

Annual report of the Mysore Department of Health.

Contributors

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No. 26]

[1931

ANNUAL REPORT
OF THE
MYSORE DEPARTMENT OF HEALTH

WITH THE GOVERNMENT REVIEW THEREON

JANUARY 1 to DECEMBER 31, 1931.



BANGALORE:
PRINTED AT THE MYSORE GOVERNMENT PRESS
1932

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GOVERNMENT OF HIS HIGHNESS THE
MAHARAJA OF MYSORE.

GENERAL AND REVENUE DEPARTMENTS.

G. O. No. G. 2507-30—P. H. 23-32-4, dated 11th October 1932.

Administration Report of the Mysore Health Department
for the year 1931.

Reviews the ———.

READ—

The Administration Report of the Health Department for the calendar year 1931, received from the Director of Health with his letter No. H. E. 33, dated 5th—6th August 1932.

ORDER NO. G. 2507-30—P. H. 23-32-4, DATED
BANGALORE, THE 11TH OCTOBER 1932.

Recorded.

2. The submission of the report has been delayed by about three months on account of delay in the receipt of statistics and other information from Cities, Towns and Districts. The attention of the Deputy Commissioners of Districts and the Presidents of Local Bodies concerned is again invited to the need for promptness in the matter.

The report embodies valuable information and Government have read it with interest. They, however, consider that a large part of the matter embodied therein could have been more appropriately published in the form of departmental bulletins.

3. Dr. Karve and Mr. Mieldazis continued as Director and Sanitary Engineer, respectively, throughout the year. Dr. Sweet, Consultant in Health, who had gone on leave from 8th May 1930 returned on 3rd February 1931.

4. *Bureau of Epidemiology and Communicable Diseases.*—(a) *Malaria Stations.*—The Malaria Stations continued to work satisfactorily. Malaria surveys were

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made in the Rayankere Dairy Farm, the Kolar Gold Field, certain villages in the Tumkur District, Tumkur Town, Narasimharajapura in the Kadur District and the Irwin Canal area. Paris-greening and employment of gambusia fish constituted the principal anti-larval measures. As a result of a couple of years' operations, considerable reduction in malaria has been reported from all the Stations. On the recommendation of the Department, a malaria staff was entertained by the Mysore City Municipality under the supervision of the Officers of the Department.

(b) *Hookworm Campaign.*—The operations of the Hookworm Unit were extended to the Hassan District also during the year under report. The Unit visited 117 estates and treated 11,579 persons. Besides this, several medical institutions were also visited by the Unit Officer with a view to see how far mass treatment for hookworm was being conducted. It is reported that 6,725 persons were treated in the medical institutions. The Director, however, considers that sufficient attention has not been paid to the treatment of hookworm and that necessary steps would be taken to see what difficulties there are in the way.

With reference to the investigation into the causes of enteric prevalent in the Bangalore City referred to in the last year's review, the Director considers that it is desirable that all cases of enteric infections, whether in private practice or in Government Hospitals, should be notified to the Department so as to enable the Public Health Laboratory to confirm the diagnosis by Laboratory tests. The Senior Surgeon is requested to examine the matter in consultation with the Department of Health and submit suitable proposals.

There was a severe epidemic of cholera during the year accounting for 5,471 attacks and 3,183 deaths. Anti-cholera measures were freely adopted including the inoculation of 2,22,378 persons and the stoppage of over 47 jattras.

5. *Bureau of Rural Health.*—This Bureau consisted of one health unit at Mandya. It continued to be popular among the villagers. Its operations were also extended to a few border villages of the Seringapatam Taluk. A new feature of the work of this unit was an attempt made to immunise the villagers against the anticipated visitation of

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OCTOBER 1932.

cholera and plague in the unit area. Accordingly, 20,201 persons were inoculated against cholera, and 9,284 against plague, while 1,883 persons were vaccinated against small-pox. The two midwives attached to the unit paid 3,701 maternity visits in addition to conducting 95 labour cases. The Unit has been on the whole doing very satisfactory work. The question of starting similar units in the other parts of the State is under the consideration of Government. In view of the large expenditure required, a committee has recently been appointed to go into the matter and suggest proposals for enlisting the co-operation of local bodies in the matter of meeting a substantial portion of the cost involved.

6. *Bureau of Health Education.*—Till about the end of November 1931, the work of this Bureau was limited practically to the exhibition of cinema films in rural and urban parts. On account of the necessity for retrenchment in expenditure, the establishment of the publicity section of this Bureau had been kept in abeyance. From the 1st of December 1931, this section also was properly organised under an arrangement with the Rockefeller Foundation. Necessary steps are being taken to prepare and circulate bulletins on health matters among the village people.

7. *Bureau of Laboratories.*—(a) *Public Health Institute.*—There was a noticeable increase of work in all the sections of the laboratory which necessitated the appointment of an assistant to the Chemical Examiner.

The Director reports that in spite of the order directing that judgments in cases where the opinion of the Chemical Examiner has been called for should be forwarded to the Public Health Institute, effect has not been given to it. The attention of the High Court will be invited to this matter.

The Director has also commented upon the irregular procedure followed by the Police in forwarding cases for medico-legal examination. He is requested to submit his proposals separately on the subject.

(b) *Vaccine Institute and Vaccination.*—The Director has brought to notice that a sum of Rs. 21,524 has been outstanding against local bodies and certain departments of Government, being the arrears due for vaccine lymph supplied by the Institute. Such delays should not be permitted.

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Arrangements are being made to prepare glycerine lymph in place of lanoline now manufactured in the Institute. The total quantity of lanoline lymph prepared in the Institute was 42,673 grains sufficient for 4,26,730 cases. Out of this, 1,69,867 vaccinations were performed within the State.

8. *Bureau of Vital Statistics.*—The Director observes that the recording and reporting of vital statistics still continue to be defective. The total number of births recorded in the year under report was 1,19,762 showing an increase of about 4,700 over that of previous year. The average rate of births was 18·64 against the average of the past five years, *viz.*, 19·31. Bangalore District returned the highest rate, *viz.*, 21·67 and the Kadur District the lowest, *viz.*, 10·52.

The total number of deaths reported during the year was 94·265, giving a death rate of 14·67 against 15·17 in the previous year. Except in the Kadur District, births exceeded deaths in all the Districts.

The total number of deaths among infants under one year of age was 9,86·3 against 10,801 in the previous year.

9. *Bureau of Sanitary Engineering.*—The work of the Bureau consisted of preparing plans and projects for water-supply, town improvement, drainage, bore-hole, latrines, etc. Recently, the executive work connected with the water-supply of towns and villages except Bangalore City has been entrusted to the Bureau. The Rockefeller Foundation Sanitary Engineer also inspected the sanitation and drainage works of a large number of places. The establishment of the Bureau was strengthened by the addition of a probationer in Sanitary Engineering. Mr. B. R. Garudachar was deputed to America for training in Sanitary Engineering during the year. He has since returned and been appointed as Executive Engineer for the Bureau. Another Officer has also been deputed for similar training this year.

10. *General.*—Mr. E. R. Sundararajan, Technical Officer of the Bureau of Vital Statistics, was deputed to America on a fellowship granted by the Rockefeller Foundation. Mr. G. N. Seshadri, Health Officer, who was deputed to Calcutta, qualified for D. P. H. of that University and returned in the course of the year. Mr. V. Narasimha

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Murthy, Health Probationer, was also deputed to Calcutta, for similar training.

In view of the prevalence of malaria in the Tuberculosis Sanatorium at Mysore, a Committee consisting of Dr. Sweet, the Director of Health, Mr. Mioldazis, the Senior Surgeon and the Chief Engineer was constituted to visit the place and make proposals for the improvement of the health of the patients. These proposals have been examined by Government and necessary action taken.

The Director visited 2 cities, 27 towns, 20 villages and the Kolar Gold Field.

Dr. Sweet visited all malaria stations and the Mysore City several times in connection with malaria survey and control work.

The work of the Department during the year was satisfactory.

R. RANGA RAO,
Secretary to Government,
General Department.

To—The Director of Health in Mysore.
The Rockefeller Foundation Sanitary Engineer.
The Chief Engineer in Mysore.
The Senior Surgeon in Mysore.
The Registrar, High Court of Mysore, with a covering letter.
The Deputy Commissioners of Districts.
The Presidents of District Boards
The President, Kolar Gold Field Sanitary Board.
The President, Mysore City Municipality.
The Municipal Commissioner, Bangalore City Municipality,
through the President.

PRESS TABLE.

Exd.—P. S. R. N.

Ministry Health Provisioner, was also deputed to Calcutta
for similar training.

In view of the prevalence of malaria in the Taluk
of Mysore, a Committee consisting of
Dr. Sweet, the Director of Health, Mr. Nishank, the Senior
Surgeon and the Chief Engineer was constituted to visit the
place and make proposals for the improvement of the health
of the patients. These proposals have been examined by
Government and necessary action taken.

The Director visited 1 cities, 57 towns, 30 villages and
the Kolar Gold Field.

Dr. Sweet visited all malaria stations and the Mysore
City several times in connection with malaria survey and
control work.

The work of the Department during the year was
satisfactory.

R. RANGA RAO,
Secretary to Government,
General Department.

- The Director of Health in Mysore.
- The Rockefeller Foundation Sanitary Engineer.
- The Chief Engineer in Mysore.
- The Senior Surgeon in Mysore.
- The Registrar, High Court of Mysore, with a covering letter.
- The Deputy Commissioner of District.
- The Presidents of Taluk Boards.
- The President, Kolar Gold Field Sanitary Board.
- The President, Mysore City Municipality.
- The Municipal Commissioner, Bangalore City Municipality
through the President.

PRESS TABLE.

1-1-55

MYSORE DEPARTMENT OF HEALTH.*

Director of Health.

J. V. Karve, M.B., Ch.B., D.P.H.

Honorary Consultant in Health

W. C. Sweet, B.Sc., M.D., Dr. P.H.

Honorary Sanitary Engineer.

J. J. Mioldazis, B.Sc., C.E.

Bureau of Administration.

G. M. Dominick, M.R.C.S., D.P.H.,
Health Officer, Mysore District.

S. Ramachandra Rao, L.M.S.,
Health Officer, Bangalore City.

M. Ramachandra Rao, B.A.,
M.B.B.S., C.P.H.
Health Officer, Kolar Gold Field.

M. G. Srinivasa Peidpet, L.M.S., B.S.Sc.,
Health Officer, Mysore City.

G. N. Seshadri, L.M.S., D.P.H.,
(CALCUTTA),
Health Officer, Shimoga Dist.

Bureau of Epidemiology and Communicable Diseases.

A. S. Venkatachalam, L.M.S.,
*Officer-in-charge, Hookworm
Campaign.*

B. Ananthaswamy Rao, B.Sc.,
M.B.B.S., M.P.H.,
*Officer-in-charge, Stations for
the Study of Malaria.*

Bureau of Laboratories.

C. V. Natarajan, B.Sc., M.B.B.S.,
Dr. P.H.,
*Superintendent, Public Health
Institute.*

J. A. Iswara Murthi, B.A., L.M.S.,
B.S.Sc.,
*Superintendent, Vaccine
Institute.*

Bureau of Vital Statistics.

E. R. Sundararajan, M.A. (Hons.), (On deputation to America),
Technical Officer.

S. Seshagiri Rao, B.Sc., M.B.B.S., in charge.

Bureau of Health Education.

E. Anantha Rao, B.Sc., M.B.B.S.,
Officer-in-charge.

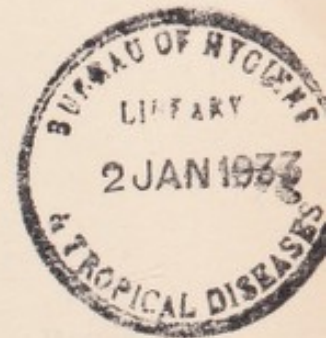
Bureau of Sanitary Engineering.

B. R. Garudachar, B.A., C.E., M.I.M., & C.Y.E., M.R. SAN. I., (On deputation to America),
H. F. Marker, L.C.E., M.R., SAN.I.,
Executive Engineer.

K. S. Hutcha Rao, B.A., B.E.,
Assistant Engineer.

Bureau of Rural Health.

T. Chandrasekharaiya, B.A., M.B.B.S., M.P.H.,
Officer-in-charge, Rural Health Unit, Mandya.



* Only officers giving full time service to the Department are included with designation as on December 31, 1931.



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ANNUAL REPORT
OF THE
MYSORE DEPARTMENT OF HEALTH

No. 26.] January 1 to December 31, 1931. [1931.

GENERAL.

Between 12th, and 14th January 1931, the Raja Saheb of Rajkote, visited the Mysore Department of Health. Under instructions of Government, the Director explained to him the details of the health organisation work in the State and took him round the Vaccine and Public Health Institutes and to the New Bangalore City Water Supply project at Thippagondanahalli with the Rockefeller Foundation Sanitary Engineer.

Dr. Victor G. Heiser of the Rockefeller Foundation, visited Mysore from March 10 to 15th, 1931. During this time, he spent three days in Bangalore and two days in Mysore, visiting the work of the department in these places. He had interviews with the Dewan and Member-in-charge, during which, proposals for future co-operation between Government of Mysore and the Rockefeller Foundation were discussed.

During the last quarter, the Malaria Stations at Bangalore and Mysore were visited by the Sanitary Commissioner, Baroda State and Dr. Timbres, Medical Officer of Health, Santhiniketan, Bengal.

During the year, over 47 Jatras, Fairs, Festivals and Cattle Shows were notified prohibited by Government in view of the State wide prevalence of cholera.

Government in their order Nos. G. 9951-4—Sanitary 92-30-4 and 9947-50—San. 70-30-3, dated 28th March 1931 approved of the appointment of the Health Officers of Kolar Gold Field and Mysore City as Public Analysts in their respective areas.

Government in their Order No. L. 7284-94—Ml. 41-30-124, dated 9th March 1931 directed that in the case of Bangalore and Mysore Cities, a new Bye-law under Bye-laws for hotels etc., be inserted requiring the production of a medical certificate by the employees in hotels.

Government in their Order No. G. 9502-4—Sany. 56-30-2, dated 13th March 1931 conveyed approval to the Director's proposal to the installation of Wet and Dry Bulb Thermometers in seven selected places in the State under charge of Medical Officers, with a view to study the influence of meteorological conditions of a place on the spread of epidemic diseases.

