0·28	1·6	4·4	1·13	6·6	1·22	4·06	1·1	2·22	1·02	...	...

Secondary Centre	Primary	Population	1950				1951			
			April		October		April		October	
			SR	AES	SR	AES	SR	AES	SR	AES
1	2	3	4	5	6	7	8	9	10	11
		CHIKMAGALUR DISTRICT								
Koppa ...	Koppa ...	8,465	17·82	1·78	10·13	1·66	9·4	1·5	9·2	1 4
	Hariharpur ...	6,933	16 79	1·56	17 22	1·68	12·5	1·3	12·2	12·7
	Sr ngeri ...	10,583	14 46	1·95	12 01	1·64	6·2	1 6	7·5	1·36
	N. R. Pura ...	6,232	37 56	2·4	23·9	1·62	35·0	1·34	3·97	1·0
	Tadasa ...	2,054	...	.	...	...	..	...	...	...
	Kattinamane ...	2,839	...	..	...	...	...	...	...	...
	Kammardi ...	4,841	...	...	...	...	...	...	13·96	1·08
	Seethur ...	...	...	...	...	...	...	...	...	...
	Nilagadde ...	...	...	...	...	...	...	...	...	...
	Begar ...	...	...	...	...	...	...	...	...	...
	Nemmar ...	624	...	...	...	...	...	...	...	...
	Vykuntapura ...	...	...	..	...	...	...	...	...	...
	Neranadodi ...	...	...	...	...	...	...	...	...	...
	Total ...	42,581	19·7	1 9	14·6	1·6	12·2	2.3	9·16	1·6
Balehonnur ...	Balehonnur ...	6,080	3 2 2	1.9	12·37	1·5	6·7	1·1	2·5	1·4
	Jayapura ...	8,180	81·9	2 06	53·47	1·3	20·3	1·8	17·2	1·37
	Basirikatte ...	3,652	...	...	...	...	...	...	...	...
	Jannagadde ...	3,584	...	...	...	...	...	...	...	...
	Total ...	21,496	48 3	2.0	39·1	1·9	14·8	1.6	11 3	1·37
Tarikere ...	Tarikere ...	6,623	40.8	1·7	...	...	29 8	1·2	9·0	1·2
	Lakkavalli ...	4,449	8 37	2·16	...	...	2·0	1·9	1·24	2·0
	Lingahalli ...	4,623	35·8	2·1	23·9	1·9	12 4	2·2	17·4	1·4
	Ajjampur ...	16,567	6 11	1·49	...	...	4·6	1·3	3·4	1·3
	Bukkambudi ...	12,978	12 9	1 5	...	...	4·6	1·38	2·53	1·7
	Hunsaghatta ...	6,810	20·15	1·72	12·6	1·7	8 9	2 6	...	...
	Santaveri ...	3,049	11 1	1 7	...	..	12·5	1·3	6 84	1·35
	Vastara ...	232	...	...	...	...	...	...	5·2	1·66
	Total ...	54,331	16 6	1 8	16·9	1·8	9·6	2·3	4·1	1·3
		HASSAN DISTRICT								
Alur ...	Alur ...	9,750	18·55	2·3	17·6	1·6	10·3	1·3	5·3	1·33
	K. Hoskote ...	3,279	1·40	1·93	12·5	1·6	7·2	1·0	5·48	1·08
	Rayarakoppal ..	5,938	12 43	1·7	15·3	1·7	8·56	1·23	6·34	1·37
	Ponnathapura ...	3,832	11·13	1·37	8·5	1·37	18 8	1·9	3·72	1·57
	Talya ...	5,806	...	...	...	...	...	...	...	...
	Kundur ...	2,066	...	...	...	...	...	...	...	...
	Total ...	3,0671	13·3	2·1	1·5	1·6	11·7	1·5	5·5	5·8
Belur ...	Belur ...	12,406	19 23	1·94	4·7	1·9	1·9	1·4	4·95	2·1
	Kesagodu ...	3,741	...	...	47·3	1·2	20·5	1·2	3·33	2·3
	Gendehalli ...	4,172	27·08	1·6	...	...	32·7	1·8	21 39	1·51
	Arehalli ...	8,480	15 63	1·13	6.07	1·1	3 7	1·04	2·4	1·55
	Naganahalli ...	5,812	13·19	1·12	4·1	1 3	3·3	1·0	3·8	1·1
	Halebidu ...	12,269	18·94	2·47	19·1	1·68	11·2	1·4	12·9	1·70
	Hagare ...	9,136	35·7	1·5	16·07	1·5	22 2	1·3	17·98	1·3
	Bikkodu ...	...	...	...	...	...	...	...	...	...
	Bellur ...	...	...	...	...	...	...	...	...	...
	Total ...	56,016	22 2	1·6	9.0	1·4	10·9	1·9	9·73	1·56
Saklespur ...	Saklespur ...	5,280	5·4	1·8	2·8	2·1	1·8	1·8	4 5	1·8
	Ballupet ...	4,876	17 41	2·44	8.9	2·0	3·7	1·9	3·2	1·4
	Belagodu ...	4,247	52·78	2·27	37·1	1·37	21·4	1·1	7·9	1·25
	Hethur ...	6,104	26 3	1·6	15·13	1·36	5·6	1·4	13·2	1·6
	Sukravarasanthe ...	1,756	15·47	1·41	11·4	1·2	7·8	1·3	30·9	1·5
	Hanabal ...	2,679	31·17	1 37	16.9	1·3	8·8	1·5	17·1	1·2
	Yeslurpet ...	...	...	...	...	...	...	...	...	...
	Uchangi ...	5,052	...	...	65·02	2·0	29·7	1.5	30 9	1·6
	Total ...	29,944	26·0	1·9	13 4	1·1	8·4	1·5	17·8	1·5

DIX A—*contd.*

1952				1953				1954			
April		October		April		October		April		October	
SR	AES	SR	AES	SR	AES	SR	AES	AES	SR	AES	SR
12	13	14	15	16	17	18	19	20	21	22	23
9·0	1.1	10 7	1·8	0·5	1·0	0·57	1·0	1 5	1·13	1·88	1 11
...	...	1·4	1·1	4·6	1·2	4 14	1·03	1·24	1 0	1·93	1·0
1·7	1·75	1·7	1·9	0·9	1·75	0·47	1.0	0·3	1·25	0 7	1·1
1·6	1·0	1·1	1·0	1·8	1·0	1·56	1·76	1·05	1 1	0·82	1·14
...	...	...	...	...	...	...	..	...	...	**0 7**	1 0
...	...	13 9	1·2	...	...	11·38	1·01	...	...	0·54	4·0
12·7	1·02	2·0	1·0	1·73	1 0	0 76	1·0	0 41	1·0	0·85	1 6
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	4·4	1·0
...	...	...	...	...	...	...	...	...	...	1·9	1·0
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...		...	...
5·7	1·13	6·4	1·8	2·6	1·1	3·5	1·1	0 34	·42	1·4	1·1
1·9	1·05	1·1	1 0	0·5	1·0	0·57	1 0	0·23	1·0	0·23	1·0
10·2	1·2	8·6	1·2	7·9	1·41	6·41	1·16	7 53	1·16	6·82	1 0
...	...	..	.	...	...	1·61	1·35	2 56	1·26	...	...
...	...	...	...	...	...	1·75	1·0	...	...	...	...
6·4	1·2	5·25	1·8	4·2	1·2	2·9	1·19	3·44	1·14	3·1	1·0
7·3	1·3	2 0	1·4	8 3	1·76	7·46	1·6	6·8	1·5	0·29	1·0
0·8	2·0	0·3	2·3	0·4	2·0	0·25	2 33	0 54	1·8	0 09	2·0
15·8	1·8	10·9	1·4	5·57	1·6	3·6	1·3	2·1	1·5	2·11	1·1
2·8	1·29	2·3	1·2	1 2	1·1	0·78	1·04	1·95	1·21	0 68	1·09
2·7	1·72	2·3	1·8	2·3	1·9	1·1	1·93	1 2	1·7	0·88	1.8
6·9	1·62	3·8	1·2	2·4	1·15	1·1	1·1	1·9	1·04	1·18	1·07
4 3	1·52	4·6	1·6	1 4	1·9	0·56	1·3	1·4	1·5	0 59	1·25
4·6	2·6	...	...	6·0	1·6	...	...	...	...	...	...
3·9	**1·5**	2·59	1·4	2·7	1 64	1·7	1.5	1·99	1 28	0·7	1·3
3 7	1·42	3·33	1 16	2·27	1·7	0·6	1·0	0 62	1·0	0·55	1·5
7·87	1·35	4·35	1·48	3·98	1·41	3·25	1·27	2·62	2·33	1·56	1·37
...	...	3·95	1 17	1·7	1·1	0·99	1·5	0 9	1·1	1·5	1·87
...	...	...	...	2·8	1 3	2·9	1·25	1·6	1·2	1·6	1·1
...	...	...	...	...	...	...	...	1·46	1·0	1·5	1·0
...	...	...	...	...	...	...	...	6·18	2 0	2·10	2·0
1·24	5·1	1·2	3·4	1·2	2 5	1·59	1·14	2·26	1·27	1·1	2·8
5·8	1·4	2·6	1·5	2·4	1·5	1·0	1·2	1·6	1·2	0.8	1·3
3·06	2·0	1·8	1·5	0·9	1·0	1·46	1·38	0·76	1·4	0 56	2 0
11·6	1·3	8·9	1·1	0·9	1·0	4·2	1·13	5·6	1 0	2·1	1·09
1·01	1·7	0·7	2·0	0·6	2·4	0·22	3·3	0·16	1·0	0·23	2·3
4·1	1·3	1·1	1·25	1 7	1·06	1·78	1·16	1 3	1·16	0·2	1·2
7·8	1 65	1·4	1·0	0·3	1·0	0·12	1·0	...	...	...	...
6·4	1·7	2·9	1·1	2·4	1·0	2·4	1·7	1 6	1·0	1·9	**1 2**
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
5·35	1·35	2·26	1·3	1·3	1·35	1·35	1·22	1·22	0·75	0·7	1·3
1·26	1·0	1·2	1·0	0·9	1 0	0·4	1 2	0·2	1·0	...	...
2·9	1·18	2·1	1·0	4·9	1·0	...	...	...	...	0·5	1·0
4·02	1·06	3 7	1·1	4 7	1·9	2·34	1·54	...	...	0 89	2·25
9·1	1·5	5·9	1·1	7·11	1·3	5·8	1·2	4·5	1·22	8·2	1·2
24·6	1·27	6·1	1·2	4·1	1·4	4 3	1 11	1·3	1·2	...	...
8·3	1·2	5·2	5·2	4·9	1·0	3·7	1·04	1·7	1·0	0·18	3·0
...	...	...	...	...	...	...	...	...	..	...	...
9·5	1·8	7·1	1·3	4·0	1·8	4·19	1·09	4·6	1·3	3·7	1·33
10·1	1·4	5·2	1·2	3·92	1·02	2·67	1·13	2·6	1·1	1·08	1·4