The Director of Health brought to the notice of Government that the present practice of preparing bills for the cost of vaccine lymph supplied to Local Bodies involved much labour and that the collection of dues was therefore retarded, causing confusion in the accounts. He proposed that the vaccine lymph may be supplied to each Local Body, to the full extent of its actual requirements, on a payment of fixed annual contribution at the commencement of each official year. Government in their Order No. G. 9466-87—San. 84-29-7, dated 12th March 1931 approved of the proposal and directed that the new arrangements may be given effect to from 1st July 1931 for a period of five years. By a subsequent order No. G. 4755—P. H. 31-31-3, dated 12th December 1931 on representation from certain Local Bodies, option of paying either according to the new fixed annual contribution system or the old system of payment on actual supplies, was given to the Local Bodies.

Government in their Order No. L. 3803-5820—Ml. 5-29-65, dated 20th January 1931, sanctioned the proposal that the Malnad Improvement or District Board Vaccinators will do vaccinations in municipalities which have no separate Vaccinators on condition that the municipalities pay to the District Board at the rate of 2 annas per case.

The Director of Health brought to the notice of Government that the rules issued with Government Order No. G. 27150-9—San. 22-19-13, dated the 9th June 1930 for regulating the training and employment of vaccinators were defective in certain respects and did not suit present requirements. He, therefore, recommended a revised set of rules which were approved and sanctioned by Government in their Order No. G. 10116-37—San. 78-29-18, dated 4th September 1931.

Government in their Order No. G. 11704-6—San. 38-30-11, dated 16th May 1931 approved of the Director's proposal to the appointment of a Chemist and a small menial staff for the Chemical Section of the Public Health Institute. One Mr. Y. V. Srikanthswara Iyer, a diplomat in Technical Chemistry was appointed as Chemist from the 20th August 1931.

The Government, on a proposal from the Director, sanctioned in their order No. G. 12447-9—San. 8-30-65, a time scale pay to the three Assistant Sanitary Inspectors of the Rural Health Unit, Mandya. By the same Government Order the allocation of all the assistant sanitary inspectors in the Department was sanctioned.

The Director of Health proposed to Government that Government Order No. R. 8653-60—L. R. 10-14-128 dated the 5th April 1915 regarding prevention of digging of burrow-pits near village sites be extended to or made applicable to towns and cities. Government approved of the proposal.

Government in their Order No. G. 2331-2—P. H. 24-34-2, dated 16th—17th September 1931, sanctioned the deputation of Mr. V. Narasimhamurthy, one of the Health Probationers, for the D. P. H. of the Calcutta University after training in the School of Tropical Medicine and Hygiene.

A Committee consisting of the marginally noted officers was constituted to select a suitable candidate for training in Sanitary Engineering in the United States of America. The deputation of Mr. B. R. Garudachar, Executive Engineer, as recommended by the Committee, was approved. Mr. E. B. Chinnappa, B.E., B.Sc., of the Manchester University, was appointed as Probationery Assistant Sanitary Engineer in the Bureau of Sanitary Engineering.

During the year, Mr. E. R. Sundararajan, Technical Officer, Bureau of Vital Statistics, was permitted to proceed to America on a fellowship granted to him by the Rockefeller Foundation for further studies in Public Health Statistics and Government sanctioned the posting of Mr. S. Seshagiri Rao, one of the Health Probationers for temporary charge of the Bureau.

Mr. G. N. Seshadri who was deputed to Calcutta for qualifying for the D. P. H. of that University, returned

after obtaining the diploma and was posted as Health Officer, Shimoga District, in November 1931.

Government in their Order No. G. 1265-7—P. H. 6-31-4, dated 7—10th August 1931, sanctioned the appointment of Mr. K. R. Venkatesan, L. M. P., as *sub pro tem* Health Officer for the Mandya Rural Health Unit.

Government with certain modifications approved the rules for regulating the functions and duties of the Central Health Committee constituted under Government Order No. G. 6680-730—Sany. 55-27-34, dated the 28th November 1929.

During the year, the Central Health Committee met for the first time on 5th September 1931.

Under instructions from Government, proposals for possible retrenchments in the Department's budget were submitted to Government. Surrenders to the extent of Rs. 10,896 were made.

Government approved of the savings of Rs. 19,756 out of Rs. 27,686 proposed by the Retrenchment Committee, in the Department's budget.

Government appointed a Committee consisting of the Director of Health, Dr. Sweet, Mr. Mieldazis, Rockefeller Foundation Sanitary Engineer, the Senior Surgeon and the Chief Engineer to go into the question of malaria in the Princess Krishnammanni Tuberculosis Sanatorium area and to make proposals for its control. The Committee after investigation made certain proposals which were approved by Government. Mosquito curtains were provided for all the patients. Treatment of anopheline breeding places was also taken up by the Mysore Municipality. Question of minor engineering works was deferred for the present.

In view of the extensive and virulent outbreak of cholera in the State, it was considered desirable to transfer the supply arrangements of the anticholera vaccine from the Medical Stores to the Health Department and proposals to that effect were made to Government. The Government in their Order No. G. 11664-5—Sany. 52-30-5, dated 15th May 1931 approved of the same and sanctioned a grant of Rs. 10,000 for the purchase of the vaccine, a refrigerator, etc. The entire working of this arrangement was placed under the supervision of the Superintendent, Vaccine Institute.

Proposals were submitted to Government for the establishment, for purposes of demonstration, of one

Rural Health Unit in each district in the next three or four years. But owing to financial stringency, the consideration of the question had to be deferred.

As per Government Order No. G. 8934-51—Sany. 2-30-17, dated 24th February 1931, two of the three health probationers were withdrawn from District Health work and drafted for training in laboratory methods and City Health work in Bangalore and Mysore. During the last quarter, the third probationer was also withdrawn and posted for work in the Bureau of Health Education.

Government Order No. G. 911—Sany. 61-30-2, dated 23rd—29th July 1931 sanctioned rules framed under Section 20 and 5 (d) of the Prevention of Adulteration Regulation IX of 1921 as amended by Regulation IV of 1890, fixing legal standards for milk, butter, cream and ghee.

The Annual Medical and Sanitary Conference was held in Mysore on the 8th, 9th, and 10th May 1931. It was opened by Rajakaryapravina P. G. D'Souza, B.A., B.L., Third Member of Council, and the Health Section was presided over by Dr. W. C. Sweet, B.Sc., M.D., Dr. P.H.

The following five papers were presented at the Conference by the officers of the Health Department :—

1. Malaria Survey of Mysore City. Mr. B. Ananthaswamy Rao, B.Sc., M.B.B.S., M.P.H.
2. Rural response to Health propaganda. Mr. T. Chandrasekharaiya, B.A., M.B.B.S., M.P.H.
3. Medical Relation in Malnad. Mr. K. Ramaswamy Sastry, L.M.P.,
4. Treatment of Dracontiasis. Mr. V. Narasimha Moorthy, B.Sc., M.B.B.S.
5. Work before the Health Propagandist in Mysore. Mr. E. Anantha Rao, B.Sc., M.B.B.S.

During the year, the Department's Quarterly reports were published and they have been generally welcome. The reports are incomplete as far as vital statistics are concerned, the figures from the districts not being received even within three months of the close of each quarter. It is again urged that the Presidents of the Local Bodies and the District authorities will more closely co-operate with the Department in this direction.

The Consultant in Health returned from leave on February 3rd, 1931, and resumed his duties. In March, he accompanied Dr. V. G. Heiser during his visits to works of the Department and also went to Savanthawadi

State to examine the antimalaria work done there. He visited all the Stations for the Study of Malaria in the State and paid several visits to Mysore City in connection with Malaria Survey and Control Work.

The Director of Health was on tour during the year for 144 days. He visited 27 towns, 20 villages and the three major cities. He made a stay of about 30 days at Mysore City to personally direct and control operations against cholera which prevailed in a very severe form during July, August and September 1931. He attended as usual the monthly meetings of the Thippagondanahalli Reservoir Committee and the Mysore Trust Board.

BUREAU OF EPIDEMIOLOGY AND COMMUNICABLE DISEASES.

The figures given in the Tables of this section are regarded as records of work only and have not necessarily been scientifically examined. They should consequently not be used in scientific articles without previous reference to this Bureau.

(a) Malaria Control Work.

STATIONS FOR THE STUDY OF MALARIA.

The scheme for an antimalaria Unit at Mysore which was under the consideration of the City Municipality was sanctioned and regular work was commenced in the month of March 1931. With the opening of this new Unit, there were altogether five stations, where regular anti-malaria work was carried on during the year. Since two years of preliminary observations were completed in the Hiriyr area, antilarval measures on the same lines as in Nagenhalli and Mudigere were started in April.

The staff of the Malaria Station at Nagenhalli was reorganised and the Assistant Sanitary Inspectors were replaced by Fieldmen for dusting parisgreen as a trial measure. This was found to work very satisfactorily and the change was also introduced into the Malaria Stations at Mudigere and Hiriyr. Under the reorganised scheme, the staff in each station consisted of one Officer-in-charge, two Assistant Inspectors and eight to ten Fieldmen depending on the extent of the area under control.

It was reported in the annual report for the year ending December 31st, 1930, that all the anopheline

breeding areas within the radius of one mile from the centre of the town were regularly treated throughout the year at weekly intervals with parisgreen diluted to a one percent mixture with dust or ash or both. In view of devising measures for effective malaria control at minimum per capital cost for small population units, it was decided during the year under report, to reduce the area under control gradually from a radius of one mile to half a mile. This reduction was started in Hiriyur and was later taken up in the other two stations. As a further possible measure of economy, complete cessation of all parisgreen operations during the winter months following the monsoon was considered. As a trial measure, this was given effect to for a period of two months starting from November at Mudigere Station and during this period, very careful observations were made for any sign of the carrier species breeding in large numbers. The adult collection in the regular catching stations as also the larval collections during this period, showed no appreciable increase of either *A. listoni* or *A. culicifacies*. This experiment will be repeated before any definite action is decided upon.

An investigation into the period of floatation of the particles of parisgreen started in 1930 was concluded during this year. Important among the findings were (1) the largest counts of parisgreen particles per square inch, were obtained immediately after the application of parisgreen mixture; (2) parisgreen was constantly found 120 hours after the last application in each of the three types of breeding places investigated, river, swamp and pool; (3) the pool averaged the largest count of 310 particles per square inch immediately after parisgreen application and the river the lowest with an average of 42 particles; (4) a 100 per cent lethal effect of parisgreen was noticed eight hours after application.

The weekly distribution of a small dose of plasmoquine compound as an experimental antimalaria measure, started at Marikanave, last year, was continued. The distribution of this drug at Nagenahalli did not meet with the favour of the local residents and its discontinuance in that village is contemplated. The routine of making monthly blood and spleen examinations was changed to quarterly examination.

A paper on "Dissections of Female Anophelines in Mysore State" was published in the Records of Malaria

Survey of India during the year. A brief reference was made to the methods of collection and preservation of adult anophelines for dissection in the three malaria stations and details of all the dissections done during the course of routine work of the stations along with those done during special surveys were given. The object of the paper was to present a complete record of this work, as a part of the work reported in the paper had already appeared in the quarterly reports of the Mysore Department of Health.

The Stations for the Study of Malaria were visited during the year by Dr. V. G. Heiser, M.D., the Far Eastern Representative of the Rockefeller Foundation, Major Coveil, M.D., I.M.S., Acting Director, Central Malaria Bureau, Kasauli, the Director of Public Health, Baroda State, and Dr. Timbres, Medical Officer of Health, Santiniketan, Bengal. The last two were specially interested in the control of *A. stephensi* breeding in wells by the larvicidal fish "Gambusia." It may be of interest that a consignment of this fish was successfully carried to Santiniketan after a prolonged journey of over a fortnight, though three previous attempts to transport them over very much shorter distances had failed.

Spleen Survey of Irwin Canal Area.

An extensive area of dry land is expected to be brought under wet cultivation in Mandya, Malvalli and Seringapatam Taluks under the Irwin Canal Irrigation Scheme. A spleen survey of a number of villages within the area and in close proximity to the channels was done with a view to determine the existing condition with reference to malaria. It was generally observed that high spleen rates obtained in villages near Krishnaraja Sagar and Hulikere decreased gradually, till almost no enlarged spleens were found at the terminals of the proposed channels. A few villages, however, had a fairly high spleen rate but this was due to local conditions. A detailed statement of the villages examined and the spleen rates obtained in each is given below:—

Spleen Rates in Irwin Canal Area.

Name of Village	Total Examined	Percentage
1. Thimmanakoppal ...	47	34.0
2. Nodikoppal ...	27	62.9
3. Bavinkoppe ...	68	54.4
4. Kalenahalli ...	63	30.1
5. Gantingondanhalli ..	39	12.8
6. Jigindapatna ..	35	11.4
7. Upparkanahalli ...	41	29.27
8. Belidegalu ...	61	13.1
9. Albujanahalli ...	50	6.1
10. Desihalli ...	85	10.6
11. Huliganpura ..	61	0.0
12. Sidholaloo ...	75	4.0
13. Huligaripura (Malvalli Taluk) ...	43	11.9
14. Basavapatna ..	42	7.1
15. Buguthegalli ..	44	11.4
16. Monigeri ...	55	3.6
17. Hosahalli ...	106	6.6
18. Mudukthoray (Bettahally) ..	35	0.0
19. Pandithahalli ...	45	4.4
20. Boppagandanapura ...	42	4.8
21. Belakvadi Primary School ...	105	5.7
22. Sivasamudram Middle School ...	120	25.8
23. Gowdageri ..	41	9.8
24. Kodipura ...	54	0.0
25. Ragibommanahalli ...	110	7.3
26. Gulagatta ...	36	8.3
27. Vodhankoppalu ...	30	0.0
28. Ramandur ..	28	17.9
29. Doranhalli ..	34	0.0
30. Kalkuri ...	100	5.0
31. Keragaval ...	107	2.8
32. Chithavalli ..	80	6.3
33. Anakola ...	61	9.8
34. Bommanhalli ..	28	0.0

Rayankere Dairy Farm.

The dairy is situated about five miles from Mysore on the Mysore-Kharapur Road. The whole farm has an area of 700 acres, 200 acres of which have been brought under cultivation. The population on the farm is about a hundred, including the staff and labour.

A spleen examination of 53 persons showed that 24 of them or 45.3 per cent had enlarged spleens. In the blood slides examined from 11 of these, benign tertian parasites were found in four.

The chief sources of anopheline larvæ in and around the farm were found to be, (1) a small stream running through the southern portion of the Farm and emptying into a tank; (2) an area to the north of the dairy farm under paddy cultivation; (3) four wells and swamps within the estate area. *A. stephensi*, *A. culicifacies* and *A. subpictus* larvæ were recovered from these areas.

A half an hour's search for adult mosquitoes in the staff quarters and the sheep-shed yielded 22 anophelines, 72 percent of which were *A. culicifacies*.

It was suggested as a temporary and immediate measure of control, that the complete staff with their families resident or working on the farm be given a daily dose of quinine of at least 10 grains. Permanent subsoil drainage of the swamps and the stream were considered by the Sanitary Engineer and it was his opinion that the cost would be prohibitive and the result doubtful. A scheme for antilarval work by a cooly member of the staff under the supervision of the Superintendent after adequate training in methods of larval control was recommended.

Tumkur District.

Severe incidence of malaria in some villages of the Pavagada and Madhugiri Taluks in the Tumkur District was reported and on a requisition from the Deputy Commissioner, a malaria survey of some of the worst affected villages was made.

Spleen and blood examinations of a representative sample in each village showed that a very large percentage of those examined were suffering from malaria. The number examined in each village and the spleen and parasite rates found are detailed below.

Spleen and Parasite Rates.

Village	Number Examined	Number with enlarged spleen	Spleen Rate	Number Examined	Number with Parasite	Parasite Rate
Tadi ...	43	33	76.8	19	3	15.8
Nagalapura ...	41	22	53.9	28	10	35.7
Tirumani ...	69	35	50.7	25	6	24.0

Adult anopheline mosquitoes were caught in houses and cattle sheds in each village and out of the 18 collected, 33 per cent were *A. culicifacies* and 11 per cent *A. stephensi*. On dissection, a midgut infection was found in one specimen of *A. stephensi*.

Since the affected villages were small units and far removed from each other, any comprehensive scheme for malaria control by antilarval measures was considered unworkable. Free supply of adequate quantities of quinine which would actually reach the suffering poor was suggested as the only relief immediately possible. The employment of trained male nurses to be stationed in each affected village for distributing the quinine mixture, working under the direction of the local Sub-Assistant Surgeon was recommended as an experiment.

Kolar Gold Field.

A rapid malaria survey of Kolar Gold Field Mining Area was done at the instance of Dr. L. P. Stokes, Chief Medical Officer of the Kolar Gold Field Hospital. The mining area is situated in the Kolar District which has a very low annual rainfall and for the most part is non-endemic for malaria. With the rest of the district, this area experienced a minor epidemic of malaria in the months of April to July 1930 and the corresponding months of this year.

A spleen examination of 294 children of both sexes was made and six were found to have enlarged spleens giving a spleen rate of 2 per cent for the whole area. A computation of spleen rates on the basis of the residence of the children examined, revealed that the Mysore Mines Area had the highest spleen rate of 6.3. The spleen rates are very low compared to the number of clinical cases treated, owing most probably to efficient quininisation of the labour force.

Larvæ of *A. culicifacies*, *A. fuliginosus* and *A. subpictus* were recovered during an examination of all the collections of water within the vicinity of the entire area. *A. culicifacies* formed nearly ninety per cent of all the larvæ collected. The principle breeding areas were, (1) overflow water from the surface ponds; (2) the waste water from the Cyanide works running as small creeks. A number of open cement concrete tanks showed no larvæ

at the time of the survey but they were considered to be potential breeding areas.

It was suggested that the cement concrete tanks be stocked with *Gambusia* and the other breeding areas be controlled by parisgreen. The selection of a suitable candidate for directing the antilarval measures, after training in the use of parisgreen at one of the malaria stations for a period of six weeks, was recommended.

Immediate action was taken on the basis of the recommendations and a candidate was sent to the malaria station at Bangalore for training. He returned to the mining area after completion of a six weeks' course with a consignment of the larvicidal fish "*Gambusia*." It is expected that regular antilarval measures will soon be put in operation.

Surveys in Towns.

A memorandum anticipating considerable increase in the incidence of malaria in areas where normally it exists only slightly and suggesting the need for making adequate provision for the supply of necessary quantities of quinine to the affected rural areas, was addressed to all the Presidents of the District Boards and the Deputy Commissioners. In the case of Municipalities it was pointed out that the department could economically undertake the control of malaria by antimosquito measures in selected situations, provided the local bodies made the necessary budget provisions. Requests for malaria surveys of such areas were invited from the local authorities. In response to the memorandum two requisitions were received, one from the minor Municipality of Narasimharajpur and the other from Tumkur Town.

Narasimharajpur, a typical malnad town, has a population of about 2200. It is situated in the interior of the malnad about 24 miles from Tarikere, the nearest railway station along the Bangalore-Shimoga line. Koppa, another small town with a population of about 800 about 14 miles from Narasimharajpur, was included in the survey as it was felt that the two minor Municipalities together might be able to finance an antimalaria unit, if found necessary, which neither of them alone could do.

A spleen examination in the two towns gave a spleen rate of 33.3 for Narasimharajpur and 53.7 for Koppa. Ideal facilities obtained for anopheline breeding

all round both the towns and the following anopheline species were collected from the two areas:—

- | | | |
|-----------------------------|--|-----------------------------|
| 1. <i>A. jeyporiensis</i>. | \| | 5. <i>A. subpictus</i> . |
| 2. <i>A. jamesi</i>. | \| | 6. <i>A. aconitus</i> . |
| 3. <i>A. tessellatus</i>. | \| | 7. <i>A. karwari</i> . |
| 4. <i>A. vagus</i>. | \| | 8. <i>A. maculipalpis</i> . |

It was found that neither of the two Municipalities either singly or collectively could finance an antimalaria unit as the area to be controlled was extensive in both the places. Consequently, prophylactic weekly administration of a suitable dose of Plasmoquine combined with efficient quinine treatment during the malaria season, was recommended as an experimental measure.

Tumkur Town.

During the course of the survey, a representative group of children from the schools in different sections of the town were examined for evidence of malaria in addition to an intensive search of all the possible anopheline breeding areas for larvæ. Adult mosquitoes were collected from a number of houses and cattle sheds.

The children under 12 years of age from seven schools were examined and out of 382, six had enlargement of spleen, giving a spleen rate of 1·6 for the town as against 3·6 in 1927. An examination of the out-patient records of the District Hospital for a period of six years from 1925-31 showed that on an average only 5·3 per cent of the total number of cases treated was for malaria and the highest treated in any month during the period was 10 per cent.

The chief sources of anopheline breeding were found to be, (1) a small tank Somekatte, near the Government High School; (2) a channel from the big town tank irrigating the fields to the south of the town; (3) wells. The species of anophelines collected from these were *A. hyrcanus*, *A. barbirostris*, *A. pallidus*, *A. fuliginosus*, *A. subpictus*, *A. culicifacies* and *A. stephensi*. Adult specimens of *A. tessellatus*, *A. subpictus* and *A. stephensi* were collected from a few houses and cattle sheds. The number of adults and larvæ of the carrier species found was very small, owing most probably to the season of year when the survey was undertaken.

From the available information, it was concluded that malaria was not a major health problem of the town.

To prevent the possibilities of epidemics of this disease in future, it was recommended that the wells be stocked with *Gambusia* to prevent *A. stephensi* breeding and in addition to drain the Somekatte and to clear the weeds from the edges of the channel from the town tank.

Mysore City.

The recommendation for opening a malaria station in Mysore City, on the findings of the survey reported in the last annual report, was sanctioned by the City Municipality and work was commenced in the beginning of this year. The staff consisted of one officer in charge, two assistant inspectors and 12 fieldmen. The services of the officer and the Assistant Inspectors were lent to the Municipality by the department.

The antilarval work in the city was organised on the lines of the standard methods developed in the existing stations for the study of malaria. The whole area was divided into six zones, each zone being covered by a pair of fieldmen in the course of a week. Each Assistant Sanitary Inspector was placed in charge of three such zones and the officer was in charge of all the operations in the city.

A consignment of *Gambusia* was successfully taken to Mysore and a hatchery was established in the pond within the Ayurvedic herb Gardens, below the Kukkarhalli Tank. This was used later in the year, for stocking the wells, to control the *A. stephensi* breeding in them.

During the course of the year, special surveys of the Body Guards Lines and the Princess Krishnammanni Tuberculosis Sanatorium were made. It was found that the Body Guard Lines was so situated that they were surrounded on all sides by breeding areas where *A. culicifacies* was found in large numbers. This was reported in the body of the original survey and it was thought that routine operations of the newly established malaria staff in the city, would deal with the anopheline problem effectively. A complete course of quinine treatment for all the residents was recommended as it was expected that this could easily be done in a colony under military discipline.

During the course of the survey of the Tuberculosis Sanatorium and its surroundings, children in two villages within a mile from the sanatorium were examined for

enlargement of spleens and it was found that both the villages had moderate spleen rates, 57·9 in Metikalli and 32·6 in Kuruberkoppal. Of 20 children examined in the sanatorium proper 15 per cent showed enlarged spleens.

Catches of adult mosquitoes in the two villages included two specimens of the carrier species, *A. culicifacies*. Larval survey of an area within a mile radius of the sanatorium showed the presence of two carrier species breeding in wells in Metikalli and *A. culicifacies* breeding in a pool near the village.

From the results of this rapid survey, it was considered likely that there was a small amount of malaria transmitted in the sanatorium. In view of the special nature of the area under consideration, even this small chance of malaria transmission was considered to be of sufficient importance to require immediate attention.

Important among the recommendations made were:—

1. The supply of mosquito-nets to all the patients ;
2. The administration of the standard course of treatment to all the patients as early as possible after their arrival ;
3. The services of the malaria officer of the City Municipality to be made available for direction and supervision of malaria control work, the staff, equipment and material being provided by the Tuberculosis Sanatorium.

The necessary funds for the purchase of the mosquito-nets were sanctioned by Government during the year but the proposal for undertaking the malaria control work was deferred owing to financial considerations.

With the experience gained after a few months of larval control work it was found that certain areas, like the betel-leaf gardens under the Dodkere, each occupied the full time of one pair of fieldmen for efficient larval control. An extra staff of one Assistant Sanitary Inspector and six fieldmen was sanctioned and the entire staff of 18 fieldmen and three Assistant Inspectors were attending to the larval control of the city area.

In addition to the routine larval control work, the inspecting staff was engaged in the distribution of quinine tabloids free of cost to the poor patients in their homes. A total of 4,438 tabloids of five grains each was distributed to 630 persons. Fish were put in 287 wells in the different sections of the city.

Bangalore City.

Malaria control work in the city continued to be under the technical direction of the officers of the Department. The experiment with the larvicidal fish *Gambusia* for controlling the *A. stephensi* breeding in wells having proved satisfactory, it was decided to extend the area under fish control by including all the wells in the northern half of the city. Fish were put in 1879 wells and 97 ponds, garden wells and cisterns in this area.

A spleen survey of the city commencing from the 17th of July was made for the fifth year in succession. Visits were made to the same schools as in the previous years and out of 1471 children examined, it was found that only nine had enlarged spleens, giving a spleen rate of 0.6 for the whole city. Blood smears from 181 of these children were examined for malaria parasites and parasites were found in seven. The parasite rate for the year, 3.8 is appreciably lower than 14.2 for the previous year.

Detailed tabular statements of work done in all the stations are appended to the report. Discussions of the tables are withheld for publication in a bulletin of the Department which is under preparation.

TABLE 1.

Relation between Infections with Malaria Parasites and Spleen Condition.

Spleen Data		Number of persons examined	Number found Infected with Malaria Parasites	Percentage Infected with Malaria Parasites
Spleen Not Examined	..	172	20	11.6
Spleen Not Palpable	..	943	84	8.9
Spleen Palpable Size P	..	288	63	21.9
Size 1	..	471	129	27.4
Size 2	..	312	96	30.8
Size 3	..	147	29	19.7
Size 4	..	11	1	9.1
Size 5	..	1	...	...
Total with Palpable Spleen	..	1,230	318	25.9
Grand Total	..	2,345	422	18.0

TABLE 2.

Relations of Species of Malaria Parasites and Age of Persons Examined.

Age	Number Examined	Infected with							
		Benign Tertian		Malignant Tertian		Quartan		Any Parasite	
		No.	Percent of No. Examined	No.	Percent of No. Examined	No.	Percent of No. Examined	No.	Percent of No. Examined
0-9 ...	1,230	88	7.2	60	4.9	83	6.7	231	18.8
10-19 ...	813	56	6.9	37	4.6	56	6.9	149	18.3
20 and over	302	13	4.3	11	3.6	18	6.0	42	13.9
All Ages ...	2,345	157	6.7	108	4.6	157	6.7	422	18.0

TABLE 3.

Statement showing the Spleen and Parasite Rates during the Years 1930 and 1931.

Quarter	NAGENHALLI						MUDIGERE						HIRIYUR							
	Zone to be protected			Peripheral Zone			Zone to be protected			Peripheral Zone			Zone to be protected		Peripheral Zone					
	Spleen Rate	Parasite Rate	Spleen Rate	Parasite Rate	Spleen Rate	Parasite Rate	Spleen Rate	Parasite Rate	Spleen Rate	Parasite Rate	Spleen Rate	Parasite Rate	Sp. Rate	Pt. Rate	Sp. Rate	Pt. Rate				
	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931				
1st	60.0	68.3	19.3	21.6	64.0	77.8	14.2	27.2	50.0	62.3	16.0	14.5	92.7	88.9	27.18	26.7	38.9	19.4	28.2	17.4
2nd	76.0	50.0	15.0	18.8	54.0	74.7	15.2	28.4	70.0	56.3	16.0	19.7	84.6	87.2	20.5	23.4	66.5	11.5	57.4	6.6
3rd	42.0	43.5	25.0	21.7	94.0	61.8	14.0	26.4	57.4	68.4	16.4	21.6	88.8	93.5	22.9	35.5	42.0	22.0	35.2	20.0
4th	48.0	38.2	12.3	11.7	87.0	61.2	25.0	26.5	60.5	72.5	6.3	11.0	85.5	96.8	27.1	29.6	31.8	22.2	18.6	16.1

TABLE 4.
Larval and Adult Catches in Control Areas.