Secondary Centre	Primary Centre	Population	1950				1951			
			April		October		April		October	
			SR	AES	SR	AES	SR	AES	SR	AES
1	2	3	4	5	6	7	8	9	10	11
Arkalgud ...	Arkalgud ...	...	...	...	...	...	...	...	...	...
	Mallipatna ...	...	...	...	...	...	...	...	...	...
	Basavapatna ...	...	...	...	...	...	...	...	...	...
	Konanur ...	...	...	...	...	...	...	...	...	...
	Rudrapatna ...	...	...	...	...	...	...	...	...	...
	Andarangi ...	...	...	...	...	...	...	...	...	...
			MYSORE DISTRICT							
Mysore ...	Periyapatna ...	...	...	...	...	...	...	...	22 5	2·4
	Bannur ...	27,281	8·02	3·07	10·11	2·85	6·97	2·9	5·3	1·8
	Sosale ...	...	...	...	...	...	...	...	...	...
K.R. Nagar ...	K. R. Nagar ...	11,176	51·48	1·87	...	...	14·2	1·5	8·7	1·53
	Hampapura ...	16,000	35·3	2·07	17·51	2·9	8·12	1·9	3·8	1·58
	Saligrama ...	7,131	9·6	1·61	11·4	1.7	7·7	1·6	4·9	1·0
	Hebbalur ...	11,557	27·98	1 84	13·2	1·5	7 7	1·7	5·3	1·6
	Thippur ...	4,896	57·7	2·1	10·4	6 7	6·3	1 6	3·75	2·03
	Mirle ...	12,164	38·11	1·22	14·46	1·36	9·1	1·8	5·45	1.5
	Anasoge ...	21,261	21·32	1·32	...	...	3·3	1·4	1·66	1·05
	Total ...	84,185	34·1	1·8	9·2	1·7	8·8	1·6	5·4	1·5
H.D. Kote ...	H. D. Kote ...	9,543	16.9	1·74	18·1	1·4	17 6	1·7	9·2	1·3
	Saragur ...	15,503	16·11	1·8	12·69	2·4	11·6	1·3	12·0	1·4
	Hampapnra ...	9,919	5·6	1·7	6·0	1·8	6·5	2·5	6·9	2·6
	Nisna ...	11,671	12·15	1·72	10·43	1·72	9·3	1·7	9·3	1·6
	Total ...	46,636	22·5	1·8	11·8	1·6	11·1	2·1	9·5	1·9
			MANDYA DISTRICT							
Mandya ...	Mandya ...	22,171	56·8	2 04	38 06	1·9	39 0	1·4	29·1	1·54
	Shivalli ...	22,403	50·4	2·0	30·5	2.1	42·8	1·3	22·8	1·5
	Chandagal ...	5,230	...	...	...	...	7·3	2·2	4·6	1·33
	Kothathi ...	3,359	43 8	2·24	65·6	1·8	74·8	1·9	50·8	1·7
	Kilara ...	14,501	62·7	1·8	64·1	2·0	36 4	2·0	35·3	1·3
	Total ...	48,764	48·1	2·0	52·2	1·9	36·6	1·3	22.4	1·3
Maddur ...	Maddur ...	21,819	23·6	2·11	20·85	1·86	12·8	2·04	8 0	1·2
	Gejjalgere ...	8,819	41·89	2·4	33·73	2 3	33·3	2·5	19·4	1·7
	Besagarahalli ...	10,205	60·2	2·0	45·73	2·85	40·0	3·3	28·0	2·0
	Koppa ...	9,860	42 0	2·6	34·2	2·4	27 8	1·6	37·2	2·3
	Doddarasinkere ...	15,885	29·5	2·6	26·5	2·7	18·9	2·5	8·0	2·1
	Total ...	66,588	3·7	2·3	28·7	2·5	24·5	2·5	12·8	1·73
Srirangapatna	Srirangapatna ...	29,165	34·7	1·9	39·69	1.9	42·2	1·46	24·4	1·8
	Arakere ...	10,433	10 99	2·3	27 1	2·7	40·2	3·2	20·2	1·9
	Pandavapura ...	28,089	55·0	4·3	44·1	3·1	31·9	1·84	33·2	2·7
	Total ...	67,687	31·8	2 6	21·7	2·5	33·1	1·9	21·6	1·7
	Bandihole ...	21,208	55·35	2·48	27·7	2·7	28·7	8·0	12·9	2·01
Malavalli ...	Malavalli ...	30,592	0·2	1 4	10·8	1·07	7·8	1·0	6·0	1·06
	Dugganahalli ...	13,568	7·3	1·4	6·9	1·6	7·4	1·5	8·2	1·5
	Kirgaval ...	16,597	20·3	2·23	15·4	1·2	8·2	1·1	11·1	1·17
	Kalkuni ...	...	...	...	...	...	...	...	0·2	1·2
	Agasanapura ...	3,262	14·8	1·5	9·8	1·4	...	...	4·7	1·2
	Total ...	64,019	7·9	1·5	9·9	1·2	7·5	1·2	17·2	1·21

A—*contd.*

1952				1953				1954			
April		October		April		October		April		October	
SR	AES	SR	AES	SR	AES	SR	AES	SR	AES	SR	AES
12	13	14	15	16	17	18	19	20	21	22	23
...	...	...	...	...	...	...	...	..	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	..	...	...	...	...	...	...
...	...	...	...	..	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	7·4	1·3	3·0	1·5
6·7	2·2	...	4·3	1·73	1·0	0·74	1·0	2·4	1·1	0·76	1·4
...	...	...	...	...	...	...	...	0·02	1·0	...	...
6·14	1·09	2·4	1·3	1·6	1·2	0·21	1·0	0·39	1·0	0·25	1·1
2·6	1·54	1·9	1·3	1·9	1·5	1·6	1·3	1·08	1·0	0·9	1·1
0·36	1·0	1·8	1·0	0·9	1·9	0·27	1·0	0·1	1·0	0·05	1·0
4·9	1·57	2·4	1·4	0·9	1·4	2·77	1·2	1·2	2·1	1·4	1·4
1·42	1·6	0·4	1·6	0·2	3·0	...	...	...	...	...	...
1·35	1·09	1·1	1·6	0·8	1·1	0·7	2·0	0·3	1·0	0·16	1·6
1·4	1·5	1·1	1·0	...	...	...	...	...	...	...	...
3·31	1·4	1·7	1·3	1·4	1·4	0·87	1·3	0·44	0·87	0·6	1·3
4·9	1·3	11·5	1·1	9·5	2·6	2·4	1·8	1·84	2·1	1·3	1·8
8·4	1·5	8·5	1·4	7·0	1·2	6·6	2·3	6·06	1·25	2·7	1·1
4·5	1·89	...	...	7·6	1·0	6·79	1·20	4·5	1·3	2·8	1·1
...	...	...	...	6·0	1·5	1·1	1·4	2·8	2·1	0·08	1·0
5·9	1·7	8·1	1·4	6·1	1·3	5·4	1·7	3·8	1·63	1·8	1·2
18·3	1·9	13·0	1·5	11·6	1·4	12·7	1·17	10·6	1·16	10·4	1·2
18·4	1·9	20·4	1·9	15·0	2·0	9·01	2·01	8·3	2·43	7·09	1·86
4·4	1·9	8·2	1·8	7·6	1·4	2·4	1·37	4·4	1·4	2·7	1·6
35·5	1·4	26·6	1·4	22·9	1·4	13·6	1·8	10·5	1·76	15·5	1·2
24·0	1·3	14·4	1·2	1·9	1·3	7·6	1·7	6·74	1·8	6·56	1·8
22·4	1·5	16·7	1·5	13·8	1·5	9·4	1·6	8·18	1·71	8·5	1·5
4·5	1·3	2·4	1·6	1·1	1·1	0·3	1·2	0·11	1·0	0·1	2·0
8·6	1·6	3·4	1·8	1·9	1·8	1·01	1·6	0·7	1·4	0·22	1·5
6·0	1·7	4·7	1·9	3·9	1·6	5·7	1·3	3·4	1·4	2·5	1·1
23·7	1·3	14·6	1·2	8·4	1·2	4·8	1·2	2·7	1·2	2·1	1·1
4·4	1·8	2·3	1·8	1·3	1·8	0·8	1·8	0·25	1·6	3·79	1·0
8·2	1·5	4·5	1·8	2·7	1·4	1·8	1·3	1·63	1·1	0·8	1·1
12·8	1·8	8·7	2·1	5·2	1·7	5·74	1·14	2·8	1·06	0·8	1·4
21·6	1·9	14·13	1·6	7·0	1·8	4·6	1·7	3·1	1·4	0·16	1·4
20·06	1·4	11·8	1·4	8·0	1·3	6·59	1·12	6·8	1·2	0·9	1·9
15·9	1·6	11·3	1·14	7·0	1·5	6·02	1·2	3·2	1·2	1·1	1·5
3·3	1·9	5·9	1·5	1·07	1·3	2·86	0·63	3·6	1·2	2·8	1·0
7·5	1·02	3·8	1·0	2·1	1·06	4·9	1·05	1·9	1·07	2·5	1·0
5·1	1·2	6·2	1·0	3·7	1·1	...	...	2·66	1·37	2·5	2·6
10·2	1·4	8·2	1·2	6·2	1·1	4·5	1·13	2·73	1·07	2·6	1·0
...	...	...	...	...	...	...	...	...	...	...	...
2·05	1·0	4·9	1·0	5·95	1·0	...	...	...	...	0·7	2·5
7·6	1·5	6·8	1·1	4·7	1·1	4·6	1·05	2·43	1·14	2·2	1·2

Secondary Centre	Primary Centre	Population	1950				1951			
			April		October		April		October	
			SR	AES	SR	AES	SR	AES	SR	AES
1	2	3	4	5	6	7	8	9	10	11
		CHITALDRUG DISTRICT								
Chitaldrug ...	Hiriyur (Vanivasapur) ...	10,884	...	...	...	...	...	...	...	...
	Ranganathapur ...	11,286	30·6	2·6	31·9	2·6	36·9	2·1	30·1	1·9
		TUMKUR DISTRICT								
Tumkur ...	Amruthur ...	11,110	3·9	1·76	4·3	1·31	7·7	1·4	3·1	1·23
	Yedavanne ...	10,676	...	...	...	...	...	...	...	...
		BANGALORE DISTRICT								
Bangalore ...	Ramanagaram (R.T.C.) ...	12,777	...	...	3·6	2·1	2·9	2·0	...	..

A—*concld.*

1952				1953				1954			
April		October		April		October		April		October	
SR	AES	SR	AES	SR	AES	SR	AES		AES	SR	AES
12	13	14	15	16	17	18	19	20	21	22	23
...	...	...	...	...	...	...	..	3·9	1·8	2·9	1·6
16·9	1·7	10·5	1·9	6·8	1·7	4·12	1·9	1·4	1·7	1·6	1·8
3·9	1·3	3·2	1·42	2·5	1·1	1·8	1·06	0·86	1·6	1·97	1·5
...	...	...	...	...	...	...	...	...	...	0·23	1·3
1·2	2·0	...	...	...	...	0·5	1·2	0·42	1·0	0 7	1·0

APPENDIX 'B'

Statement showing the details of D.D.T. spraying for the two rounds during the year 1954 under the National Malaria Control Programme.