Species	January 1 to December 31, 1930																			
	Nagenhalli					Hiriyur					Mudigere									
	Number of Larvae and Pupae.					Number of Larvae and Pupae					Number of Larvae and Pupae									
	2	3	4	P	Total	2	3	4	P	Total	Ptd. Zone	Ptd. Zone	Ptd. Zone	2	3	4	P.	Total	Ptd. Zone	Ptd. Zone
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
<i>A. aitkenii</i>	86	62	51	12	211	263	93	192	198	3	487	387	129	108	30	2	1	141	1	1
<i>A. aconitus</i>	45	22	18	1	86	10	81	186	251	16	534	6	1	4	5	1	2	12	1	28
<i>A. barbirostris</i>	211	148	59	4	417	1422	155	280	232	12	629	1751	2000	502	296	117	41	956	15	76
<i>A. culicifacies</i>	27	23	16	4	70	527	174	309	280	5	768	52	55	57	27	...	...	84	28	30
<i>A. fuliginosus</i>	94	41	26	...	161	172	255	402	448	36	1186	4	6	724	302	88	37	1146	26	45
<i>A. byrcanus</i>	66	24	18	1	109	83	90	159	128	4	381	2	4	1829	574	68	56	2027	29	104
<i>A. jamesii</i>	28	30	55	...	113	60	...	1	5	...	6	...	...	2443	1477	278	157	4355	894	3010
<i>A. jeyporiensis</i>	...	...	...	...	...	...	...	...	...	...	...	...	...	420	119	1	41	681	28	4
<i>A. karwari</i>	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>A. leucosphyrus</i>	240	147	127	6	520	567	962	1689	1451	90	4192	2115	1658	617	397	77	47	1138	46	33
<i>A. listoni</i>	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>A. maculatus</i>	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>A. maculipalpis</i>	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>A. majidi</i>	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>A. pallidus</i>	9	2	1	...	12	12	51	77	138	15	281	13	9	206	104	...	15	325	1	4
<i>A. stevensi</i>	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>A. subpictus</i>	258	117	31	...	406	1129	560	764	825	80	2329	1862	1809	190	122	...	...	...	...	123
<i>A. tessellatus</i>	9	33	90	41	...	164	174	82	18	6	1	3	23	51	224
<i>A. vagus</i>	104	35	11	2	152	525	...	8	1	...	4	252	175	217	123	3	8	351	217	...

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TABLE 5.
Bangalore Spleen Surveys.

Area	Survey began on June 22, 1927				Survey began on July 6, 1928				Survey began on July 15, 1929				Survey began on July 17, 1930				Survey began on July 17, 1931			
	Number Examined	Spleen Rate	Average Spleen	Average Enlarged Spleen	No. Examined	Spleen Rate	Average Spleen	Average Enlarged Spleen	No. Examined	Spleen Rate	Average Spleen	Average Enlarged Spleen	No. Examined	Spleen Rate	Average Spleen	Average Enlarged Spleen	No. Examined	Spleen Rate	Average Spleen	Average Enlarged Spleen
Lal-bagh Area	152	37.5	0.57	1.53	127	26.0	0.89	1.51	145	14.5	0.23	1.62	134	16.4	0.20	1.25	189	1.6	0.03	1.7
Malleswaram Area	221	31.2	0.44	1.42	188	8.5	0.11	1.31	257	12.8	0.16	1.27	295	8.9	0.05	1.36	348	...	...	...
Chamarajpet Area	156	21.8	0.34	1.56	251	13.8	0.18	1.31	181	6.1	0.05	1.36	134	3.7	0.05	1.40	147	...	...	...
Basavangudi Area	164	15.2	0.22	1.44	200	8.0	0.13	1.63	213	4.2	0.06	1.33	205	7.3	0.08	1.06	290	0.8	...	...
City—Area	166	8.4	0.13	1.50	161	4.3	0.06	1.29	315	7.3	0.09	1.22	327	4.2	0.07	1.50	497	1.0	...	...
Total	859	23.2	0.34	1.48	937	11.5	0.16	1.42	1,111	8.7	0.12	1.35	1,095	6.1	0.08	1.31	1,471	0.6	0.01	2.0

TABLE 6.

Larval and Adult Catches in Bangalore City.

Species	January to Dec. 31, 1930					January to Dec. 31, 1931					Adult F.		
	Number of Larvae and Pupae					Adult F.	Number of Larvae and Pupae						
	2	3	4	P	Total		2	3	4	P		Total	
<i>A. aconitus</i>	1	...	1	...	
<i>A. barbirostris</i>	...	19	12	...	...	31	5	1	3	...	4	11
<i>A. culicifacies</i>	...	1	...	1	...	2	85	1	1	...	2	24	
<i>A. fuliginosus</i>	...	5	14	...	...	19	232	22	33	4	59	189
<i>A. hyrcanus</i>	...	12	12	24	18	16	14	14	1	45	7
<i>A. jamesii</i>	
<i>A. jeyporiensis</i>	1	...	1	1	6	1	6	...	13	1
<i>A. listonii</i>	...	2	5	7	3	1	3	3	...	7	...
<i>A. subpictus</i>	...	56	51	21	...	128	1,392	178	201	100	379	1,053	
<i>A. stevensi</i>	...	6	5	6	...	11	114	7	15	13	35	28	
<i>A. pallidus</i>	...	3	3	...	...	6	40	8	1	2	11	8
<i>A. vagus</i>	...	9	11	...	...	20	161	16	17	6	39	96

TABLE 7.

Larval and Adult Catches in Mysore City.

Species	Number of Larvae and Pupae					Adult F.	
	2	3	4	P	Total		
<i>A. aconitus</i>	...	2	2	...	...	4	...
<i>A. barbirostris</i>	...	128	61	22	4	215	...
<i>A. culicifacies</i>	...	206	145	38	38	427	234
<i>A. fuliginosus</i>	...	611	357	186	37	1,191	395
<i>A. hyrcanus</i>	...	61	14	16	2	93	4
<i>A. jamesii</i>	...	159	105	56	3	323	8
<i>A. listonii</i>	...	129	47	19	2	197	13
<i>A. maculipalpis</i>	1	...	1	...
<i>A. pallidus</i>	...	32	53	30	4	119	5
<i>A. subpictus</i>	...	1,321	799	411	191	2,722	1,145
<i>A. stevensi</i>	...	259	65	45	37	406	31
<i>A. tessellatus</i>	1	1	4
<i>A. vagus</i>	...	119	95	55	14	283	222

TABLE 8.
Dissection of female anophelines in Mysore State between October 1, 1928 and December 31, 1930.

Species	Routine examinations in three stations			Examinations during epidemics of malaria										Grand total											
	Number of mosquitoes dissected	Number of guts examined	Number of glands examined	Hulikere tunnel, October 1929					Kolar district village, June 1930					Mysore City August, 1930					Mosquitoes		Guts		Glands		
				Mosq. exam.		Guts. Inf.		Glds. Inf.		Mosq. exam.		Guts. Inf.		Glds. Inf.		Mosq. exam.		Guts. Inf.		Glds. Inf.		Exam.	Inf.	Exam.	Inf.
			
<i>A. aconitus</i>	1,224	1,221	1,215	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,224	...	1,221	...	1,215	...
<i>A. barbitrostris</i>	72	72	72	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	72	...	72	...	72	...
<i>A. culicifacies</i>	5,732	5,687(b)	5,619(c)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5,732	...	5,703	...	5,635	...
<i>A. fuliginosus</i>	788	781	779	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	788	...	781	...	779	...
<i>A. hyrcanus var nigerrimus</i>	223	223	222	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	223	...	223	...	222	...
<i>A. jamesii</i>	487	486	483	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	487	...	486	...	483	...
<i>A. jeyporiensis</i>	6,377	6,317	6,110	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,377	...	6,317	...	6,110	...
<i>A. karwari</i>	61	61	61	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	61	...	61	...	61	...
<i>A. leucosphyrus</i>	6,373	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	3	...	3	...
<i>A. listonii (a)</i>	6,034	3,978	5,928(d)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,034	...	5,978	...	5,928	...
<i>A. majidii</i>	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...
<i>A. maculipalpis var indiensis</i>	43	43	43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	43	...	43	...	43	...
<i>A. pallidus</i>	137	137	135	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	137	...	137	...	135	...
<i>A. philippinensis</i>	24	23	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	24	...	23	...	24	...
<i>A. stephensi</i>	2,708	2,683(e)	2,646	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,708	...	2,685	...	2,648	...
<i>A. subpictus</i>	5,961	5,906	5,866	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5,961	...	5,925	...	5,885	...
<i>A. tessellatus</i>	220	216	214	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	220	...	216	...	214	...
<i>A. turkhudi</i>	10	10	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	...	10	...	10	...
<i>A. vagus</i>	1,135	1,127	1,125	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,135	...	1,127	...	1,125	...
All anophelines	31,240	30,975	30,556	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	31,240	...	31,012	...	30,593	...

(a) *A. listonii* includes *A. minimus* and *A. minimus* var *varuna*.
 (b) One *culicifacies* stomach found infected out of 135 *culicifacies* dissected and 185 stomachs examined at Nagenhalli, Mysore district in April, 1929.
 (c) One *culicifacies* gland found infected at same place in same month out of 134 glands examined from 135 *culicifacies* dissected.
 (d) One *listonii* gland found infected at same place in April, 1929, out of 38 glands examined from 39 *listonii* dissected.
 (e) Two *stephensi* stomachs found at Hiriyur, Chitaldrug District, out of 43 stomachs examined from 92 *stephensi* dissected in September 1930.

(b) Hookworm Campaign Unit.

The Hookworm Campaign Unit continued to work in Kadur District till the 7th February 1931. It then moved to Hassan District. The operations were conducted from the following camping places.—

Chikmagalur, Mudigere, Kanachur, Sampigekhan, Mavinakere, Nandipura, Saklespur, Chicknahalli, Arehalli, Yemmekhan, Santavari, Aldur, Karakurchalu, Kotigehar, Kalasa, Merthikhan, Subbanhodige and Balehonnur. The main items of work consisted of propaganda with the aid of the cinema films, mass treatment, examination of faecal samples before and after treatment and demonstrations. The activities were suspended from April, since about that time most of the labour force in the plantations was demobilised. The Unit returned to headquarters on the 1st of April. It, however, resumed the field work in the latter part of the year, commencing the third course of treatment on the 2nd October 1931. This time, a tentative programme was chalked out in advance and circulars were issued to all the planters, soliciting their co-operation. The response, however, from the planting community was far from encouraging. Out of about 300 planters addressed, only 17 replied, agreeing to have the treatment on their estates. The unfavourable conditions of coffee trade was, perhaps, partly responsible for this lack of enthusiasm. During the latter part of the year, the department's motor-van, which was at the disposal of the Unit in the previous years, was not made available, being otherwise engaged. There was, therefore, delay and hardship experienced in reaching the remote parts in the area operated. Altogether, 117 estates were visited and 11,579 persons treated.

Besides treatment in the plantations, systematic visits were made to the several medical Institutions in the specified area and the new method of treatment demonstrated to the local medical officers, who were at the same time instructed to carry on the treatment of the indigenous population. Twenty-one dispensaries were visited during the demonstrations. This completes the visit to all the Medical Institutions in Kadur and Hassan Districts and the affected Taluks of Mysore District. The demonstration in Shimoga District, had, however, not been taken up. The reports received from the several Medical Institutions show 6,725 persons as having been treated. This

part of the campaign was not efficiently carried out. Perhaps a second visit to enquire into the particular difficulties of medical men, with a view to suggest their solution may be helpful.

On transfer in the early part of the year of the field laboratory to the Public Health Institute, Bangalore, all faecal samples were sent to that Institute for examination by the Stoll's and Willi's method of counting.

Shortly after the return of the Unit to headquarters in April, the Unit Health Officer, with two of the assistant sanitary inspectors, were drafted for cholera duty in Hunsur and Krishnarajapet Taluks of Mysore District and Channapatna Town of Bangalore District. They were on this work till about 9th July 1931.

While in headquarters from 9th July 1931 to 1st October 1931, the Health Officer was engaged on investigation into the value of certain newer drugs, such as ethylene tetrachlor in the Victoria Hospital, Bangalore. But this work had to be suspended, as he had to start off on Hookworm field work.

Statement showing the number of persons treated against Hookworm Infestation in the several Estates during the year 1931.

Serial No.	Name of Estate	Date of Treatment	Number treated
1	Kanchur Estate	10th January 1931	50
2	Kanchur Villages	Do	52*
3	Attikonda Estate	14th Jan. 1931	49
4	Karedike do	Do	41
5	Biligily do	16th Jan. 1931	67
6	Mavinkere do	17th Jan. 1931	401
7	Mallarasangudda Estate	18th Jan. 1931	330
8	Sampegekkam do	19th Jan. 1931	25
9	Sampegekkam Village	Do	87*
10	Nandipur Estate	24th Jan. 1931	109
11	Do do	25th Jan. 1931	25
12	Do do	Do	18
13	Do do	Do	21
14	Kalagenni Estate	26th Jan. 1931	106
15	Bettadamane Estate	28th Jan. 1931	207
16	Tolalu Estate	10th Feb. 1931	66
17	Madasuse do	12th Feb. 1931	68

*Not billed.

Serial No.	Name of Estate	Date of Treatment	Number treated
18	Chetanahally Estate ...	12th Feb. 1931	180
19	Hulihangal do ...	13th Feb. 1931	195
20	Kemargudu do ...	14th Feb. 1931	36
21	Kanuganahally Village ...	Do	35*
22	Chechanahally Village ...	14th Feb. 1931 & 15th Feb. 1931	48*
23	Hiresade ...	16th Feb. 1931	71
24	Tholalpet Estate ...	Do	89
25	Malali do ...	19th Feb. 1931	44
26	Sulegudda do ...	18th Feb. 1931	71
27	Warthihally do ...	20th Feb. 1931	301
28	Cubbinhally Estate ...	21st Feb. 1931	108
29	Utholalu do ...	Do	317
30	Bavimane do ...	22nd Feb. 1931	14
31	Arabhally Village ...	22nd Feb. 1931 & 26th Feb. 1931	230*
32	Billodu ...	22nd Feb. 1931	170
33	Husurgudda ...	23rd Feb. 1931	249
34	Lingapur ...	24th Feb. 1931	67
35	Soondhally ...	25th Feb. 1931	171
36	Udevar ...	26th Feb. 1931	108
37	Malhally ...	Do	51
38	Holalu ...	27th Feb. 1931	109
39	Doddalukkunda ...	Do	132
40	Anughatta ...	28th Feb. 1931	112
41	Kannuguppe ...	Do	88
42	Salavara ...	1st March 1931	99
43	Goranahally Village ...	Do	10*
44	Bathney Estate ...	2nd March 1931	135
45	Heggadi ...	Do	217
46	Hebbale ...	3rd March 1931	55
47	Surkodi ...	4th March 1931	67
48	Belagavally ...	Do	167
49	Belavar ...	Do	26
50	Jakanahally Estate ...	5th March 1931	144
51	Madinahally do ...	6th March 1931	54
52	Gurugihally do ...	Do	23
53	Madanahally Village ...	Do	11*
54	Bhagya Estate ...	8th March 1931	126
55	Alvalli do ...	9th March 1931	65
56	Golgonda Estate ...	Do	124
57	Golgonda do ...	Do	11
58	Sundokere Estate ...	12th March 1931	70
59	Matsagar do ...	13th March 1931	24
60	Donegal do ...	14th March 1931	96

*Not billed.