Sl. No.	Name of the Unit	Population	No. of villages and towns	Total No. of houses in the village	No. of houses sprayed	No. of houses refused and locked	Quantity of D.D.T. spent		Remarks
							75 per cent Wettable powder	Emulsion concentrate	
	April Bound.								
1	Bangalore	43,490	69 1	10,552	10,146	406	4,254	...	...
2	Mandya	3,11,684	589 2	66,355	62,179	4,176	42,146	...	...
3	Mysore	75,913	159 1	16,241	15,792	449	1,360½	...	...
4	Chickmagalur	4,15,560	3,693 8	1,11,113	1,01,418	9,695	31,113½	4,619½	...
5	Shimoga	5,77,940	4,460 10	1,46,795	1,34,924	11,388	20,927	8,080	...
	Total ..	14,24,587	8,970 22	3,51,056	3,24,459	26,114	99,800½	12,699½	...
	October Bound.								
1	Bangalore	5,37,218	1,606 5	1,34,012	1,25,057	8,955	72,612	...	...
2	Mandya	7,98,825	1,801 4	1,62,334	1,48,660	13,674	1,01,149	...	...
3	Mysore	9,79,839	2,268 8	2,30,262	2,05,016	25,246	1,14,055	...	...
4	Chickmagalur	8,22,925	5,090 13	1,98,244	1,88,314	9,930	95,881	18½	...
5	Shimoga	6,21,492	4,463 13	1,59,653	1,51,409	8,244	38,109	7,879	...
	Total ...	37,60,299	15,228 43	8,84,505	8,18,456	66,049	4,21,806	7,897½	...
	Grand Total ...	51,84,886	24,198 65	12,35,561	11,42,915	92,163	5,21,606½	20,597	...

APPENDIX C.—Splenometric data—Results of biannual spleen surveys.

No.	District	No. of Primary Units	Population	1951 April No. Exam.	1951 April S.R.	1951 April A.E.S.	1951 October No. Exam.	1951 October S.R.	1951 October A.E.S.	1952 April No. Exam.	1952 April S.R.	1952 April A.E.S.	1952 October No. Exam.	1952 October S.R.	1952 October A.E.S.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Shimoga ...	32	2,15,998	25887	7·6	2·3	23843	5 3	2·1	24579	3·8	1·58	21085	2·6	1 6
2	Chickmagalur ...	31	1,77,068	24374	9·3	2·1	24732	6·4	1·3	25195	4·1	1·4	26255	3·7	1·3
3	Hassan ...	19	1,16,631	13749	10·1	1·9	13788	11·9	1·5	12896	6·9	1·4	12281	3·6	1·1
	Malnad ...	82	5,09,697	64010	9·0	2·1	62363	7·9	1·6	62670	4·9	1·5	59571	3·3	1·3
4	Mandya ..	18	2,53,133	28722	27·6	2·1	34849	18·1	2·5	26465	12·0	1·6	26086	9·2	1·6
5	Mysore ...	20	1,57,802	11667	9·6	1·8	11662	6·8	1·8	11627	4·1	1·5	11874	3·2	1·3
6	Chitaldrug ...	5	22,170	2119	36·9	2·1	3361	30·1	1·9	4636	16·9	1·7	4899	10 5	1·5
7	Tumkur ...	5	21,786	...	...	...	1595	3·1	1·25	1403	3·9	1·3	1456	3·2	1·4
8	Bangalore ...	1	12,777	1412	2·9	2·0	...	...	...	1391	1·2	2·0	...	...	...
	Maidan ...	49	4,67,673	43920	19·2	2·0	51467	14·5	1·9	45521	7·6	1·6	44315	8·7	1·4
	Grand Total ...	131	9,77,300	607920	14·9	2·0	113830	11·2	1·8	1108191	6·2	1·5	103886	6·0	1·4

...	.....	...	.....	1953 April No. Exam.	1953 April S.R.	1953 April A.E.S.	1953 October No. Exam.	1953 October S.R.	1953 October A.E.S.	1954 April No. Exam.	1954 April S.R.	1954 April A.E.S.	1954 October No. Exam.	1954 October S.R.	1954 October A.E.S.
...	...	...	...	17	18	19	20	21	22	23	24	25	26	27	28
1	Shimoga ...	32	2,15,998	26644	1.7	1·6	25893	1·58	1·4	22014	1·11	2·3	22771	0·9	1·3
2	Chickmagalur ...	31	1,77,068	26476	3·7	1·4	27993	2·5	1·3	28129	2·04	1·3	29215	1·4	1·2
3	Hassan ...	19	1,16,631	15781	2,78	1·3	14736	1·9	1·2	13287	1·6	1·1	10551	1·03	1·3
	Malnad ...	82	5,09,697	68301	2·7	1·2	68628	2·06	1·3	63430	1·5	1·5	62537	1·11	1·3
1	Mandya ...	18	2,53,133	26953	7·0	1·6	25153	1·5	1·3	22251	3·4	1·4	22845	2·7	1·4
2	Mysore ...	20	1,57,802	15408	2·9	1·6	20626	1·5	1·5	22785	1·6	1·4	21323	0 9	1·3
3	Chitaldrug ..	5	2,2170	5300	6·8	1·7	5529	4·2	1·9	5648	3·25	1·8	5870	2·6	1·9
4	Tumkur ...	5	21,786	3426	2·5	1·1	2549	1·8	1·06	1161	0·86	1·6	2528	0·5	1·4
5	Bangalore ...	1	12,777	...	...	...	1352	0·5	1·2	1426	0·42	1·6	1409	0·7	1·0
	Maidan ...	49	4,67,673	50887	5·4	1·3	55209	3·4	1·4	53371	1·84	1·5	53975	1·4	1·4
	Grand Total ...	131	9,77,300	118388	3·8	1·4	123837	2·7	1·4	116801	2·04	1·4	116512	1·5	1·2

APPENDIX

SPLENOMETRIC

Results of Biannual Spleen Surveys

Secondary Centre	Primary Centre	Population	1950				1951			
			April		October		April		October	
			SR	AES	SR	AES	SR	AES	SR	AES
1	2	3	4	5	6	7	8	9	10	11
										SHIMOGA
Shimoga ...	Thyavangi ...	...	...	...	...	...	...	...	...	...
	Kulambi ...	...	...	...	...	...	...	...	...	...
	Sowlanga ...	9,631	26·6	2·03	19·1	2·02	25·9	2·2	12·8	2·05
	Kumsi ...	11,340	12·52	1·86	7·06	1·71	6·2	1·3	2·9	1·63
	Bhadra ...	9,320	18·4	1·5	9·28	1·2	13·4	1·7	2·41	1·75
	Holehonnur ...	14,184	16·5	1·2	4·43	1·23	4·6	1·4	3·3	1·3
	Ayanur ...	..	...	...	...	...	...	...	...	...
	Shimoga West ...	...	...	...	...	...	...	...	.	.
	Total ...	44,475	14·3	1·8	9·1	1·6	10·4	2·1	5·3	1·3
Sorab ...	Sorab ...	7,110	8·6	1·3	4.3	1·23	2·2	2·6	0·93	1·0
	Hade ...	2,816	1·29	1·11	0·58	1·0	...	...	...	...
	Chandraguthi ..	5,813	...	...	3·03	1·3	2·4	2·0	...	...
	Anavatti ..	14,300	3·0	1·4	4·0	1·2	2·1	1·4	0·9	1·0
	Ulvi ...	1,055	...	...	...	...	...	...	...	...
	Kuppagadde ..	392	...	...	...	...	...	...	..	..
	Tattur ...	7,743	...	...	...	...	..	...	...	...
	Sigga ...	1,429	...	...	...	...	...	...	...	...
	Motaguppe ...	2,344	...	...	...	...	...	...	...	...
	Total ..	42,802	4·4	1·4	2·9	1·3	2·2	2·4	0·6	1·0
Shikaripur ...	Shikaripur ...	3,665	31·76	1·65	4·6	1·37	3·06	1·12	0·9	1·11
	Anjanapur ...	...	18·84	1·78	14·62	1·2	6·9	1·1	...	...
	Shiralkoppa ...	10,304	17·68	1·70	14·4	1·8	11·6	1·4	8·8	1·53
	Mallikote ...	...	...	...	...	...	...	...	...	...
	Mulakoppa ...	...	...	...	...	...	...	...	...	...
	Hosur ...	...	...	...	...	...	...	...	...	...
	Chickajogiballi ...	...	...	...	...	...	...	...	...	...
	Total ...	13,959	12·6	1·7	9·9	1·6	7·2	1·2	6·3	1·4
Hosanagar ..	Hosanagar ...	3,165	63·0	1·73	18·7	2·4	2·08	1·35	1·88	1·54
	Nagar ...	4,881	...	...	58·4	1·5	28·1	1·5	30·24	1·44
	Humchadakatte ...	3,024	19·5	2·6	14·2	2·2	13·5	1·65	12·26	2·54
	Yadur ..	4,516	...	...	...	...	...	...	...	...
	Kodur ..	3,739	...	...	...	...	...	...	...	...
	Sonli ...	8,046	...	...	...	...	...	...	...	...
	Total ...	27,371	44·1	1·9	..	...	13·6	1·6	13.9	1·8
Anandapuram...	Anandapuram ..	5,656	13·42	1·95	9·19	1·8	2·0	1·4	2·5	1·4
	Ripponpet ...	6,693	12·2	1·7	3·6	1·7	1·6	1·1	2·5	1·2
	Bhimanakone ..	3,994	...	...	..	...	...	...	...	...
	Thyagarthi ..	6,000	43·51	2·1	11·3	1·2	10·4	1·6	5·9	1·5
	Haridravathi ..	1,040	...	...	...	...	...	...	...	...
	Total ...	23,383	22·8	2·0	10·2	1·5	6·12	2·5	4·05	1·4

'D'.

DATA.

in the Health Units.

1952				1953				1954			
April		October		April		October		April		October	
SR	AES	SR	AES	SR	AES	SR	AES	SR	AES	SR	AES
12	13	14	15	16	17	18	19	20	21	22	23
DISTRICT.											
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
10·3	1·7	7 3	2·3	6·2	2·1	3·5	1·9	3 6	1·8	2·3	1·9
1·32	1·12	...	...	1·4	2·2	0·2	2·0	1 55	1·1	0·22	1·33
1·37	1·9	1·0	1·6	0·41	1·6	0 29	1·25	0·3	1·2	0·55	1·0
3·5	1·3	2·0	1·5	4·9	1·9	2·32	1·45	1·8	1·3	1·25	1·36
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
4·3	1·3	3·0	1·28	...	...	2·24	1·4	1·81	1·85	1·7	3·0
...	...	0·43	2·3	...	...	1·3	1·0	...	...	5.1	1·0
...	...	...	...	...	...	...	...	...	...	0	0
0·38	1·2	4·7	1·4	0·1	2·0	1·0	1·0	0·4	1·0	0	0
0·3	1·0	0·4	1·0	0·5	1 2	0·5	1·0	...	...	0·8	1·0
0·85	1·0	...	...	...	...	0·4	1·0	1·1	1·0	0·64	1 0
0·84	4·0	...	...	0·3	1·0	0·61	2·0	0·4	1·0	0	0
0·18	2·0	...	...	1 7	1·1	0·9	1·0	...	...	1·3	1·0
...	...	...	...	0 6	2·0	0 4	1·0	2·7	1·0	0	0
...	...	...	...	0·0	0·0	0·7	1·0	...	...	0	0
2·9	1·37	0·6	1·1	0·36	1·2	0·62	1·0	·57	·5	0·5	1·0
1·43	1·4	2·1	1·2	2·2	1·3	1·98	1 29	...	...	3·88	1·4
...	...	...	...	4·4	1·5	4·4	1·2	4·05	1·6	...	...
6·38	1·4	6·0	1·3	3·4	2·0	3·2	1 1	1·7	1·2	0·1	1·0
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
3·8	1·4	3·6	1·23	3·2	1·6	2·9	1 1	2·62	1·8	1·1	1·4
2·82	1·0	2·4	1·6	0·2	2·0	0·22	1 0	0·54	1·5	...	...
13·03	1·19	7·7	1·1	8·0	1·08	3 6	1·15	1·03	1·2	...	...
5·12	1·37	4·5	2·0	2·2	1·4	2·0	1·5	...	...	...	...
...	...	...	...	5 9	1·5	7 3	1·1	1·8	1·5	...	...
...	...	...	...	3·7	1·5	12 7	1·2	0·2	1·3	...	...
...	...	...	...	2·9	1·5	2·48	1·23	...	...	...	...
7·19	1·21	4·2	1·62	4·6	1·6	4 41	1·06	4·2	1·2	...	...
2·0	1·2	1·0	1·57	2·1	1·4	1·7	1·1	...	...	0·15	1·0
2·4	1·4	6·4	1·4	...	...	4 2	1 64	...	...	2·03	1·0
10 62	1·51	4·5	1·0	2·5	1·0	2·43	1·0	...	...	0·5	1·0
1·36	1·8	1·7	1·4	1·9	1·0	0·73	1 0	...	...	0·95	1·0
...	...	3·4	1·3	9·3	1·5	3 75	1·0	...	...	1·1	1·0
1·97	1·35	2.5	1·46	2·7	1·3	2·8	2 24	...	...	1·06	1·0

APPENDIX 'F'

Statement showing births, deaths, birth rates, death rates, malaria morbidity rates etc.

District Secondary Centre	Population	1953									
		Births			Birth rate		Deaths			Death rate	
		As reported	As detected	Total	As reported	Total	As reported	As detected	Total	As reported	Total
1	2	3	4	5	6	7	8	9	10	11	12
Shimoga ...	2,31,863	5,350	1,969	9,319	31·7	40·19	1,603	474	2,097	6·9	9·05
Chickmagalur ...	1,84,251	4,113	4,401	8,514	22·2	46·3	1,517	1,706	3,283	8·4	17·8
Hassan ...	1,10,609	3,257	1,864	5,121	29·3	46·3	589	484	1,073	5·3	9·7
Mysore ...	2,09,935	4,077	896	4,883	19·5	23·2	1,350	304	1,654	6·4	7·9
Mandya ...	3,34,412	9,631	2,044	12,475	28·4	37·3	2,640	332	3,272	7·9	9·7
Chitaldrug ...	27,692	472	245	723	17·3	26·1	156	65	200	5·5	7·2
Tumkur ...	21,086	337	97	434	16·0	20·6	100	55	155	4·7	7·3
Malnad Districts ...	5,26,663	14,720	8,234	22,884	27·9	43·5	3,769	2,684	6,463	7·1	12·2
Maidan Districts ...	6,14,425	14,523	3,992	18,515	23·6	13·1	4,235	1,046	5,281	6·9	8·5
Grand Total ...	11,41,088	29,243	12,226	41,459	25·6	38·3	8,004	3,730	11,734	7·0	10·2

APPENDIX 'F'

Statement showing births, deaths, birth rates, death rates, malaria morbidity rates etc.

District Secondary Centre	Population	1954										Malaria morbidity 1953			1954	
		Births			Birth rate		Deaths					Deaths due to malaria		No. of malaria cases	Morbidity rate	No. of Malaria cases	Morbidity rate (per 1,000 population
		As reported	As detected	Total	As reported	Total	As reported	As detected	Total	As reported	Total	1953	1954				
	13	14	15	16	17	18	19	20	21	22	23	24		25	26	27	28
Shimoga ...	2,55,925	7,879	2,385	10,264	30·8	40·1	2,435	628	3,053	9·5	11·9	8	—8	38,492	79·5	13,636	49·4
Chickmagalur ...	2,14,106	4,033	4,643	8,676	18·8	40·5	1,317	1,654	2,971	6·1	13·8	11	6	17,600	85·0	13,197	91·6
Hassan ...	1,11,272	2,574	1,611	4,185	23·2	37·4	849	511	1,360	7·6	12·2	6	4	8,880	30·3	4,268	38·4
Mysore ...	2,18,516	5,236	764	6,000	24·0	28·0	1,540	301	1,841	7·2	8·6	36	27	6,902	32·9	4,333	20·2
Mandya ...	3,34,090	8,882	2,660	11,342	25·9	33·9	3,045	914	3,989	9·0	11·8	36	57	15,249	45·6	11,634	34·[illegible]
Chitaldrug ...	22,170	469	300	769	21·3	34·9	117	69	186	5·8	8·4	...	...	3,680	132·9	2,691	121·[illegible]
Tumkur ...	21,788	535	312	847	24·3	38·5	218	100	312	9·9	14·4	...	...	599	28·5	1,890	86·7
Malnad Districts ...	5,81,307	14,486	8,639	23,125	25·7	40·0	4,601	1,793	7,394	7·9	12·6	25	18	34,972	66·4	30,101	51·4
Maidan Districts ...	6,21,662	14,922	4,036	18,958	23·6	30·4	4,920	1,384	6,304	7·9	10·1	92	71	23,430	43·1	20,548	83·0
Grand Total ...	12,02,969	29,408	12,675	42,083	24·7	34·9	9,521	4,177	13,698	7·8	11·2	117	92	61,402	53·8	50,659	42·1

APPENDIX 'G'

Blood Smears for 1954

Statement showing the results of smears examined from January 1954 to December 1954

Secondary Centre	Total No. of smears examined	...			...			...			Remarks
		Number examined	Number positive	Number negative	Number examined	Number po ve	Number negative	Number examined	Number positive	Number negative	
Shimoga—											
Anandapuram	352	203	...	203	...	...	...	149	...	149	...
Sorab ...	311	238	...	238	...	...	...	73	1	72	...
Sagar ...	494	331	...	331	86	...	86	77	...	77	...
Hosanagar ...	229	110	...	110	84	...	84	35	...	35	...
Thirthahalli ...	246	111	...	111	129	...	129	6	...	6	...
Shimoga ...	174	107	...	107	15	...	15	52	...	52	...
Shikaripur ...	555	299	4	295	92	...	92	164	2	162	...
Total ...	2,361	1,399	4	1,395	406	...	406	556	3	553	...
Chikmagalur—											
Chickamagalur	819	557	5	552	163	14	149	99	20	79	...
Mudigere ..	1,266	285	2	283	591	24	567	390	10	380	...
Koppa ...	961	233	1	232	400	...	400	328	5	323	...
Balehonnur ...	211	107	...	107	12	...	12	92	...	92	...
Tarikere ...	1,731	405	3	402	1,045	488	557	281	71	210	...
Total ..	4,988	1,587	11	1,576	2,211	526	1,685	1,190	106	1,084	...
Hassan—											
Saklespur ...	566	159	...	159	302	1	301	105	...	105	...
Alur ...	143	52	...	52	79	7	72	12	2	10	...
Belur ...	138	55	...	55	48	...	48	65	...	65	...
Total ...	877	266	...	266	429	8	421	182	2	180	...
Mysore—											
Krishnaraja-nagar	1,525	1,165	2	1,163	267	4	263	93	...	93	...
Heggadadevan-kote.	148	15	...	15	133	...	133	...	...	...	...
Bannur ...	38	1	...	1	37	...	37	...	...	...	...
Sosale ...	57	33	...	33	18	3	15	6	3	3	...
Total ...	1,768	1,214	2	1,212	455	7	448	99	3	96	...
Chitaldrug—											
Hiriyur ...	1,350	...	...	...	...	...	...	1,350	352	998	...
Ranganathapur	...	...	...	...	...	...	...	...	...	...	...
Total ...	1,350	...	...	...	...	...	...	1,350	352	998	...
Mandya—											
Mandya ...	328	327	1	326	215	12	203	86	9	77	...
Maddur ...	1,461	1,408	...	1,408	53	..	53	...	...	...	...
Srirangapatna	797	286	...	286	511	18	493	...	...	...	...
Malavalli ..	545	357	...	357	129	...	129	59	...	59	...
Bandihole ...	32	30	...	30	2	...	2	...	...	...	...
Total ...	3,463	2,408	1	2,407	910	30	880	145	9	136	...
Tumkur—											
Amruthur ...	...	...	...	...	...	...	...	...	...	...	...
Yedavanne ...	111	5	...	5	106	2	104	...	...	...	...
Grand Total	14,878	6,839	18	6,821	4,517	573	3,944	3,522	475	32,047	...

Infant Parasite rate—0·3 per cent, Adult parasite rate 12·7 per cent, Parasite rate of smears taken and clinically diagnosed as malaria 13·5 per cent.

APPENDIX H.

Anti-Malaria Drugs.

Statement showing anti-malaria drugs spent, etc.

District	1953								
	Quinine sulphate	Mepacrine Tabs.	Paludrine		Totaquin		Other drugs		
			0·1 Gm.	0·3 Gm.	Tabs	Powder	Cinchona Tab.	Cinchona Feb.	Q.B.H. Ampl.
1	2	3	4	5	6	7	8	9	10
	lbs. ozs.								
Shimoga ...	63 0	7,953	4,074	18,387	3,892	6 8	...	11 11	...
Chikmagalur ...	58 8	11,343	8,108	8,747	3,666	1 10	...	11 2	...
Hassan ...	25 11	4,509	3,892	6,611	2,415	...	...	15 6	...
Mysore ...	15 9	5,525	7,787	8,589	4,369	1 15	...	6 9	...
Mandya ...	30 12	1,895	27,820	10,368	1,475	...	...	3 14	...
Chitaldrug ...	6 15	...	2,308	...	...	...	130	...	...
Tumkur ...	0 12	605	3,625	9,375	...	...	...	0 8	...
Total ...	201 3	31,830	57,614	55,062	15,317	10 1	130	49 2	...

District	1954							
	Quinine sulphate	Mepacrine Tabs	Paludrine		Totaquin		Other drugs	
			0·1 Gm.	0·3 Gm.	Tabs	Powder	Resochin	Q.H.B. Ampls.
...	11	12	13	14	15	16	17	18
	lbs. ozs.							
Shimoga ...	25 2	13,324	1,490	6,461	7,718	1 5	...	...
Chickmagalur ...	38 15	849	11,311	11,512	5,910	...	...	...
Hassan ...	8 11	1,566	1,797	1,469	150	1 7	100	...
Mysore ...	14 6	2,285	4,120	4,323	3,706	6 12	...	...
Mandya ...	28 7	705	15,134	21,812	10,373	...	...	...
Chitaldrug ...	5 8	...	3,479	...	630	...	1,436	...
Tumkur ...	1 6	...	3,575	905	325	...	400	...
Total ...	122 7	18,729	40,903	46,982	27,812	9 8	1,936	...

BUREAU OF VITAL STATISTICS

SRI E. R. SUNDARARAJAN, M.A. (HONS.),

Superintendent and Deputy Registrar-General of Births, Deaths and Marriages.

The Bureau of Vital Statistics attended to the compilation of vital statistics in the State and took all necessary measures to improve such registration. From 1947, the Bureau has been issuing certificates of births and deaths on applications received from all over the State.

The compilation of vital statistics which was being done in Taluk Offices, was centralised in the Office of the Registrar-General of Births, Deaths and Marriages in Mysore, Bangalore.

In spite of many efforts, unfortunately, the average number of returns received from villages stood at about 50 per cent of the number of inhabited villages. As regards events recorded in these returns, the recording was getting more and more complete in areas where there are Rural Health Units and in other areas also a steady improvement was noticeable due to the fact that certificates of births and deaths, very much needed by the public are being issued by the Registrar-General.