Serial No.	Name of Estate	Date of Treatment	Number treated
61	Kumlaradi Estate	14th March 1931	96
62	Kadmane	16th March 1931	879
63	Do	17th March 1931	168
64	Do	18th March 1931	249
65	Ossoor	20th March 1931	221
66	Hallhally	22nd March 1931	33
67	Bachenhally	23rd March 1931	65
68	Raksidi	Do	17
69	Bakervally	24th March 1931	36
70	Bellur	Do	170
71	Kumberhally	25th March 1931	44
72	Hunigenahally Etc.	26th March 1931	161
73	Heddanahudave	27th March 1931	55
74	Haradebetta	29th March 1931	121
75	Kagnur Estate	Do	32
76	Mallpura	Do	56
77	Adarvalli	Do	8
78	Yemmakhan	7th Oct. 1931	156
79	Dewankhan	Do	8
80	Yemman	8th Oct. 1931	12
81	Kurubarahally	Do	29
82	Chumchemkul	Do	29
83	Hospet	11th Oct. 1931	108
84	Samlavari	13th Oct. 1931	52
85	Beetykhan	14th Oct. 1931	53
86	Arabidakool	17th Oct. 1931	97
87	Sanlavari Village	15th Oct. 1931	3*
88	Doopadakool	18th Oct. 1931	81
89	Do	Do	44
90	Mylemane	29th Oct. 1931	131
91	St. Joseph Gunimavu	31st Oct. 1931	80
92	Balakithlu	Do	54
93	Sidraban	Do	20
94	Dowkhan	Do	45
95	Begumane	2nd Nov. 1931	53
96	Tippanahally	5th Nov. 1931	69
97	Karakurachalu	8th Nov. 1931	92
98	Mallandur Village	3rd Nov. 1931	6*
99	Gundikhan Estate	8th Nov. 1931	37
100	Sidargavi do	Do	69
		20th Nov. 1931	
101	Kotigehar Village	21st Nov. 1931 & 24th Nov 1931	20*
102	Balur Estate	22nd Nov. 1931	220

*Not billed.

Serial No.	Name of Estate	Date of Treatment	Number treated
103	Urvinkhan Estate ...	23rd Nov. 1931	65
104	Bomhall do ..	25th Nov. 1931	55
105	Heradike do ...	28th Nov. 1931	35
106	Kulmuddy do ..	Do	57
107	Jaccan do ..	Do	32
108	Kalasa Town ...	30th Nov. 1931	9*
109	Marthikhan Estate ...	5th Dec. 1931 & 6th Dec. 1931	364
110	Badnekhan do ...	6th Dec. 1931	101
111	Merthi Subhan Kodige ...	7th Dec. 1931 & 8th Dec. 1931	327
112	Hadin Beri Estate ...	9th Dec. 1931	36
113	M Cowhalla do ...	Do	69
114	M. St. Anthony's Estate ...	Do	79
115	M. Waddukal Estate ...	Do	71
116	Dasarahally do ...	21st Dec. 1931	70
117	Karkanhalli ...	22nd Dec. 1931	22
	Total ...	...	11,579

Statement showing the number of persons treated against Hookworm Infection in the several Dispensaries in the State during 1931.

Serial No.	Name of Dispensaries	Male	Female	Total	Total Attendance
	Mysore District.				
1	Bellur ...	10	...	16	5,356
2	Periyapatna ...	15	6	27	4,748
3	Chamarajanagar ...	...	...	...	...
4	Nagamangala ...	150	97	247	1,089
5	Gundlupet ..	25	7	35	2,154
6	Hunsur ..	62	16	84	4,532
7	Nazarabad ...	...	...	...	...
8	Krishnarajpete ...	615	261	876	3,921
9	Sonnathapura ...	...	...	...	...
10	Hura ...	4	...	4	...
11	Bethadapur ...	54	9	63	809
12	Akkihebbal ...	4	..	4	..

* Not billed.

Serial No.	Name of Dispensaries	Male	Female	Total	Total Attendance
13	Yedatore	1	1	2	..
14	Arenhally	12	4	16	...
15	Heggaddevankote	7	..	7	...
16	Hampapur	3	...	3	..
17	Gramgere	...	...	...	...
18	Sargur	...	...	103	...
19	T. Narsipur	..	...	1	..
20	Nisra	...	...	15	...
Hassan District.					
21	Heresave	38	5	135	3,110
22	Arehally	64	13	81	1,402
23	Yeslurpet	64	19	170	3,078
24	Sargur	...	..	130	2,074
25	Basavapatna	166	24	190	713
26	Saklespur (Female Dispensary)	...	45	75	718
27	Belagudu	..	...	26	972
28	Gramma	...	...	...	1,002
29	Halkur	2	1	3	497
30	Chennarayapatna	...	...	...	1,235
31	Shukravarasanthe	14	...	14	402
32	Arsekere	..	...	..	1,585
33	Kenchamanahoskote	15	5	20	759
34	Holenarsipur (Female Dispensary)	...	...	34	3,206
35	Hanbal	...	...	...	953
36	Konannur	..	..	5	1,649
37	Royerhoppal	18	8	69	1,140
38	Gettahalli	142	41	183	...
39	Banavar	6	4	13	3,132
40	Saklespur	220	15	288	...
41	Alur	...	...	...	1,322
42	Nagenhalli	302	57	359	...
43	Mallipatna	9	...	9	816
44	Arkalgud	171	71	242	1,205
45	Holenarsipur	309	6	349	1,015
46	Halle Mysore	50	...	50	...
47	Shravanabelgola	198	57	255	..
48	Hagare	26	4	30	2 110
Kadur District.					
49	Santaveri	...	..	21	3,160
50	Gonibide	12	8	20	...
51	Aldur	418	81	499	1,514
52	Sollebile	72	16	88	486

Serial No.	Name of Dispensaries	Male	Female	Total	Total Attendance
53	Hariharpur ...	11	4	15	688
54	Lakkavalli ...	32	13	45	..
55	Bukkambudi ...	..	...	...	...
56	Sringeri ...	31	25	56	...
57	Ajjampur ...	205	32	237	1,089
58	Javali ...	1	...	21	...
59	Koppa ...	76	25	310	2,419
60	Narasimharajpur ...	...	...	4	...
61	Basariketti ..	7	2	9	1,179
62	Birur ...	200	15	425	10,103
63	Attigundi ...	8	...	57	362
64	Kadur ...	..	...	...	...
65	Tarekere ..	47	5	52	1,348
66	Tarikere (Female Dispensary) ...	22	79	101	880
67	Balehonnur ...	14	20	38	819
68	Mudigere ...	7	1	35	1,461
69	Mudigere (Female Dispensary) ...	...	...	...	...
70	Kalasa ...	20	1	21	1,975
71	Neduvale ...	17	8	25	1,150
72	Tarikere (Railway Dispensary) ...	...	...	...	544
Shimoga District.					
73	Malur ...	89	61	150	598
74	Sante Bennur ..	...	..	...	1,925
75	Ananthapur ...	...	...	...	1,031
76	Hosnagara ...	121	86	207	1,912
77	Humachadakatte ...	...	...	...	974
78	Nagor ...	...	...	...	...
79	Anavathi ...	...	...	...	636
80	Chandragutti ...	...	...	...	...
81	Shimoga (District Hospital Male Dispensary) ...	45	5	48	1,949
82	Shimoga (District Hospital Female Dispensary)...	...	5	5	1,410
83	Megaravalli ...	2	1	3	670
84	Devangi ...	..	...	1	...
85	Sagar ...	...	...	...	...
Grand Total ...		4,191	1,159	6,725	...

Bureau of Health Education.

The personnel of the Bureau remained practically unchanged till the end of November. In December, however, the Bureau was fully reorganised.

The outstanding feature of the reorganisation is the co-operation of the Rockefeller Foundation with the Government of Mysore in the furtherance of the activities of the Bureau. By an agreement, the Government and the Foundation divided the expenses of the Bureau for a period of two years from 1st December 1931, after which Government undertakes to bear the entire cost providing for a budget of Rs. 12,500 a year.

In pursuance of this, the personnel of the Bureau was fully completed and its specific duties and functions clearly defined. (*Vide Appendix A.*)

During the first quarter of the year, the Bureau worked

1. Venereal diseases (for men) 3 parts each.
2. How disease is spread (Tuberculosis).
3. How to prevent disease (General).
4. One scar or many (value of vaccination).
5. Rat menace.
6. "Fly" as a disease carrier.
7. The Knowing Gnome.
8. In his father's footsteps (rural sanitation).
9. The Long Vs. the Short Haul (value of mother's milk.)
10. Jinks : (a comic picture to show the value of fresh air, daily bath, good exercise and wholesome food).
11. Social Hygiene—3 parts (for woman).

in association with the Hookworm Campaign Unit in the "Malnad" parts of Kadur and Hassan Districts demonstrating the films on Hookworm disease on the several coffee and tea estates. During the rest of the year certain selected parts of the State were visited on Health propaganda work; much out-door work, however, was not possible during the third quarter being the rainy season. About the end of May eleven more films

(personally selected by Dr. Sweet while on leave home) on the marginally noted Health subjects were added to the two films on "Malaria" and "Hookworm," at a cost of about Rs. 2,400.

In all about 89 lectures illustrated by the films were held, during the year, to an approximate audience of 33,072, including school children and ladies. The Departmental motor van which carried the cinema equipment, travelled 3,733 miles.

The principal places where cinema shows were held are noted below :—

- | | | |
|---|-----|---|
| 1. Tumkur Town (In connection with State Teachers' Conference) | ... | 3 |
| 2. Kolar Town (In connection with the University Extension lectures and the meetings of the Association for Social and Moral Hygiene) | ... | 2 |
| 3. Bangalore City (Before the Delegates of the All India Ophthalmological Conference) ... | ... | 1 |
| 4. Bangalore City (Under the auspices of the Civic and Social Progress Association) ... | ... | 1 |

5. On several Coffee and Tea Estates of Hassan and Kadur Districts. (In association with the Hookworm Campaign Unit)	..	...	33
6. Mysore City (Dasara Exhibition Grounds)	...	...	7
7. Mysore City (Specially for Prince Jayachamaraja Wodeyar and his school mates at the Chamundi Vihar Palace)	...	...	1
8. Special Shows exclusively for ladies (In the Cities of Bangalore and Mysore)	...	...	7
9. Certain selected rural parts of Tumkur, Bangalore and Mysore Districts	...	...	34

A gratifying feature is the keen interest evinced by the audiences everywhere, in the films exhibited and the explanatory talks given. Following almost every lecture, the appreciation of the local bodies was communicated to the Department as formal resolutions. The frequent requisitions received from Municipal Councils and Village Panchayets for the services of the Bureau bear further testimony to the real usefulness and educative value of the shows.

Bureau of Rural Health.

There were a few changes in the personnel of the staff of the Unit during the year. The Assistant Health Officer was transferred to the Mysore City Malaria Station and the Chief Sanitary Inspector, (a Sub-Assistant Surgeon under training) was appointed as Assistant Health Officer and transferred from Maddur section to Mandya section. In his place, a trained Sanitary Inspector (not a medical man) was posted to Maddur from Malaria Station, Mudigere. The Unit, therefore, worked throughout the year, short of one medical man. This was a severe handicap, particularly at a time when medical help was most needed for the control of plague and cholera epidemic which prevailed more or less right through the year, in the area.

Twenty-seven villages with a total population of 19,000 were infected with plague, of which 5 reported imported cases. All the villages were visited and 8,059 antiplague inoculations given. The percentage protected varied considerably in different villages as shown below :—

<i>No. of Villages Infected.</i>		<i>Percentage of Protection.</i>
4	...	.. 90 and above.
7	..	... Between 50 and 75.
9	...	... Between 25 and 50.
5	...	... Below 25.
2	...	.. No Inoculations.

In the last two villages no inoculations were performed, as they had been evacuated soon after the commencement of the epizootic in rats. In 19 other uninfected villages people came forward voluntarily for protective inoculations and 1225 persons were immunized, thus bringing up the total number of inoculations by the unit to 9,284. The unit reported 304 cases with 190 deaths (a case mortality of 62.5%). Tables 9 to 11 give the details of attacks and deaths among the inoculated and the uninoculated.

TABLE 9.

Details of plague infection and inoculation for 1931.

Month	Plague infection				Total No. of inoculations done	Remarks
	Inoculated		Uninoculated			
	Attacks	Deaths	Attacks	Deaths		
January	9	...	32	17	2,194	15 attacks occurred one day after inoculation, 1 two days after, 2 three days after, 1 five days after, 3 six days after and 1 seven days after. Thus 23 attacks were while the disease was incubating. 37 attacks occurred subsequent to 7 days of inoculation. Case mortality in these was 21.6 per cent. Among the uninoculated (in which the 23 cases that occurred within the incubation period are included), there were 267 attacks and 182 deaths, the case mortality being 68.1 per cent.
February	11	...	22	15	888	
March	1	...	17	15	765	
April	...	...	7	4	188
May	...	...	4	2	1
June	2	1	18	10	360	
July	3	2	25	12	575	
August	...	...	6	5	154
September	...	...	7	6	155
October	6	3	30	26	408	
November	8	3	28	19	1,467	
December	20	7	53	37	2,729	
Total	60	16	244	174	9,284	

TABLE 10.

Plague.

Details of Attacks and Deaths among Inoculated cases.

Period between inoculation and attacks in days	Total No. of attacks	Total No. of deaths	Details of deaths											Recoveries	
			Period between attack and deaths in days												
			1	2	3	4	5	6	7	8	9	15			
1 to 7	23	8	2	1	3	1	1	...	...	...	...	...	...	...	15
7 to 14	6	4	...	1	...	...	...	...	1	...	1	1	...	...	2
14 to 21	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2
21 to 30	2	1	...	...	...	...	...	...	1	...	...	...	...	...	1
30 to 60	7	1	...	...	1	...	...	...	...	...	...	...	...	...	6
60 to 90	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2
90 to 120	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1
120 to 150	5	2	...	1	1	...	...	...	...	...	...	...	...	...	3
150 to 180	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1
300	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2
365	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Unknown	8	...	...	...	...	...	...	...	...	...	...	...	...	...	8
Total	60	16	2	3	5	1	1	...	2	...	1	1	...	44	

TABLE 11.

Plague.

Infected				In Anticipation				
No. of villages	Population	No. of inoculations	Per cent protected	No. of villages	Population	No. of inoculations	Per cent protected	No. of inoculations done at office
27	18,966	7,786	41.1	9	5,110	1,225	23.9	273
				Population		Inoculations		Percent protected
Grand Total				24,076		9,284		38.5

Twenty-eight villages were infected with cholera in the Unit area and 27 others reported imported cases only. The resources of the Unit were hard put to in the control of this rapidly spreading epidemic and it was with great difficulty that all the infected villages could be visited in time, to conduct control measures, which consisted of chlorination of drinking water supplies wherever possible and conducting mass inoculations in all the infected localities as detailed below. The Unit endeavoured to obtain, as far as possible, at least 90 per cent protection in the affected places and the figures actually obtained are as follows :—

<i>No. of Villages Infected.</i>				<i>Percentage of Protection.</i>
8	...	...	...	90 and above
4	...	...	...	Between 75 and 90
7	...	...	...	Between 50 and 75
3	...	...	...	Between 25 and 50
3	...	...	...	Below 25
3	...	...	...	No inoculations since report was received too late
28				

It was, of course, easier to get the people under the needle where infection was actually on the increase. An important and novel feature of the work of the Unit was its successful attempts at immunising the people near infected localities in anticipation of disease during both cholera and plague epidemics. Protective inoculation was practically unknown in these areas till the Health Unit first introduced it to the local communities, and the success of its efforts during the first trial is mainly the result of the propaganda work during the previous two years and the growing confidence of the people in the Unit's staff. Of 20,201 inoculations done against cholera, 16,678 were done during the five months, May to September, the period of maximum incidence of the disease in the area. Fifteen villages were protected in anticipation of the disease and the total number of inoculations done in them was 3,250 or 51.9 per cent.

Tables 12 to 14 give the details of attacks and deaths due to cholera among the inoculated and the uninoculated.

TABLE 12.

Details of Cholera Infection and Inoculations for 1931.

Month	Cholera Infection				Total No. of inoculations done	Remarks
	Inoculated		Uninoculated			
	Attacks	Deaths	Attacks	Deaths		
January ...	29	11	40	30	2,030	33 attacks occurred one day after inoculation, 13 two days after, and 10 three days after. Thus 56 attacks were while the disease was incubating. 26 attacks occurred subsequent to 3 days of inoculation. There were 18 deaths amongst them, giving a case mortality of 69·2 per cent. Among the uninoculated (in which the 56 cases that occurred within the period of incubation of the disease are included), there were 359 attacks with 203 deaths, the case mortality being 56·5 per cent.
February ...	...	...	1	1	340
March ...	...	...	2	2	282
April ...	...	...	8	8	337
May ...	9	3	28	13	8,550	
June ...	19	7	63	39	6,240	
July ...	13	5	109	61	3,854	
August ...	10	7	12	7	1,118	
September ...	2	...	33	13	1,916	
October ...	...	...	7	4	536
November ...	...	...	...	...	...
December ...	...	...	...	...	...
Total ...	82	33	303	178	20,201	

TABLE 13.

Statement showing the Attacks and Deaths among Inoculated cases.

Period between inoculation and attack (in days)	No. of attacks	No. of deaths	Details of deaths							No. recovered	Remarks
			Period between attack and deaths in days								
			1	2	3	4	5	6	7		
1 ...	33	13	7	5	1	...	...	...	...	20	
2 ...	13	6	4	2	...	...	...	...	...	7	
3 ...	10	6	5	1	...	...	...	...	...	4	
4 ...	5	1	1	...	...	...	...	...	...	4	
5 ...	7	2	2	...	...	...	...	...	...	5	
6 ...	6	?	1	...	...	...	...	...	2	3	
7 ...	...	...	...	...	...	...	...	...	...	...
8 ...	1	...	...	...	...	...	...	...	...	...
9 ...	1	...	...	...	...	...	...	...	...	1	
Unknown ...	6	2	...	...	...	...	...	...	...	1	
Total ...	82	33	20	8	1	...	...	...	2	49	

TABLE 14.

Cholera.

	No. of villages	Popula- tion	Inocula- tions done	Per cent protected	Inoculations done at labour colonies and at office
Infected	28	15,993	8,839	55.3	
Imported	27	23,303	3,748	16.1	
In anticipation ...	15	6,260	3,250	51.9	* 796
Villages affected beyond health unit area ...	13	7,650	3,568	46.6	
Grand Total ...	83	53,206	20,201	36.47	

* These figures are not considered in calculating the percentage in the grand total since the total population among the coolies was not known.

The area of the Unit increased to almost double its original extent after the commencement of the epidemics, and during the cholera season, a few villages bordering Mandya Taluk, but situated in Seringapatam Taluk were also visited for work at the request of the people.

On account of the prevalence of epidemics, the usual routine of the Unit received a set back. One thousand eight hundred and eighty-three vaccinations against small-pox were performed during the year as against 2,501 in the previous year. Of these, 1,738 were primary and secondary of which 1,642 were inspected and 1,353 were found successful. There were 95 re-vaccinations, of which 86 were inspected and 26 were successful.

Although there is considerable improvement in the attitude of the people towards vaccination much difficulty is still felt in many places to obtain 95 per cent protection among the population. It is not easy to make the villager overcome the habit of procrastination.

There were fewer clinics during the year. Firstly, because regular visits could not be given to the centres due to heavy epidemic work and secondly, because two of the clinic centres had been evacuated for a considerable part of the year due to the prevalence of plague. The Zanana Mission from Channapatna conducted 47 Maternity

and Childwelfare clinics at Maddur. They extended their activities to Nidaghatta Village during the latter part of the year. They examined and treated a total of 654 cases.

There were only 20 cases of typhoid reported as against 67 cases during the previous year and one village contributed 11 cases out of the 20.

One thousand seven hundred and eighty-one persons were examined at office and outside. Of these 1,149 were found to be suffering from communicable diseases. (An analysis of the diseases is shown in Table 15.)

Disease	Number of Cases
Typhoid	20
Cholera	11
Smallpox	1
Scarlet fever	1
Dysentery	1
Measles	1
Whooping cough	1
Other communicable diseases	1145
Total	1149

...the year of the first epidemic... double its... extent after the commencement of the epidemic... and during the cholera season a few villages... Madhav Taluk but occurred in... also visited to work at the... On account of the... outbreak of... smallpox were... 2,000 to the persons... and... of which... Although there is... of the... is still... among the... There were fewer... because regular visits could not be given to the... due to heavy epidemic work and secondly because two of the clinic centres had been vacated for a considerable part of the year due to the prevalence of... Zappa Mission from Channarayana conducted...

TABLE 15.
Details of diseases recorded at Rural Health Unit, Mandya for the year 1931.

Month	Total	Communicable diseases																	
		Pneumonia	Typhoid	Dysentery	Influenza	Tuberculosis	Leprosy	Small-pox	Chicken-pox	Malaria	Plague	Cholera		Venereal		Hookworm	Paralysis	Tonsils	
											Attacks	Deaths	Attacks	Deaths	Syphilis	Gonorrhoea			
January	218	1	1	1	1	7	1	..	24	41	17	41	69	41	5	2	5	..	..
February	81	..	..	..	..	5	..	..	11	33	15	1	1	1	1	1	3	1	2
March	88	..	..	..	..	1	..	..	17	18	16	2	2	2	1	6	6	..	..
April	64	..	..	2	1	4	..	..	10	7	4	8	8	3	3	..	3	..	..
May	115	..	11	2	2	3	..	..	9	4	2	16	37	3	3	1	3	3	3
June	142	..	1	3	3	4	..	..	9	15	11	46	82	1	1	1	1	3	3
July	200	..	..	3	1	3	..	..	10	28	20	66	122	3	3	..	3	4	4
August	122	..	1	..	..	8	..	..	22	6	5	14	22	2	2	..	2	1	1
September	278	..	..	..	3	3	..	..	66	7	6	35	35	5	5	..	7	5	5
October	122	..	..	1	2	3	..	..	11	36	29	4	7	2	2	1	3	1	1
November	204	..	4	..	5	..	..	..	46	36	22	..	..	6	3	3	6	2	2
December	140	..	..	1	1	2	..	..	22	73	44	..	..	2	..	..	2	2	2
Total	1,781	10	20	18	18	43	2	2	257	304	190	211	385	35	15	44	3	23	23

The Unit installed 32 borehole latrines at Maddur. It was found that the soil of Mandya Taluk was not particularly well suited for the construction of these latrines. It was also found that pit and trench systems that were tried during the previous year would not work satisfactorily owing to want of attention. Unless local case venging labour is made available to keep the latrine premises clean, they very soon come to be dropped from use. The borehole latrines installed in private houses in Maddur Town, however, have been fairly satisfactory.

Suggestions were given for the installation of flush latrines of the septic tank type in private houses that are being newly constructed in the Mandya extension. In one house where the latrine has been in use for over six months, the results have been very satisfactory and two others have already commenced the construction of like latrines for their own houses. It would be very useful if the Mandya Municipality could legislate and enforce the construction of similar latrines for all houses in the newly growing extension.

The two midwives attached to the Unit together gave 357 visits to 22 villages and they have paid 2,660 pre-labour visits, 1,041 postnatal visits and 108 visits for miscellaneous cases. They have also conducted 95 labour cases during the year.

The Unit conducted spleen survey in 19 villages situated along the Irwin Canal zone and examined 1,036 cases for enlarged spleen, out of which, 72 had palpable spleen, eight had one size spleen, 45 had two size spleen, 15 had three size spleen, one had four size spleen and 823 were negative.

The Unit Laboratory examined 236 blood-smears, 65 specimens of urine, 11 specimens of spleen-smears from dead rats, six samples of faeces, 13 specimens of sputum, one specimen of nasal-smear, and sample for fungus. Out of 236 blood-smears examined for malaria parasites, 107 were positive, 43 being Benign Tertian, 45 Malignant Tertian and 19 Quartan.

The Public Health Institute examined for the Unit 35 samples of blood for Wassermann reaction and one specimen of milk suspected to be adulterated.

THE BUREAU OF SANITARY ENGINEERING.

The Bureau of Sanitary Engineering of the Mysore Department of Health through its Water Supply, Sewage and Drainage and Town Planning Sections has as its major activities problems relating to public water-supplies, public sewage and drainage systems, inspection of towns, town planning, disposal of town refuse, control of trade wastes, inspection of District jattras and sterilisation of water-supplies during cholera epidemics.

ORGANISATION OF BUREAU.

Proposals for the creation of a Bureau of Sanitary Engineering were finally approved by Government Order No. G. 14C53-108—Sanitary 31-29-29, dated 31st May 1930, and the personnel of the Sanitary and Town Planning Division of the Department of Public Works was transferred to the Bureau of Sanitary Engineering in September 1930, in addition to a small staff authorised on a special budget approved by Government. The Government Order creating the Bureau of Sanitary Engineering entrusted to it the following duties :—

(1) The planning and designing of all new works of water-supply and drainage, including under the latter all schemes for the treatment and disposal of sewage and trade wastes.

(2) The inspection, supervision and alteration of all existing works of the character above described, including the planning of more efficient methods of purifying existing water-supplies.

(3) All engineering aspects of malaria and plague involving design of drainage projects for malaria control and the design of rat-proof construction for the control of plague.

(4) The approval of all plans :—

(a) For town planning improvements or extensions.

(b) For the sanitation, ventilation and lighting of schools, jails and other public buildings.

(c) For works of irrigation so far as they might affect the health of a community.

(5) The investigation and supervision of all watersheds supplying water for domestic purposes.

(6) The collection of water samples from public and private water systems for bacteriological and chemical examination.

The following table shows the personnel of the Bureau of Sanitary Engineering at the close of the year.

Executive Engineer	...	1*
Assistant Engineers	...	2
Sub-Engineer	...	1
Sub-Overseers	...	10
Draftsmen	...	3
Head Clerk	...	1
Clerks	...	3
Accountant	...	1
Accounts Clerk	...	1
Stenographer	...	1
Chauffeur	...	1
Tracer	...	1
Chemist	...	1
Peons	...	12

WATER SUPPLY.

Public Water Supplies.

Eversince the beginning of the Bureau of Sanitary Engineering, the problem of pure potable water-supplies has been of paramount importance. Almost all water-supply systems are visited each quarter and samples of the raw water and filtered water are collected for bacteriological examination.

Public water-supply systems in Mysore State are found mainly in the Municipalities. Twenty-six municipalities serving 10.4 per cent of the total population of the State have their water-supply systems; three of these have rapid sand filtration and chlorination eight rapid, sand filtration, five slow sand filtration, one sedimentation, three borewells and six piped raw water supplies.

The following table describes the features of each water-supply system.

Rapid Sand Filtration and Chlorination.

Bangalore.—Water-supply system with a capacity of 3½ million gallons per day and serving a population of

* The Executive Sanitary Engineer was detailed to the United States for a period of one year on a fellowship for the study and investigation of modern methods employed in water-supplies and sewage disposal systems. The Executive Engineer, Water-Supply Division, Department of Public Works was acting also in the capacity of Executive Sanitary Engineer from August 1931.

3,06,470 (includes the City and Civil and Military Station) comprises collection tanks, coagulation, chlorination and filtration through rapid gravity filters.

Mysore.—Water-supply system with a capacity of 2½ million gallons per day and serving a population of 1,07,142 comprises a raw water intake from an irrigation canal from Cauvery river, prechlorination, coagulation, filtration through rapid gravity filters and post chlorination.

Kolar Gold Field.—Water-supply system with a capacity of 2 million gallons per day and serving a population of 85,103 as well as the Gold Mines comprises a collection tank, coagulation, filtration through rapid gravity filters and chlorination.

Rapid Sand Filtration—Gravity Filters.

Davangere.—Water-supply system with a filtering capacity of 265,000 gallons per day and serving a population of 23,155 consists of a raw water intake on the river Tunghabadra, coagulation and filtration through rapid gravity filter.

Pressure Filters.

Shimoga.—Water-supply system with a capacity of 300,000 gallons a day and serving a population of 20,661 consists of a raw water intake from the river Tunga and four vertical and one horizontal pressure rapid filters.

Harihar.—Water-supply system with a capacity of 96,000 gallons per day and serving a population of 6,884 consists of raw water intake from the river Tungabhadra and two pressure rapid filters.

Bhadravati.—Water-supply system with a capacity of 200,000 gallons a day and serving the staff and coolies colony of the Bhadravati Iron Works, consists of raw water intake from the river Bhadra and three pressure rapid filters.

Nanjangud.—Water-supply system with a capacity of 125,000 gallons per day and serving a population of 8,215 consists of raw water intake from the river Kabbini and four pressure rapid filters.

Hunsur.—Water-supply system with a capacity of 144,000 gallons per day and serving a population of 6,777 consists of raw water intake from the river Lakshmana Tirtha and three pressure rapid filters.

Yedatore.—Water-supply system with a capacity of 50,000 gallons per day and serving a population of 3,349

consists of raw water intake from an irrigation canal of Cauvery river hydraulic ram and one pressure rapid filter.

Sivasamudram.—Water-supply system with a capacity of 80,000 gallons per day and serving a population of 1,093 consists of raw water intake from the Feed Canal from Cauvery river for the Power House and two rapid pressure filters.

Tumkur.—Water-supply system with a capacity of 134,000 gallons per day and serving a population of 18,196 consists of a collection tank, sedimentation tanks and three slow sand filters.

Kolar.—Water-supply system with a capacity of 100,000 gallons per day and serving a population of 16,161 consists of a collection tank and three slow sand filters.