During the year 6,574 births and deaths certificates were issued and 5,702 references were attended to.

During the year 1,74,578 live births were reported giving a birth rate of 16·7 per mille of population as compared with 16·5 in the previous year. The number of deaths reported under all causes was 86,405 giving a death rate of 8·3 as against 7·8 in the preceding year.

The birth rate of males for every 100 females born is 107·5 and the death rate of males for every 100 females is 103·2. The birth rate per square mile area in the Mysore State is 5·3 and death rate is 2·6. The vital index is 202 and the natural increase of population—births over deaths is 8·4. The average rates for the previous 5 years is births 16·4 and deaths 8·0.

These birth and death rates are low as only 51·0 per cent of birth returns and 49·7 per cent of death returns were received for compilation.

The Bellary District was merged with the Mysore State. The Bellary District followed the composite Madras pattern of compilation, and therefore, the vital statistics reports from Bellary have been separately dealt with.

The number of Birth returns received for each month from each district are given in the following statement, for the year 1954.

District (Rural Area)	January	February	March	April	May	June	July	August	September	October	November	December	Total
Bangalore ...	994	1,016	976	861	967	1,025	1,061	1,060	962	1,157	1,139	1,142	12,360
Chitaldrug ...	539	481	452	476	483	481	518	542	565	622	685	671	6,515
Hassan ...	747	813	768	788	854	1,018	1,011	990	963	1,041	1,014	995	11,002
Chikmagalur ...	470	478	469	400	475	504	530	541	520	550	566	590	6,093
Kolar ...	1,361	1,505	1,446	1,613	1,567	1,506	1,322	1,682	1,440	1,557	1,425	1,478	17,702
Mandya ...	638	594	635	587	594	683	633	581	650	706	703	649	7,651
Mysore ...	782	713	725	852	806	822	812	960	801	845	883	764	9,705
Shimoga ...	1,000	1,002	1,019	904	922	949	1,003	965	918	964	916	867	11,429
Tumkur ...	1,117	943	1,077	1,014	1,155	1,448	1,565	1,405	1,604	1,765	1,256	1,248	15,597
State (Ex. Bellary) ...	7,643	7,545	7,567	7,495	7,623	8,439	8,455	8,666	8,423	9,207	8,587	8,404	98,054
Bellary ...	439	445	435	446	437	429	453	442	435	430	424	401	5,216
State (In. Bellary) ...	8,082	7,990	8,002	7,941	8,060	8,868	8,908	9,108	8,858	9,637	9,011	8,805	1,03,270

Statement of Death returns received during the year 1954.

District (Rural Area)	January	February	March	April	May	June	July	August	September	October	November	December	Total
Bangalore ...	942	983	901	845	917	986	996	1,010	963	1,013	880	1,137	11,573
Chitaldrug ...	536	491	452	480	499	479	527	539	565	632	685	671	6,556
Hassan ...	731	828	816	964	865	891	974	991	884	981	998	995	10,948
Chikmagalur ...	459	477	468	406	476	483	525	537	507	552	582	590	6,062
Kolar ...	1,370	1,367	1,426	1,603	1,363	1,508	1,383	1,600	1,592	1,541	1,413	1,489	17,671
Mandya ...	633	592	645	584	554	619	535	560	624	704	702	626	7,378
Mysore ...	805	830	780	867	831	864	867	823	854	897	923	816	10,160
Shimoga ...	1,011	961	1,000	968	874	1,013	1,000	897	870	893	869	762	11,118
Tumkur ...	1,094	983	1,040	1,101	1,095	1,115	1,251	1,316	1,147	1,357	1,284	1,058	13,831
State (Ex. Bellary) ...	7,581	7,512	7,568	7,818	7,477	7,958	8,053	8,273	7,996	8,570	8,342	8,144	95,297
Bellary ...	439	445	435	446	437	429	453	442	435	430	424	401	5,216
State (In. Bellary) ...	8,020	7,957	8,003	8,264	7,914	8,387	8,511	8,715	8,431	9,000	8,766	8,545	1,00,513

Annual Vital Statistics of Mysore State for the Year 1954.

Districts and Cities	Estimated Mid Year Population	Deaths	Death rate	Live Births	Birth rate	Still Births	Percentage of S.B. on L.B.	Infant Deaths	Infant Mortality rate	Mat. Death	Mat. mortality rate	Vital Index	Rate Natural increase per 1,000 of population
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Bangalore District	14,49,776	6,735	4·6	16,365	11·3	208	1·3	750	45·8	98	5·9	243·0	6·7
Bangalore Corporation ...	9,03 053	12,939	14 3	25,106	27·8	1,062	4·2	3,005	119·7	17	0·6	194·0	13·5
Chitaldrug District ...	9,15,618	5,929	6·5	10,062	11·0	199	2·0	420	41·7	56	5·4	169·7	4·5
Hassan District	7,44,278	4,693	6·3	10,375	13·9	356	3·4	674	65·0	105	9·8	221·1	7·6
Chickmagalur District ...	4,37,290	2,800	6·4	7,540	17·2	199	2·6	558	74 0	60	7·7	269 3	10·8
Kolar District	10 14,758	9,346	9·2	13,221	14·0	364	2·7	1,223	92·5	85	6·2	141 5	4·8
Kolar Gold Fields City ...	1,67,499	2,230	13·3	5,904	35·2	210	3 6	524	86·3	10	1·6	264·8	21·9
Mandya District	7,44,868	6,117	8·2	14,448	19·4	356	2·5	1,183	81·9	87	5·9	236·2	11·2
Mysore District	10,84,269	6,595	6 1	15,169	14 0	161	1·1	865	56·1	90	5·9	230 0	7·9
Mysore City	2,75,580	3,280	11·9	7,046	25·6	306	4·3	604	85·7	27	3·4	214·8	13·7
Shimoga District	7,00,271	5,747	8·2	15,722	22·5	333	2·1	1,052	66·9	87	5·8	273 5	14·3
Tumkur District	12,16,549	8,840	7·3	14,161	12·6	280	2·0	892	63·0	134	9·3	160·2	5·3
Mysore State (Ex. Bellary) ...	96,53,803	75,251	7·8	155,119	16·1	4,040	2·6	11,850	76·4	855	5 4	206·1	8·3
Bellary District	8,17.350	11,154	13 6	19,459	23·8	285	1·2	2,559	131·6	131	6·6	174·5	10·2
Mysore State (Ex. Bellary) ...	104,71,153	86,405	8·3	174,578	16·7	4,325	2·5	14,409	82·5	986	5·5	202 0	8·4
Rural (Ex. Bellary) ...	72,01,939	50,682	7·0	94,356	13 1	1,304	1·4	7,112	75·4	728	7·6	186 2	6·1
Urban (Ex. Bellary) ...	11,05,732	6,120	5·5	22,707	20·5	1,158	5·1	605	26·6	73	3·1	371·0	15 0

The following are the numbers of return of Births and Deaths received and the percentage they bear on the expected numbers.

District	Number of population villages	Number of Returns, (Birth or Death) Expected	Number of Returns Received		Percentage of Returns Received		Birth Rate Recorded	Birthrate corrected for returns	Still Birth Rate Recorded	Still Birth Rate Corrected for returns	Infant Death rate recorded	Infant Death Rate Corrected for Returns	Death rate Recorded	Death Rate corrected for Returns
			Birth	Death	Birth	Death								
Bangalore District ...	2,477	29,724	12,360	11,573	41·6	38 9	11·2	26·9	1·2	2·9	46·1	118·5	4·6	11·8
Bangalore Corporation ...	...	...	..	..	...	..	...	...	..	..	...	...	...	...
Chitaldrug District ...	1,213	14,556	6,515	6.556	44 8	45 0	10·9	24·3	1 9	4·2	42·1	93·5	6·5	14·4
Hassan District ...	2,230	26.760	11,002	10,948	41·1	40·9	14·9	36·3	3·4	8·3	64·9	158·6	6·3	15·4
Chickmagalur District ...	935	11,220	6,093	6,062	54·3	54·0	17·2	31·7	2·6	4·8	74·0	137·0	6·4	11·9
Kolar District ...	2,728	32,736	17,702	17,671	54·1	54·0	14·0	25·9	2 7	4·9	92·5	171·3	9·2	17·0
Kolar Gold Fields ...	...	...	...	...	...	...	..	...	...	...	...	...	...	...
Mandya District ...	1,329	15,948	7,651	7.378	48·0	46·3	19·4	40·4	2 5	5·2	81 9	176·9	8·2	17·7
Mysore District ...	1,346	16,152	9,705	10,160	60·1	62·9	14·9	24·8	0·9	1·5	57·0	90·6	6·1	9·7
Mysore City ...	...	...	...	...	..	..	...	...	...	...	...	...	.	...
Shimoga District ...	1,638	19 656	11,429	11.118	58·1	56·6	22·4	38·6	2·1	3·6	66·9	118·2	8·2	14·5
Tumkur District ...	2,392	28,704	15 597	13,831	54 3	48·2	12·6	23·2	2 0	3·6	63·0	130·7	7·3	15·1
Mysore State (Ex. Bellary) ...	16,288	195,456	98,054	95,297	50·2	48·8	16·0	31·9	26·0	50·8	7·7	15 8	7·8	16·0
Bellary District ...	576	6,912	5,216	5,216	75·5	75 5	16·4	21 7	1·2	1·6	131·5	174·2	9·4	12·5
Mysore State (Including Bellary District) ...	16,864	202,368	103,270	101,513	51 0	49 7	16·1	31 6	2·5	4·9	82·6	166·2	8·0	16·1

The corrected rates given above indicate that the chief defect in the reporting is rather in non-reporting than in reporting incompletely. The reported birth rate of 16·1 becomes 31·6 when corrected for non-reporting; a death rate of 8·0 becomes 16·1 an infant mortality rate of 82·6 becomes 166·2. These corrected rates are normal and are the expected rates. Compared with the previous year's figures, the percentage of Birth returns received for Mysore State (Ex. Bellary) shows, an increase of 4·1 per cent, and the percentage of death returns received shows an increase of 2·8 per cent.

Population.

At the Census taken at sunrise on 1st March 1951 the population of Mysore State excluding Bellary was counted as 90,74,972. The estimated populations by districts and cities are given below in 1953 and 1954 :—

District and Cities	Population as per Census 1951	Estimated Population as on 1st July	
		1953	1954
Bangalore District	13,48,084	14,19,269	14,49,776
Bangalore Corporation ...	7,78,977	8,65,831	9,03,053
Chitaldrug District	8,68,370	9,01,442	9,15,618
Hassan District	7,15,135	7,35,536	7,44,278
Chikmagalur District... ...	4,17,538	4,31,365	4,37,290
Kolar District	9,70,791	10,01,567	10,14,758
Kolar Gold Fields City ...	1,59,084	1,64,976	1,67,499
Mandya District	7,17,545	7,36,672	7,44,868
Mysore District	10,40,448	10,71,124	10,84,269
Mysore City	2,44,323	2,66,202	2,75,580
Shimoga District	6,63,315	6,89,182	7,00,271
Tumkur District	11,51,362	11,96,987	12,16,542
Mysore State (excluding Bellary District).	90,74,972	94,80,153	96,53,802
Bellary	7,73,712	8,04,882	8,17,350
Mysore State (including Bellary District)	98,48,684	1,02,85,035	1,04,71,152

Excess of Live Births over Deaths

During the year an excess of 88,173 live births over deaths were reported and the figures are given below for the Districts and Cities.