Chikmagalur.—Water-supply system with a capacity of 115,000 gallons per day and serving a population of 12,225 consists of raw water intake from a mountain stream and three slow sand filters.

Chintamani.—Water-supply system with a capacity of 100,000 gallons per day and serving a population of 4,985 consists of a collection tank and two slow sand filters.

Kadur.—Water-supply system with a capacity of 50,000 gallons per day and serving a population of 3,822 consists of a collection tank and two slow sand filters.

Bore-wells.

Hassan.—Water-supply system with a capacity of 2,000 gallons per hour from two bore-wells serving a population of 10,544 consists of two deep well pumps and one high lift pump, three small service reservoirs.

Tarikere.—Water-supply system with a capacity of 1,500 gallons per hour serving a population of 8,211 consists of one deep well pump and a small elevated tank.

Tiptur.—Water-supply system with a capacity of 1,500 gallons per hour and serving a population of 5,160 consists of one deep well pump and a small elevated tank.

Sedimentation.

Hiriyur.—Water-supply system serving a population of 2,748 consists of two sedimentation tanks fed from an irrigation canal.

Raw Water.

Mudgere.—Water-supply system serving a population of 1,607 consists of raw water fed from the river, Hemavati,

Koppa.—Water-supply system serving a population of 871 has a gravity raw water fed from a collection tank.

Molakalmuru.—Water-supply system serving a population 3,331 has a gravity raw water fed from a collection tank.

Chitaldrug.—Water-supply system serving a population of 10,732 has a gravity raw water fed from a collection tank.

Sollebyle.—Water-supply system with a population of 901 has a gravity raw water fed from a mountain stream during the rainy season.

Kalasa.—Water-supply system with a population of 4,088 has a gravity raw water fed from a collection tank.

Chlorination.

Chlorination was first used as a sterilising agent at the Kolar Gold Fields in June 1924. It was then extended to Mysore City in August 1929. Prechlorination was started at Mysore in February 1931 and was taken up at Bangalore Jewell Filters in June 1931. A Burn and Company's stoneware chlorinator was installed during a cholera epidemic at Nanjangud in April 1931 and glass-jar chlorinators at Mudigere in December 1931, at Kunigal in May 1931 and at Channapatna in June 1931. The stoneware chlorinator and the glass-jar chlorinators are charged with perchloron, a commercial bleaching powder with about 65 per cent available chlorine.

New Water Supplies.

New water supply schemes were prepared during the year for the following localities :—

Closepet.—A pumping scheme for water-supply to the town from an infiltration well on the bank of the Arkavati river.

Mandya.—A scheme for the supply of water from bore-wells.

Konanur.—A scheme for the supply of water to the town by pumping from the river Hemavati.

Sagar.—A scheme for the supply of water to the town by pumping from a streamlet.

Bagepalli.—A pumping scheme from the river Chitravati.

Aldur.—An hydraulic ram scheme from a near by stream.

Sollebyle.—An hydraulic ram scheme for the supply of water from a mountain stream.

Melkote.—Water-supply scheme from bore-wells was proposed.

Santhemaranhalli.—A distribution system for water-supply from borewells.

Devanur.—A distribution system for water-supply from bore-wells.

Hosdurga.—A distribution system for water-supply from bore-wells.

Arsikere.—A distribution system for water-supply from bore-wells.

Dodballapur.—A distribution system for water-supply from bore-wells.

Holenarsipur.—An hydraulic ram scheme for water-supply from the river Hemavati.

Seringapatam.—An hydraulic ram scheme for water supply from the river Cauvery.

Maddur.—A scheme for water-supply from the Maddur tank.

Extension and Improvements.

Extensions or improvements to the following existing water supply systems were proposed.

Mysore.—Two alternative schemes for conveying city water supply from the Krishnarajendra Dam to the filter works in a closed conduit.

Chikmagalur.—A scheme for extending the water-supply to the administrative block of the General Hospital.

Tiptur.—A distribution system to the town from additional bore-wells.

Tarikere.—An extension of the present water-supply from bore-wells.

Hassan.—An extension of the present water-supply from bore-wells.

Harihar.—An extension of the town distribution system and a provision for an elevated tank.

Collection of Water Samples.

The collection of water samples for bacteriological examination from municipal and rural water-supply systems was continued throughout the year. Nine hundred and nineteen samples of water were collected and brought to Bangalore for bacteriological examination at the Public Health Institute. The results of the bacteriological examination were as follows:—

Bangalore.—Six hundred and eight samples of water were collected from the filter plant and distribution reservoirs in the City.

Source	No. of samples	B. Coli Per 100 c.c.							
		0	2	4	6	8	10	20	100
Applied Water	140	93	7	4	1	..	2	14	19
Clear Well	285	91	42	49	40	19	6	29	9
High Level Reservoir	31	6	9	8	1	..	..	6	1
Low Level Reservoir	31	12	5	2	1	2	1	8	..
Palace Reservoir	32	11	6	2	5	1	3	3	1
Malleswaram Reservoir	30	20	3	2	1	..	1	2	1
Basavangudi	27	4	4	3	5	3	2	2	4
Chamrajpet	30	6	3	6	5	2	2	5	1
Taps	2	1	1	..	..	..	..	..	..
Total	608	244	80	76	59	27	17	69	36

Two hundred and forty samples of water were collected from other municipal water supplies.

Source	No. of samples	B. Coli per 100 c.c.									
		0	2	4	6	8	10	20	100	1000	10000
Yedatore.—											
Raw water ...	2	...	...	...	...	...	...	2	..	..	..
Filtered water ...	1	...	...	...	...	...	...	1	..	..	..
Reservoir ...	8	...	...	...	...	8	...	..	..	..	..
Taps ...	2	...	...	1	...	...	1	..	..	..	..
Hunsur.—											
Raw water ...	2	...	...	...	...	...	...	1	..	..	1
Filtered water ...	1	...	...	...	...	...	...	1	..	..	..
Reservoir ...	1	...	...	...	...	...	...	1	..	..	..
Taps ...	3	...	...	...	...	...	...	1	1	1	1
Mysore.—											
Raw water ...	1	...	...	...	...	...	...	1	..	..	..
Applied water ...	1	...	...	...	...	...	...	1	..	..	..
Clear well ...	2	1	1	...	...	...	...	..	..	..	..
Reservoir ...	2	...	...	1	...	...	...	1	..	..	..
Taps ...	2	...	1	...	...	...	...	1	..	..	..
Nanjangud.—											
Raw water ...	2	...	...	...	...	...	...	2	..	..	..
Filtered water ...	2	...	...	...	...	...	...	1	1	..	..
Taps ...	2	...	...	...	...	...	...	2	..	..	..
Davangere.—											
Raw water ...	6	...	...	...	...	...	...	1	3	2	..
Applied water ...	6	...	...	1	...	...	...	4	..	1	1
Filtered water ...	6	1	...	...	1	...	1	2	1	1	1
Taps ...	7	1	...	1	...	...	1	3	1	..	..
Tumkur.—											
Raw water ...	3	2	...	...	...	...	...	1	..	..	..
Applied water ...	2	...	...	...	...	...	...	2	..	..	..
Reservoir ...	...	...	...	...	...	...	...	..	..	..	..
Taps ...	4	...	1	...	1	...	1	1	..	..	..
Shimoga.—											
Raw water ...	6	...	...	...	...	...	...	1	4	1	..
Filtered water ...	6	...	...	1	...	1	1	3	..	..	..
Reservoir ...	16	1	...	1	...	1	3	9	..	1	1
Taps ...	6	1	...	...	...	...	3	2	..	..	..

Source	No. of samples	B. Coli per 100 c.c.									
		0	2	4	6	8	10	20	100	1000	10000
Bhadravati.—											
Raw water ...	6	...	...	...	...	...	...	3	3	...	...
Filtered water ...	7	2	...	...	1	...	1	...	4	...	...
Tap water ...	3	1	...	...	...	1	...	...	1	...	...
Chikmagalur.—											
Raw water ...	5	...	...	...	...	...	...	...	2	1	2
Filtered water ...	5	...	...	...	...	...	1	...	3	1	...
Reservoir ...	4	...	...	...	...	...	...	3	1	...	...
Taps ...	1	...	...	...	...	...	...	1	...	...	...
Kolar Gold Fields.—											
Raw water ...	1	...	...	...	...	...	...	...	...	1	...
Applied water ...	1	...	...	...	...	...	...	...	1	...	...
Filtered water ...	2	...	1	...	...	...	...	...	1	...	...
Reservoir ...	2	...	...	...	1	...	...	...	1	...	...
Taps ...	2	2	...	...	...	...	...	...	...	...	...
Chintamani.—											
Raw water ...	2	...	...	...	...	...	...	...	...	2	...
Filtered water ...	2	...	...	...	1	...	...	1	...	...	...
Reservoir ...	1	...	...	...	...	...	...	...	1	...	...
Taps ...	2	...	...	...	...	...	...	1	1	...	...
Thippagondanahalli.—											
Raw water ...	12	...	...	...	...	...	...	...	2	6	4
Filtered water ...	7	1	...	...	...	...	...	1	4	1	...
Reservoir ...	7	...	...	...	...	...	...	...	3	4	...
Taps ...	7	...	...	...	...	...	...	...	5	2	...
Haribar.—											
Raw water ...	1	...	...	...	...	...	...	...	...	...	1
Reservoir ...	4	...	...	...	...	...	...	...	3	1	...
Taps ...	5	...	...	...	...	...	...	2	3	...	...
Hiriyur.—											
Raw water ...	2	...	...	...	...	...	...	...	...	1	1
Taps ...	2	...	...	...	...	...	...	...	2	...	...
Mudgere.—											
Raw water ...	...	...	...	...	...	...	...	...	...	...	...
Reservoir ...	6	1	...	...	...	...	...	...	2	3	...
Taps ...	1	...	...	...	...	...	...	...	...	1	...

Source	No. of samples	B. Coli per 100 c.c.									
		0	2	4	6	8	10	20	100	1000	10000
Kadur.—											
Raw water	2	..	..	..	..	..	..	..	1	1	..
Reservoir	3	1	..	..	..	..	..	2	..	..	..
Taps	2	1	..	..	..	..	..	1	..	..	..
Kolar.—											
Raw water	2	..	..	..	..	..	..	..	1	..	1
Filtered water	2	..	..	1	..	..	..	1	..	..	..
Reservoir	1	..	..	..	..	..	..	..	1	..	..
Taps	2	..	..	..	..	..	..	2	..	..	..
Chitaldrug.—											
Tap	1	..	..	..	..	..	..	1	..	..	..
Sivasamudram.—											
Raw water	1	..	..	..	..	..	..	1	..	..	..
Filtered water	1	..	..	1	..	..	..	..	..	..	..
Tiptur —											
Bore-wells	3	..	1	..	1	..	..	..	1	..	..
Kunigal.—											
Bore-well	2	1	..	..	..	..	..	1	..	..	..
Dug well	2	..	..	..	..	..	..	..	2	..	..
Hassan.—											
Bore-well	5	3	1	..	..	1	..	..	..	..	..
Tarikere.—											
Bore-well	3	..	..	..	..	..	1	2	2	..	..
Challakere.—											
Bore-well	1	1	..	..	..	..	..	..	..	..	..
Channapatna.—											
Bore-well	2	1	..	..	..	..	1	..	..	..	..
Mysore Palace											
	2	2	..	..	..	..	..	..	..	..	..
Arsikere											
	1	1	..	..	..	..	..	..	..	..	..
Total	240	25	6	7	5	11	7	43	92	31	13

Seventy-one samples of water were collected from rural water supplies.

Source	No. of samples	B. Coli Per 100 c.c.									
		0	2	4	6	8	10	20	100	1000	10000
Dug wells ..	56	1	..	..	..	..	..	2	16	21	16
Bore-wells ..	3	1	..	..	..	..	1	..	..	1	..
Tanks ..	4	..	..	..	..	..	..	..	1	1	2
Step-wells ..	2	..	..	..	..	..	..	..	..	1	1
Streams ..	2	..	..	..	..	..	..	..	..	1	1
Ponds ..	4	..	..	..	..	..	..	..	2	1	1
Total ..	71	2	..	..	..	..	1	2	19	26	21

Cholera Control.

Numerous outbreaks of cholera in the State required the services of the field staff of this bureau for the sterilisation of drinking water supplies. In all 758 treatments were made with perchloron. Six hundred and ninety-three of these were wells, 20 tanks, 30 ponds and 15 streams.

Sewage and Drainage.

One municipality in the State has a fairly complete underground drainage system: three other municipalities have a skeleton system which provides for a very small portion of the population.

Mysore.—Mysore City has about 67 miles of underground sewage system and nearly 9,000 house connections for sullage water. The sewage thus collected is settled in six sedimentation tanks and the effluent is used on a sewage farm.

Bangalore.—Only a few sections of Bangalore have underground sewage system. The sewage is treated in septic tanks and the effluent is utilised for small sewage farms.

Davangere.—The main out-fall of the Davangere drainage system is underground and serves a very small portion of the municipality. The sullage thus collected is used for irrigation of a small sewage farm.

Bhadravati.—The colony for the staff and coolies of the Bhadravati Iron Works is sewered; the total flow is

treated in a septic tank and the effluent is discharged into a dry nulla.

The following new drainage projects and improvements to existing systems were prepared for the following localities :—

Bangalore	...	Sanitary fittings to the new Insurance Office building.
Do	...	Sanitary fittings to the Mysore Lancers Hospital.
Davangere.	...	A new drainage scheme for the second stage of the complete drainage project.
Kadur	...	Surface system of drainage for the town.
Kalasa	...	Underground drainage system for the town.
Tiptur	...	Septic tank for the town out-fall works.
Shimoga	...	Underground drainage scheme for the town.
Mysore	...	Underground drainage system for Mysore Railway Station Yard and colony.

Trade Wastes.

Dodballapur.—A coagulation tank for the treatment of wastes from a dye factory.

Nightsoil Disposal.

Although there are limited underground drainage systems in Mysore State, these systems are not utilised to any great extent for the taking of nightsoil. The dry conservancy system is in vogue.

Flushing Latrines.

Mysore.—The installation of cheap flushing latrines for utilising existing house connections in Mysore was gradually pushed forward by the Municipal Council. During the year some 400 house connections were converted into flushing latrines. This type of installation is now required before a permit is issued for building purposes wherever there is a public water supply connection on the premises.

Mandya.—A latrine involving the principles of the cheap flushing latrine at Mysore City and a small septic tank was installed at a private residence in the Mandya Rural Health Unit area. This installation was made to encourage an improved method of nightsoil disposal in a new extension of the town where improved house construction was being undertaken. The effluent from the

septic tank is absorbed in a sullage channel 50 feet long and filled with broken stones to a depth of 18 inches. The effluent is distributed over the length of the channel by means of country tile pipes laid with open joints.