Districts and Cities	Live Births for 1954	Excess of Live births over deaths	
		1953	1954
Bangalore District	9,630	8,959	9,396
Bangalore Corporation	12,167	11,355	9,428
Chitaldrug District	4,133	6,867	8,503
Hassan District	5,682	4,856	6,078
Chikmagalur District	4,740	4,244	6,029
Kolar District	3,875	4,588	7,607
Kolar Gold Fields City... ...	3,674	3,974	3,972
Mandya District	8,331	9,003	7,207
Mysore District	8,574	7,248	7,757
Mysore City	3,766	4,098	4,094
Shimoga District	9,975	10,694	10,645
Tumkur District	5,321	6,361	6,271
Bellary District	8,305	...	...

Live Births.

A total of 1,74,578 live births were reported during the year giving a birth rate of 16·7 per mile of population as compared with 16·5 in the previous year. The birth rate was highest (22·5) in Shimoga District and lowest (11·0) in Chitaldrug District. The variations in the birth rates in districts and cities are shown below :—

Districts and Cities	Live Births Reported	Birth Rate		
		1954	1953	1952
Bangalore District ...	16,365	11·3	11·3	11·3
Bangalore Corporation ...	25,106	27·8	30·5	34·0
Chitaldrug District ...	10,062	11·0	13·6	14·9
Hassan District ...	10,375	13·9	12·7	14·2
Chikmagalur District ...	7,540	17·2	17·3	20·5
Kolar District ...	13,221	14·0	13·1	15·4
Kolar Gold Fields City ...	5,964	35·2	39·4	39·8
Mandya District ...	14,448	19·4	19·0	15·7
Mysore District ...	15,169	14·0	13·0	14·8
Mysore City ...	7,046	25·6	27·8	27·7
Shimoga District ...	15,722	22·5	23·0	22·7
Tumkur District ...	14,161	12·6	11·5	11·2
Mysore State (excluding Bellary District)	1,55,119	16·1	16·5	16·5
Bellary	19,459	23·8	...	...
Mysore State (including Bellary District)	1,74,578	16·7	16·5	16·5

Still Births.

In Mysore State, 4,325 still births were reported during the year giving a percentage of 2·5 on the reported live births, as compared with 2·7 in the preceding year. The still birth rate was highest (3·4) in Hassan District and lowest (1·1) in Mysore District. The variations in the Districts and Cities are noted below :—

Districts and Cities	Still Births Reported	Per cent on Live Births		
		1954	1953	1952
Bangalore District	209	1·3	1·7	1·4
Bangalore Corporation	1,062	4·2	4·4	5·1
Chitaldrug District	199	2·0	2·0	1·3
Hassan District	356	3·4	3·1	2·7
Chikmagalur District	199	2·6	3·4	2·3
Kolar District	364	2·7	2·8	2·3
Kolar Gold Fields City	210	3·6	3·4	3·5
Mandya District	356	2·5	2·6	2·2
Mysore District	161	1·1	1·1	0·9
Mysore City	306	4·3	4·4	5·1
Shimoga District	338	2·1	2·1	2·5
Tumkur District	280	2·0	1·9	1·4
Mysore State (excluding Bellary District)	4,040	2·6	2·7	2·5
Bellary	285	1·2	...	...
Mysore State (including Bellary District)	4,325	2·5	2·7	2·5

Infant Mortality.

A total of 14,409 deaths of infants under one year of age were reported during the year, giving an infant mortality rate of 82 5 per 1,000 Live births, as against 78·8 in the previous year. The rate was highest (92·5) in Kolar District and lowest (41·7) in Chitaldrug District. The variations in the rates in districts and cities are given in the following statement :—

Districts and Cities	No. of Infant deaths reported	Infant Mortality Rate		
		1954	1953	1952
Bangalore District ...	750	45·8	61·8	56·8
Bangalore Corporation ...	3,005	119·7	137·5	135·1
Chitaldrug District ...	420	41·7	50·3	42·8
Hassan District ...	674	65·0	60·5	74·0
Chikmagalur District ...	558	74·0	79·0	71·6
Kolar District ...	1,223	92·5	67·7	56·1
Kolar Gold Fields City ...	524	86·3	98·6	92·1
Mandya District ...	1,183	81·9	78·5	69·5
Mysore District ...	865	56·4	51·4	50·5
Mysore City ..	604	85·7	92·5	89·5
Shimoga District ...	1,052	66·9	66·4	53·0
Tumkur District ...	892	63·0	60·5	62·3
Mysore State (Ex. Bellary District.)	11,850	76·4	78·8	72·8
Bellary District ...	2,559	131·5	...	...
Mysore State (Including Bellary District.)	14,409	82·5	78·8	72·8

Total Deaths from all Causes.

During the year 86,405 deaths from all causes were reported giving a general death rate of 8·3 per mile of population as compared with 7·8 in the preceding year. The rate was highest (9·2) in Kolar District and lowest (4·6) in Bangalore District.

The variations in the rates in districts and cities are shown below :—

Districts and Cities	Total Deaths Reported	Death Rate		
		1954	1953	1952
Bangalore District ...	6,735	4·6	5·0	4·6
Bangalore Corporation ...	12,939	14·3	17·4	18·7
Chitaldrug District ...	5,929	6·5	6·0	5·4
Hassan District ...	4,693	6·3	6·1	5·8
Chikmagalur District ...	2,800	6·4	7·4	6·3
Kolar District ...	9,346	9·2	8·5	7·7
Kolar Gold Fields City ...	2,230	13·3	15·3	14·6
Mandya District ...	6,117	8·2	6·8	5·8
Mysore District ...	6,595	6·1	6·3	7·4
Mysore City ...	3,280	11·9	12·4	13·0
Shimoga District ...	5,747	8·2	7·5	7·0
Tumkur District ...	8,840	7·3	6·2	5·9
Mysore State (Ex. Bellary District).	75,251	7·8	7·8	7·3
Bellary ...	11,154	13·6	...	...
Mysore State (Including Bellary District.)	86,405	8·3	7·8	7·3

Conjugal Condition.—Of 75,251 deaths reported in the Mysore State (Ex. Bellary) the conjugal condition at the time of death, as reported, was as follows :—

Conjugal condition	Deaths in 1954	Per cent of total deaths							
		1954	1953	1952	1951	1950	1949	1948	1947
Single ...	28,546	37·9	32·5	35·4	35·4	35·8	34·1	29·1	32·1
Married ...	31,747	42·2	39·0	40·6	44·6	44·4	48·1	55·1	49·2
Widows and Divorced	2,620	3·5	3·9	3·7	3·2	2·3	3·0	2·7	2·7
Not Stated ...	12,338	16·4	24·6	20·5	16·8	16·8	14·6	12·5	15·9

Age Distribution of Deaths.

The following statement gives the distribution of 75,251 deaths in the Mysore State (Ex. Bellary) reported in the different age groups :—

Age Groups	Estimated population in 1954	Deaths reported			Mortality rate		
		1954	1953	1952	1954	1953	1952
Under 1 year ..	183,804	11,850	12,304	11,153	64·5	78·8	72·8
1— 5 years ...	980,114	13,391	13,375	11,456	13·7	14·0	12·2
5—10 ,, ...	127,9211	3,888	3,062	2,841	3·3	2·4	2·3
10—15 ,, ...	1291,885	1,972	1,856	1,731	1·5	1·5	1·4
15—20 ,, ...	893,723	2,365	2,688	2,677	2·6	3·1	3·1
20—30 ,, ...	1631,932	5,921	5,870	5,827	3·6	3·7	3·7
30—40 ,, ...	1274,658	5,688	5,698	5,400	4·5	4·6	4·4
40—50 ,, ...	935,725	5,822	5,925	5,441	6·2	6·5	6·1
50—60 ,, ...	624,334	6,377	6,267	5,394	10·2	10·5	9·3
60 and Over ..	558,416	16,218	14,623	12,485	29·0	27·6	21·4
Not Stated ...	...	1,779	2,235	2,043	...	...	...
Total ...	9653,802	75,251	73,304	66,447	7·8	7·8	7·1

It will be seen from the above statement, that the mortality rates varies, 0year after year in each age group "Under 1 year" is highest and falls suddenly in the next age groups. The mortality is lowest 1·5 in the "10-15" age group, thereafter rises gradually till the end of life.

History of Chief Diseases in Mysore State in the year 1954.

The following are the numbers of deaths reported under the chief causes listed in the Death Returns in use in Mysore State (excluding Bellary :—

	Causes of Death	Number as reported	Corrected figures	Specific death rate
	1	2	3	4
1	Plague	115	235	2
2	Small-pox	945	1,936	20
3	Cholera	1,457	2,986	31
4	Malaria	15,225	31,199	323
5	Typhoid	2,889	5,920	61
6	Other fevers	12,859	26,350	273
7	Dysentery and Diarrhoea ...	8,063	16,523	171
8	Respiratory Diseases ...	3,519	7,211	75
9	Tuberculosis	3,032	6,213	64
10	Leprosy	385	789	8
11	Maternal deaths	855	1,752	18
12	Suicide	190	389	4
13	Drowning	786	1,611	17
14	Wounds and accidents ...	731	1,498	16
15	Killed by wild beasts ...	20	41	0·4
16	Snake bite	138	270	3
17	Rabies	64	131	1
18	All other causes	21,497	44,051	456
19	Causes not stated ...	2,481	5,084	527

The column (3) gives the corrected figures based on the number of Death returns received and these are given as the likely incidence. Applying correction for the returns not received. Specific death rates are calculated and entered in column (4).

Both figures will be given for purpose of comparison. The corrected figures are given in brackets.

Plague.

During the year 115 (235) deaths from Plague reported as against 106 (231) in the previous year, with a specific death rate of 1·2 per one lakh of population as compared with 1·1 in the preceding year. The incidence was highest 8·0 in Kolar District and lowest 0·1 in Bangalore District. The variations in the Districts and Cities are shown in the following Statement.

District and Cities	No. of deaths from Plague in 1954	Specific Death Rate			Per cent on total deaths		
		1954	1953	1952	1954	1953	1952
Bangalore District ...	2	0·1	0·3	2	0·02	0·06	0·4
Bangalore Corporation ...	...	...	0·0	0	...	..	...
Chitaldrug District ..	2	0·2	0·5	0	0·03	0·09	...
Hassan District ...	...	...	2·0	8	..	0·3	1·4
Chickmagalur District ...	1	0·2	0·0	0	0·03	...	...
Kolar District ...	81	8·0	1·6	3	0·9	0·2	0·4
Kolar Gold Fields City ...	4	2·4	0·0	0	0·1	...	...
Mandya District ..	5	0·7	0·4	0	0·08	0·06	0·1
Mysore District ...	6	0·5	5·0	36	0·09	0·7	4·8
Mysore City ...	...	...	0·0	0	...	...	...
Shimoga District ...	5	0·7	0·6	0	0·8	0·08	0·1
Tumkur District ...	9	0·7	0·7	1	0·1	0·1	0·2
Mysore State (Excluding Bellary District)	115	1·2	1·1	6	0·2	0·1	0·8
Bellary ...	11	1·3	...	...	0·1	...	...
Mysore State (Including Bellary District) ...	126	1·2	1·1	6	0·1	0·1	0·8

Small-pox.

In the year under report 945 (1,936) deaths from Small-pox were reported as compared with 1,149 (2,484) in the preceding year, with a specific death rate of 10 as compared with 12 in the previous year. The incidence was highest 25 in Kolar District and lowest 2 in Chickmagalur District. The variations in the Districts and City areas are shown in the following table:—

District and Cities	Number of Deaths from Small-pox in 1954	Specific Death Rate			Per cent on Total Deaths		
		1954	1953	1952	1954	1953	1952
Bangalore District ...	132	9·1	13	14	1·9	3·9	3·0
Bangalore Corporation ...	17	2·1	11	14	0·1	0·6	1·1
Chitaldug District ...	136	15	6	17	2·3	1·1	3·2
Hassan District ...	49	7	5	5	1·0	0·7	0·8
Chickmagalur District ...	8	2	6	4	0·3	0·9	0·7
Kolar District ...	253	25	24	37	2·7	2·9	4·8
Kolar Gold Fields City ...	3	2	4	9	0·1	0·3	0·6
Mandya District ...	48	6	10	9	0·8	1·4	1·6
Mysore District ...	30	3	6	9	0·4	0·9	1·2
Mysore City ...	...	...	5	11	...	0·4	0·8
Shimoga District ...	112	16	6	21	1·9	0·9	3·0
Tumkur District ...	157	13	17	16	1·8	2·8	2·7
Mysore State (Ex. Bellary District) ...	945	10	12	15	1·3	1·5	2·1
Bellary ...	77	9	...	..	0·7	...	...
Mysore State (In. Bellary District) ...	1,022	10	12	15	1·2	1·5	2·1

Cholera

During the year 1,457 (2,986) deaths from Cholera were reported as against 1,300 (2,832) in the previous year, with a specific death rate of 15 as compared with 14 in the preceding year. The incidence was highest 33 in Shimoga District and lowest 2 in Kolar District. The variations are given in the following statement :—

District and Cities	Number of Deaths from Cholera in 1954	Specific Death Rate			Per cent on Total Deaths		
		1954	1953	1952	1954	1953	1952
Bangalore District ...	104	7	17	11	1·5	3 5	2·5
Bangalore Corporation ...	1	0·1	1	..	0·01	0·07	...
Chitaldrug District ...	240	26	9	3	4·0	1·5	0·6
Hassan District ...	34	5	12	12	0·7	1·9	2·1
Chickmagalur District ...	136	31	4	11	4·9	0·5	1·7
Kolar District ...	16	2	45	29	0·2	5·2	3·8
Kolar Gold Fields City ...	7	4	7	7	0.3	0·4	0·5
Mandya District ...	235	32	13	10	3·8	1·9	1·7
Mysore District ...	200	18	17	19	3·0	2·8	2·6
Mysore City ...	3	1	...	...	0·09	...	...
Shimoga District ...	232	33	2	28	4·0	0·3	4·0
Tumkur District ...	249	21	8	1	2 8	1 3	0·3
Mysore State (Ex. Bellary District) ...	1,457	15	14	12	1·9	1·7	1·7
Bellary ...	183	23	...	...	1·6	...	...
Mysore State (Ex. Bellary District) ...	1,642	16	14	12	1·9	1·7	1·7

Malaria

During the year under report 15,225 (31,199) deaths from Malaria as against 12,859 (28,015) in the previous year, with a specific death rate of 158 as compared with 136 in the preceding year. The incidence was highest 345 in Kolar District and lowest 42 in Bangalore District. The variations are stated in the following statement :—

District and Cities	Number of Deaths from Malaria in 1954	Specific Death Rate			Per cent on Total Deaths		
		1954	1953	1952	1954	1953	1952
Bangalore District ...	1,388	96	98	92	20·6	19·7	20·1
Bangalore Corporation ...	31	3	3	4	0·2	0·2	0·3
Chitaldrug District ...	1,877	205	182	141	31·6	30 5	26·3
Hassan District ...	1,524	205	198	175	32·5	32·5	30·1
Chickmagalur District ...	511	117	167	156	18·3	22·5	24·7
Kolar District ...	3,497	345	222	198	37·4	26·1	25·3
Kolar Gold Fields City ...	39	23	19	18	1·7	1·2	1·2
Mandya District ...	1,225	164	129	124	20·0	19·1	21·5
Mysore District ...	1,590	147	153	165	24·1	24·5	22·5
Mysore City ...	16	6	9	19	0·5	0·7	1·5
Shimoga District ...	946	135	142	128	16·3	18·9	18·2
Tumkur District ..	2,581	212	147	150	29·2	23·7	25·3
Mysore State (Ex. Bellary District) ...	15,225	158	136	127	20·2	17·4	17·8
Bellary ...	498	61	...	...	4·5	...	...
Mysore State (In. Bellary District) ...	15,723	150	136	127	18·2	17·4	17·8

Typhoid

A total of 2,889 (5,920) deaths from Typhoid reported during the year as against 2,442 (5,320) in the previous year, with a specific death rate of 30 as against 26 in the preceding year. The incidence was highest 41 in Mandya and Tumkur Districts and lowest 23 in Bangalore District. The variations in the Districts can be seen in the following statement :—

District and Cities	Number of Deaths from Typhoid in 1954	Specific Death Rate			Per cent on Total Deaths		
		1954	1953	1952	1954	1953	1952
Bangalore District ...	335	23	22	17	5·0	4·5	3·6
Bangalore Corporation ...	50	6	5	12	3·9	0·3	0·9
Chitaldrug District ...	282	31	29	25	4·7	4·9	4·6
Hassan District ...	248	33	19	24	5 3	9·1	4·2
Chickmagalur District ...	140	32	33	21	5·0	4·4	3·3
Kolar District ...	371	37	28	28	4·0	3·2	3·6
Kolar Gold Fields City ...	11	7	6	2	0 5	0·4	0·2
Mandya District ...	307	41	31	31	5·0	4·6	5·4
Mysore District ...	353	33	28	34	5·4	4·5	4·6
Mysore City ...	42	15	9	8	1·3	6·7	6·6
Shimoga District ...	251	36	42	34	4·4	5·6	4·8
Tumkur District ...	499	41	34	29	5·6	5·4	4·8
Mysore State (Ex. Bellary District) ...	2,889	30	26	24	3·8	3·3	3·4
Bellary ...	..	...	...	...	...	...	...
Mysore State (In. Bellary District) ...	2,889	28	26	24	3·3	3·3	3·4

Other Fevers

Twelve thousand eight hundred and fifth-nine (26,350) deaths from other fevers were reported as compared with 11,385 (24,804) in the previous year, with a specific death rate of 132 as compared with 120 in the previous year. The incidence was highest 174 in Kolar District and lowest 64 in Hassan District. The variations in the incidence are shown below.

District and Cities	Number of Deaths from Other Fevers in 1954	Specific Death Rate			Per cent on Total Death		
		1954	1953	1952	1954	1953	1952
Bangalore District ...	1,067	74	68	67	15.8	13·7	14·5
Bangalore Corpn. ...	2,312	256	218	185	17·9	12·6	13·6
Chitaldrug District ...	1,159	127	112	112	19·5	18·6	20·9
Hassan District ...	479	64	64	71	10·2	10·5	12 3
Chickmagalur District ...	551	126	127	104	19·5	17·1	16·5
Kolar District ...	1,761	174	149	131	18·8	17 5	16·9
Kolar Gold Fields City ...	286	171	170	203	12·8	11·1	13·9
Mandya District ...	1,103	148	126	109	18·2	18·7	18·8
Mysore District ...	1,134	105	105	133	17·2	16·7	18·0
Mysore City ...	577	210	240	224	17·6	19·6	17·3
Shimoga District ...	992	142	123	116	17·3	16·4	16·5
Tumkur District ...	1,438	118	98	89	6·3	15·7	15·1
Mysore State (Ex. Bellary District) ...	12,859	132	120	114	17·1	15·4	16·0
Bellary ...	2,627	321	...	..	22·5	...	...
Mysore State (In. Bellary District) ...	15,486	148	120	114	17·9	15·4	16·0

Dysentery and Diarrhoea

During the year 8,063 (16,523) deaths from Dysentery and Diarrohoea were reported as compared with 8,178 (17,817) in the preceding year, with a specific death rate 84, as compared with 86 in the preceding year. The incidence is highest 96 in Mandya District and lowest 44 in Kolar District. The variation in the District are given in the following table.

District and Cities	Number of Deaths from Dysentery and Diarrhoea in 1954	Specific Death Rate			Per cent on Total Death		
		1954	1953	1952	1954	1953	1952
Bangalore District ...	715	49	56	45	10·6	11·2	9·9
Bangalore Corpn. ...	1,962	217	257	210	15.2	14·8	15 4
Chitaldrug District ...	456	50	49	36	7 7	8·1	6·7
Hassan District ...	575	77	71	56	12·2	11 6	9·7
Chickmagalur District ...	342	78	102	56	12·1	13 7	8·9
Kolar District ...	448	44	58	46	4 8	6·8	5·9
Kolar Gold Fields City ...	283	169	193	222	12·7	12 6	15·3
Mandya District ...	717	96	58	43	11·7	8·6	7·5
Mysore District ...	700	65	70	88	10 6	11 3	11·9
Mysore City ...	305	111	117	116	9·3	9 5	9 0
Shimoga District ...	656	94	74	49	4·0	9·9	6·9
Tumkur District ...	904	74	71	65	10 2	11·4	11·0
Mysore State (Ex. Bellary District) ...	8,063	84	86	73	10·7	11·1	10·2
Bellary ...	442	54	....	...	4·0	...	...
Mysore State (In. Bellary District) ..	8,505	81	86	73	9·8	11·1	10·2

Respiratory Diseases

Accounted for 3,519 (7211) deaths as compared with 2,854 (6,218) in the preceding year, with a specific death rate of 37, as compared with 30 in the preceding year. The incidence is highest 63 in Mandya District and lowest 27 in Bangalore District. The variations are shown in the following statement.

District and Cities	Number of Deaths from Respiratory Diseases in 1954	Specific Death Rate			Per cent on Total Deaths		
		1954	1953	1952	1954	1953	1952
Bangalore District ...	396	27	22	22	5·9	4·5	4·9
Bangalore Corpn. ...	168	19	9	6	1·3	0·5	0·4
Chitaldrug District ...	263	29	30	23	4·4	4·9	4·8
Hassan District ...	297	40	24	23	6·3	3·9	4·0
Chickmagalur District ...	154	35	34	31	5·5	4·6	5 0
Kolar District ...	311	31	34	32	3·3	4·0	4·1
Kolar Gold Fields City ...	52	31	15	2	2·3	0·9	0·2
Mandya District ...	470	63	44	30	7·7	6·6	5 1
Mysore District ...	542	50	46	50	8·2	7·3	6·7
Mysore City ...	101	37	5	5	3·1	0·4	0·4
Shimoga District ...	382	55	45	35	6·6	6·0	5·0
Tumkur District ...	383	32	31	26	4·3	4·9	4·4
Mysore State (Ex. Bellary District) ...	3,519	37	30	27	4·7	3·9	3·8
Bellary ...	748	92	...	...	6·7	...	...
Mysore State (In. Bellary District) ...	4,267	41	30	27	4·9	3·9	3·8

Tuberculosis

During the year 3,032 (60,213) deaths from Tuberculosis reported as against 3,147 (6,856) in the preceding year, with a specific death rate of 31 as compared with 33 in the previous year. The incidence was highest 55 in Tumkur District and lowest 13 in Chickmagalur District. The variations are shown in the following table.

District and Cities	Number of Deaths from Tuberculosis in 1954	Specific Death Rate			Per cent on Total Deaths		
		1954	1953	1952	1954	1953	1952
Bangalore District ...	418	29	28	31	6·2	5·7	6 8
Bangalore Corpn ...	279	31	38	36	2·1	2·2	2·7
Chitaldrug District ...	175	19	25	24	3·0	4.2	4·5
Hassan District ...	157	21	25	23	3·3	4·1	4·0
Chickmag lur District ...	56	13	25	21	2·0	3·4	3·3
Kolar District ...	385	38	43	43	4·1	5·1	5·5
Kolar Gold Fields City ...	94	56	68	63	4·2	4·5	4·8
Mandya District ...	253	34	24	27	4·1	3·5	4·7
Mysore District ...	250	23	28	32	3.8	4·5	4·3
Mysore City ...	143	52	54	85	4·3	4·1	6·6
Shimoga District ...	151	22	24	20	2·6	3·3	2·9
Tumkur District ...	671	55	46	53	7·6	7·5	9·0
Mysore Stats (Ex. Bellary District) ...	3,032	31	33	35	4·0	4·3	4·9
Bellary ...	...	...	...	...	...	...	...
Mysore State (In. Bellary District) ...	3,032	29	33	35	3·5	4 3	4·9

Leprosy

During the year 385 (789) death from Leprosy were reported as against 473 (1,031) in the preceding year with a specific death rate of 4 as against 5 in the preceding year. The incidence highest 7 in Tumkur District and lowest 3 in Bangalore District and Shimoga District. The variations can be seen in the following table. Investigations in a few instances reviewed wrong diagnosis made by lay Revenue Patels who are the informants. One cannot therefore vouch for the accuracy of the figures for death under leprosy.

District and Citios	Number of Death from Leprosy in 1954	Specific Death Rate			Per cent on Total Deaths		
		1954	1953	1952	1954	1953	1952
Bangalore District ...	41	3	3	3	0·6	0·7	0·7
Bangalore Corporation ...	1	0·1	1	2	0·01	0·05	0·1
Chitaldrug District ...	45	5	6	5	0·9	1·0	0·9
Hassan District ...	41	6	6	5	0·9	1·0	0·9
Chickmagalur District ...	16	4	3	5	0·6	0·5	0·8
Kolar District ...	54	5	9	7	0·6	1·0	1·0
Kolar Gold Fields City ...	1	0·6	1	1	0·04	0·08	0·1
Mandya District ...	41	6	2	3	0·7	0·4	0·5
Mysore District ...	41	4	5	5	0·6	0·8	0·7
Mysore City ...	...	...	0·4	1	...	0·03	0·1
Shimoga District ...	23	3	5	3	0 4	0·6	0·5
Tumkur District ...	81	7	8	10	0·9	1·3	1·7
Mysore State (Ex. Bellary District) ...	385	4	5	5	0·5	0·6	0·7
Bellary ...	...	...	...	...	...	...	...
Mysore State (In. Bellary District) ..	385	4	5	5	0·4	0·6	0·7

Maternal Deaths

In the year under Report 855 (1,752) deaths from Maternal Deaths were reported as against 958 (2,087) in the preceding year, with a Maternal mortality rate 5·4 per 1,000 births as compared 6·0 in the preceding year. The rate was highest 9·8 in Hassan District and lowest 5·4 in Chitaldrug and Shimoga Districts. The variations are shown in the following statements.

District and Cities	Number of Deaths from Maternal Deaths in 1954	Maternal mortality rate		
		1954	1953	1952
Bangalore District ...	98	5·9	5·8	6·9
Bangalore Corporation ...	17	0·6	1·2	0·8
Chitaldrug District ...	55	5·4	8·1	7·1
Hassan District ...	105	9·8	9·6	10·1
Chickmagalur District ...	60	7·7	8·7	7·1
Kolar District ...	85	6·2	5·6	6·1
Kolar Gold Fields City ...	10	1·6	0·6	0·1
Mandya District ...	87	5·9	7·3	9·1
Mysore District ...	90	5·9	6·5	7·0
Mysore City ...	27	3·4	5·6	2·1
Shimoga District ...	87	5·8	8·0	8·2
Tumkur District ...	134	9·3	8·7	10·6
Mysore State (Ex. Bellary District).	855	5·4	6·0	6·3
Bellary ...	131	6·6	...	...
Mysore State (In. Bellary District).	986	5·5	6·0	6·3

Suicide

During the year 190 (389) Suicides were reported as compared with 234 (510) in the previous year. Of these 105 were males and 85 females. Suicides occured 146 in Rural, 17 in Urban and 27 in Cities.

Drowning

Under Drowning 786 (1,611) deaths were reported as compared with 742 (1,617) in the preceding year. Of these 333 were Males and 453 Females. Deaths due to drowning occured 672 in Rural 63 in Urban and 51 in Cities.

Wounds and Accidents

Wounds and Accidents accounted for 731 (1,498) as compared with 625 (1,362) in the previous year. Of these 216 in Cities, 445 in Rural and 70 in Urban areas. Four hundred and twenty-six Males and 305 Feamales deaths were reported.

Killed by Wild Beasts

A total of 20 (41) deaths, as compared with 26 (57) in the previous year. Of these 2 in Cities and 18 in Rural areas. Eleven Males and 9 Females deaths were reported.

Snake Bite

Under Snake bites, 138 (270) deaths as compared with 120 (261) in the preceding year. Of these 125 in Rural, 8 in Urban and 5 in Cities. Ninty-nine Males and 33 female deaths were reported.

Rabies

Under Rabies 64 (131) deaths as against 42 (91) in the preceding year. Of these 56 occured in Rural and 8 in Urban areas. Forty-three Males and 21 Female deaths were reported.

All othrr Causes

A total of 21,497 (44,051) as compared with 25,567 (53,700) in the previous year were reported under ' All Other Causes ', which have occured apart, from the above specified causes. Of these 6,876 in Rural, 3,340 in Urban and 11,281 in City areas. Eleven thousand two hundred and forty Males and 10,257 Female deaths were reported.

Causes not Stated

During the year 2,481 (5,084) deaths as compared with 1,706 (3,717) in the previous year. The deaths reported, without specifying any cause of death. Of these 1,307 Males and 1,174 female deaths were reported.

Reporting of Marriages During the year 1954

As the reporting of marriages is voluntary, the returns are not being sent regularly. The particular of marriages of 11,271 couples were received in the Mysore State (Ex. Bellary). The age distribution of the Brides and Bridegrooms was as follows :—

Age of the Bride-grooms	Age of the Bride													
	Below 15	15—20	20—25	25—30	30—35	35—40	40—45	45—50	50—55	55—60	60—65	65—70	70—75	Total
Below 15	53	...	...	...	...	...	...	...	...	...	...	...	...	53
15—20 ...	707	135	...	...	...	...	...	...	...	...	...	...	...	842
20—25 ...	3,139	2,471	137	...	...	...	...	...	...	...	...	...	...	5,747
25—30 ...	1,154	1,884	190	12	1	...	...	...	...	...	...	...	...	3,241
30—35 ...	232	459	84	28	2	...	...	...	...	...	...	...	...	805
35—40 ...	65	176	52	17	8	3	...	...	...	...	...	...	...	321
40—45 ...	26	74	26	14	6	2	1	...	...	...	...	...	...	149
45—50 ...	8	23	8	2	3	6	3	...	...	...	...	...	...	53
50—55 ...	4	8	6	6	4	5	2	1	...	...	...	...	...	36
55—60 ...	2	2	1	...	1	3	2	1	...	2	...	...	...	14
60—65 ...	...	1	...	...	...	2	...	...	...	2	...	...	...	5
65—70 ...	...	...	1	...	...	2	...	...	...	...	...	...	...	3
70—75 ...	...	...	...	...	1	...	1	...	...	...	...	...	...	2
75 & Over	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...	5,390	5,233	505	79	26	23	9	2	...	4	...	...	...	11,271

BUREAU OF VITAL STATISTICS

Tables

Reported Number of Deaths From :—

1. Plague.
2. Smallpox
3. Cholera.
4. Malaria.
5. Typhoid.
6. Other Fevers.
7. Dysentery and Diarrhoea.
8. Respiratory Diseases.
9. Tuberculosis.
10. Leprosy.
11. Maternal Deaths.
12. Suicide.
13. Drowning
14. Wounds and Accidents.
15. Killed by wild Beasts.
16. Snake Bite.
17. Rabies.
18. All Other Causes.
19. Causes not stated.
20. All Causes.

by Sex, in Rural, Urban and City Areas, in the Districts of the Mysore State, in each month of the Year 1954.

21. Reported Number of *Live Births*, by Sex, in Rural, Urban and City Areas, in the Districts of the Mysore State, in each month of the Year 1954.

22. Reported Number of *Still Births*, by Sex, in Rural, Urban and City Areas, in the Districts of the Mysore State, in each month of the Year 1954.

23. Reported Number of *Infant Deaths under one Year of Age*, by Sex, in Rural, Urban and City Areas in the Districts of the Mysore State, in each month of the Year 1954.

24. Detailed Statistics of Births and Deaths in Districts and Cities in Mysore State in 1954.

25. Detailed Statistics of Births and Deaths in *Taluks and Hoblis*, in Mysore State in 1954.

26. Detailed Statistics of Births and Deaths in *Major and Minor Municipal Areas* in Mysore State in 1954.

27. Detailed Statistics of Births and Deaths, by Sex, in all *Rural, Urban and City Areas* of the Mysore State in 1954.

28. Statement showing Deaths, by Age, Conjugal Condition, Cause and Sex in Mysore State, including all *Rural, Urban and City Areas in 1954.*

28. (*a*) Statement showing Deaths, by Age, Conjugal Condition, Cause and Sex in *Rural Areas*, in Mysore State in 1954.

(*b*) Statement showing Deaths, by Age, Conjugal Condition, Cause and Sex in *Urban Areas, having a population of below, 1,00,000* in Mysore State in 1954.

(*c*) Statement showing Deaths, by Age, Conjugal Condition Cause and Sex in *Urban Areas, having a population of 1,00,000 and over but below 10,00,000* in Mysore State in 1954.

29. Statement showing *Live Births* (Including Single, Twins, and Triplets) classified according to Age of Mother and Order of Birth, Number of Living Children in all *Rural, Urban and City Areas* in Mysore State in 1954.

29. (*a*) Statement showing *Live Births* (Including Plural Births) classified according to Age of Mother, Order of Birth and Number of Living Children in *Rural Areas* in Mysore State in 1954.

(*b*) Statement showing *Live Births* (Including Plural Birth) classified according to Age of Mother, Order of Birth, Number of Living Children in *Urban Areas having a population below 1,00,000* in Mysore State in 1954.

(*c*) Statement showing *Live Births*, (Including Plural Births) classified according to Age of Mother, Order of Birth and Number of Living Children in *Urban Areas having a population of 1,00,000 and over but below 10,00,000* in Mysore State in 1954.

30. Statement showing *Still Births* (Including Plural Still Births) classified according to Age of Mother, Order of Birth and Number of Living Children, in

(*a*) *All Rural, Urban and City Areas.*

(*b*) *Rural Areas.*

(*c*) *Urban Areas having a population of below 1,00,000 ;*

(*d*) *Urban Areas having a population of 1,00,000 and over but below 10,00,000.*

in Mysore State in 1954.

31. Statement showing Births, and Deaths, by Sex, in Rural and Urban Areas in Taluks of Bellary District in 1954.

S. SESHAGIRI RAO,
Director of Public Health.

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