Imhoff Closet.

Bangalore.—A conservable latrine for the convenience of the Public Health Department office staff was converted into an Imhoff Closet in order to determine the efficiency of this type of installation for use in populated areas where the absence of sub-soil water would make the construction of borehole latrines rather questionable. The sedimentation chamber is covered with a concrete slab in which two types of seats are being demonstrated :—

(1) an ordinary 9" X 6" stoneware reducer and
(2) a porcelain Hindustani pan. The gas vent was constructed outside the latrine wall and protected by expanded metal screen. The effluent from the sedimentation chamber is absorbed in a soakage pit. This latrine has been giving very satisfactory service.

Borehole Latrines.

Kadakola :—(Mysore District).—Twelve borehole latrines were excavated at Kadakola and were covered with concrete slabs.

Siddalingapura :—(Mysore District).—Six borehole latrines were constructed for public use.

Kalaswadi :—(Mysore District).—Two borehole latrines were constructed for public use.

Mandya :—(Mysore District).—Thirty-five borehole latrines were excavated for private individuals in the Mandya Rural Health Unit area. These private latrines were constructed because the public latrines at Kadakola, Siddalingapura and Kalaswadi were not being properly taken care of by the sweepers.

Khasbagh :—(Dodballapur).—Ten borehole latrines were constructed for private individuals : three of these were designed so as to collect the sullage and bathwater from the houses and enhance the liquefaction of the night-soil in the borehole.

Agricultural School :—(Bangalore District).—Six boreholes were installed by the students of the school under the supervision of the Sub-Overseer detailed for borehole latrine construction.

Town Refuse.

Next to the collection and disposal of nightsoil in Indian towns and villages, the collection and proper disposal of town refuse presents a difficult problem. The experiments of Dr. Fowler at Nagpur in making compost of rubbish and cowdung and nightsoil solution and his success at the Central Hotel, Bangalore in breaking-down garden refuse with cowdung solution led to the possibilities of utilising nightsoil collections and town refuse collections for the preparation of compost. Compost making was carried out at Mysore City on an experimental scale utilising ordinary street refuse and conserved nightsoil from the City. The first batch of town refuse was broken down with nightsoil solution applications within six weeks and the final product as analysed by the Department of Agriculture was as follows :--

				Per cent.
Moisture	...	...	...	12'73
Organic matter	...	...	...	17'06
Phosphoric acid	...	..	...	'87
Potash	...	...	...	1'26
Nitrogen	...	...	...	'81

The success of this experiment encouraged the production of compost on a larger scale and in July the Municipal Council undertook the preparation of compost in order to utilise all of its nightsoil collections from the City. This work unfortunately was begun at the height of the fly-breeding season and the presence of innumerable flies around the compost heaps necessitated the discontinuation of this process in August. The disposal of the nightsoil was then undertaken by means of trenching. But after a period of two weeks numerous difficulties involved caused a reversion to the compost method. The second site selected for the compost work was an isolated spot in the Sewage Farm at a considerable distance from any habitation. On this second undertaking there was an effort made to improve the quality of the finished product. In the first place only organic refuse was used. All inorganic material was separated at the collection stations within the City and again during the formation of the heaps at the compost field. The mixture of nightsoil and water was applied to the heaps in the same

manner as in the first process. The compost heaps when completely broken down were piled into storage heaps which were covered with cowdung solution. The breeding of flies during the cold months was negligible. But with the hot season approaching it will be necessary to take some steps to prevent a repetition of the first process. A committee consisting of the Director of Agriculture, the Sanitary Engineer and Dr. Fowler has been formed in order to devise improvements on the present method of compost making and if possible to entirely eliminate fly-breeding during the process.

Town Planning.

Inspection of Towns.—The following towns and villages were inspected with a view to make further suggestions and to note the progress of work in the matter of sanitation, drainage and other improvements:—

Closepet.	Koppa.
Kolar.	Chamundi Hill.
Dodballapur.	Melkote.
Shimoga.	Maddur.
Mysore.	Sivasamudram.
Chikballapur.	Santhemaranahalli.
Anekal.	Whitefield.
Tumkur.	Tiptur.
Bannerghatta.	Turuvekere.
Sarjapur.	Chitaldrug.
Kunigal.	Hosdurga.
Hassan.	Hiriyur.
Chikmagalur.	Channarayapatna.
Sagar.	Ghati Subrahmanya.
Tarikere.	Mulbagal.
Magadi.	Devarayasamudram.
Sida.	Arisikere.
Madhugiri.	Honnali.
Nanjangud.	Davangere.
Tayalur.	Harihar.
Bidadi.	Nangli village.

Town surveys and preparation of town maps were completed in the following localities:—

Mulbagal.	Sravanbelagola.
Devarayasamudra.	Nelamangala.
Mudiyanur.	Melkote.
Koppalamadugu.	Chamundi Hill.
Tayalur.	

Town Improvements.—Plans were prepared for the following town improvements :—

Goribidnur	...	Road junction improvements.
Naikanhatti	...	Village layout.
Hoskote	...	Park layout.
Nelamangala	...	Adi Dravida colony.
Devanhalli	...	Adi Karnataka colony.
Chikballapur	...	Police station junction.
Anekal	...	Road junctions and improvements to market.
Vitalkunte	...	Village improvements.
Kadgodri	...	Mosque, musafirkhana and school building layout.
Bannerghatta	..	Road junction improvement.
Nangli village	...	Adi Karnataka colony.
Sagar	...	Road junction improvements.
Closepet	...	Bus stand.
Shimoga	...	Road junction improvements.
Bangalore	...	Do do
Tumkur	...	Market improvements.
Kunigal	..	Town Hall.

Town Extensions.—Layout plans for town extensions were completed for the following localities :—

Anekal	...	Town extension.
Closepet	...	Do
Chintamani	...	Do
Gamenahalli	...	Irwin Canal Division Staff Quarters layout.
Harihar	..	Town extension.
Bangalore	...	Extension to the west of the Central Jail.
Do	...	Extension for the ground behind Jayadeva Hostel.

Miscellaneous.—

Bangalore	...	Drainage of Swamp below Sanky's Reservoir.
Mysore	...	Malaria Survey map of Tuberculosis Sanatorium.
Do	..	Malaria Survey Map, Rayankere Dairy Farm.
Kunigal	...	Design of Slaughter House.
Chitaldrug	...	Design of mutton-stall
Channapatna	...	Design of mutton-stall and Slaughter house.
Chamrajnagar	...	Design of slaughter house.
Shimoga	...	Do do

BUREAU OF LABORATORIES.

(a) Public Health Institute.

As in previous years the work done at the Institute is under three main sections, *viz.*, Bacteriological, Chemical and Medico-legal.

TABLE 16.

Twelve thousand, three hundred and five examinations were made during the year as against 11,877 in the previous year.

Examinations	Positive	Negative	Total 1931	Total 1930
1. Blood for Wassermann reaction ...	5,099	4,803	9,902	9,076
2. Do Widal's reaction ..	184	361	545	1,578
3. Do Pressure test ...	...	...	3	...
4. Do Blood count ...	...	...	34	39
5. Do Malarial Parasites ...	10	75	85	78
6. Do Relapsing Fever Spirillum.	...	1	1	10
7. Smears for Kala Azar ...	...	...	...	1
8. Do Pneumococci ...	2	3	5	..
9. Smears of Urethral and Vaginal discharges for Gonococci.	15	19	34	34
10. Urine for Tubercle Bacilli ...	...	...	1	...
11. Do Gonococci ...	1	..	1	..
12. Do B. Coli ...	3	3	6	39
13. Motion for Hookworm Ova ...	2	...	2	...
14. Do other ova ...	10	45	55	..
15. Do Cholera Vibrios ...	33	54	87	75
16. Do Tubercle Bacilli ...	...	2	2	3
17. Do Amoebae ...	...	...	..	72
18. Do Bacillus Typhosus ...	...	...	...	4
19. Do Dysentery Bacilli ...	...	..	...	5
20. Smears from dead rats for Plague Bacilli.	1	15	16	26
21. Throat smears for Diphtheria ...	...	..	...	1
22. Nasal smears for Lepra Bacilli ...	2	7	9	6
23. Sputum for Tubercle Bacilli ..	12	59	71	68
24. Do Influenza Bacilli ...	1	1	2	1
25. Do Plague Bacilli ..	...	...	...	1
26. Gland smears for Plague Bacilli ...	..	1	1	...
27. Vomitted matter for cholera ..	...	7	7	8
28. Sweetmeat for Cholera ...	...	...	...	1
29. Squirrel for Plague Bacilli ...	...	1	1	...
30. Water for Dysentery Bacilli ...	..	...	..	1

Examinations	Posi- tive	Nega- tive	Total 1931	Total 1930
31. Catheter specimen of urine	1
32. Clothpiece soaked with smear for Cholera Vibrios.	1
33. Pathological specimen for section cutting.	13	20
34. Cerebro-spinal fluid for Colloidal Gold Test	3	23
35. Pus	2	1
36. Worms	1	1	...
37. Jams	10	...
38. Grapes	1	...
39. Water samples	1,352	702
40. Preparation of auto-vaccine	53	2
Total	12,305	11,877

Ten thousand, five hundred and seventy samples of blood were received for various examinations. Three hundred and eighty-three specimens of other materials were also examined.

The methods adopted last year regarding the technique of Wassermann reaction were continued to be employed this year also. Fewer samples of Cerebrospinal Fluid were sent for examination. Investigation regarding climatic changes and their effect on the minimum lethal dose of complement has been studied. The colder months have been productive of higher titre complement. The Guine-pigs are inbred families reared in the Laboratory and are of a healthy stock. Fewer false positives have on the whole been obtained in the Wassermann reaction and they compare very favourably with Kahn's reaction. This latter reaction was discontinued in the latter part of the year except in special cases, owing to the financial stringency. In this connection, it must be mentioned that there has been extremely inadequate recovery of fees payable to this Institute for the performances of Wassermann reaction by the medical subordinates throughout the State. A uniform method of levying of such fees with a standardisation of the technique in the performance of Wassermann reaction and controlled by a flocculent reaction like the Kahn would seem the best method for examination of bloods for venereal infection.

Routine performance of Widal reaction on blood submitted for enteric infection has revealed what seems a very different state of affairs to the belief commonly held. In the tentative conclusions offered in the preliminary typhoid survey in Bangalore City, it was suggested that the mild enteric infections were probably para-typhoid, but during the year under report, there seems to be a reversal of the infection in the Widal positives. A much greater number are positive for pure typhoid and it has been noticed that the cases are more in number during this year; the infection is much more severe and there is a greater preponderance of nervous and encephalitic symptoms. Two cases of non-specific agglutinating types are also on record. Blood cultures for *B. Typhosis* have also been done and in two cases where this bacterium was isolated, it has been found that while they behave normally in carbohydrate reactions, they do not do so against the regular agglutinating sera. Pure cultures of these strains, as also those obtained elsewhere are being maintained in this laboratory. It is desirable that all cases of enteric infections, whether in private practice or in Government Hospitals should be notified. The diagnosis should be confirmed by laboratory tests. Contact infections from cases that have already occurred might be traced. The medical practitioners of the State should take advantage of the laboratory aid in an increasing measure. Plenty of statistical data would then be available for purposes of correlation and drawing conclusions.

In the Bacteriological Section, 1,352 samples of water were examined quantitatively to determine the number of colonies per C. C. on Agar plate and qualitatively for the presence of lactose fermenters and also for cholera. Lactose fermenters were invariably present in 5 C. C. samples and in 28 samples the results were positive for cholera.

During the third quarter of the year, cholera prevailed in an epidemic form in various parts of the State. Many water samples suspected to contain *Vibrios* were sent to this laboratory for diagnosis. In the samples submitted for analysis, *bacillus prodigiosus*, various types of *vibrios* and other bacteria were identified. A number of motions were also sent from the epidemic areas. From these, three definite types of cholera *vibrios* were isolated which do not agglutinate with Kasauli serum, though they behave like the cholera *vibrios* in point of toxicity, etc. The

Madras District Laboratory in the Civil and Military Station confirmed the findings of this laboratory regarding the vibrios.

Research work on Bio-chemical standards were continued throughout the year. But there was greater paucity of material as compared with last year. The study of nature of filterable viruses, both in vitro (by tissue culture) and vivo (by animal experiments) was continued, but owing to lack of certain laboratory facilities and equipment, it is being held over. A few specific types of phages have been cultivated and experiments are hoped to be conducted on them also.

Nine Sub-Assistant Surgeons from the Medical Department were sent over for training in Laboratory technique and were attending the Institute for a period of three months, in the afternoons.

Since October last, the Hookworm Unit has been placed under control of the Public Health Institute and its results are being checked and included in the reports of the Institute.

Six hundred and ninety-four specimens were received from the Health Officer, Hookworm Unit and from the Medical Inspector of Schools, Bangalore and these were examined at this Institute as per Statement enclosed.

During the year under report, the volume of work in all Sections had increased, necessitating the appointment of at least one assistant, and Government were pleased to appoint a Chemist in the latter half of the year to help in the work of the Chemical Section.

In spite of the existence of this Institute for a period of over 30 years, advantage of its presence has been taken by only two Districts and the Government Hospitals therein, *viz.*, Bangalore and Mysore. The outlying districts, as seen by the various statistical tables appended, have not taken as full an advantage as they should do.

On the appointment of the Chemist, and on the adoption of the Food Adulteration Regulation by some municipalities, it was hoped that more material for food analysis would be submitted for examination; but except from the City of Bangalore, no material has been received. Local Boards have also not been forwarding water samples to the Chemical Section freely.

Three hundred and fifty-one specimens, as shown below were received for analysis, chiefly from Government

Departments and a few from private persons as against two hundred and twenty-three in the preceding year.

Number	Items	Number of specimens	From
1	Urine ...	173	Government & Private
2	Ghee ...	8	Government
3	Castor Oil ...	4	Private
4	Groundnut oil ..	1	Do
5	Arrack ...	1	Government
6	Orange Crush ...	1	Private
7	Sulphate of Alumina ...	3	Government
8	Golden Syrup ...	1	Private
9	Silt ...	1	Government
10	Wood spirits ...	2	Do
11	Blood sugar estimation ..	57	Government & Private
12	Soap ..	1	Private
13	Brandy ..	2	Government
14	Butter ..	1	Do
15	Rum ...	1	Do
16	Milk sediment ..	1	Do
17	Milk ..	2	Do
18	Pyridine ...	1	Do
19	Wood Naphtha ..	1	Do
20	Sweetmeats ...	2	Do
21	Disinfectants ..	3	Do
22	Blood Calcium ...	11	Government & Private
23	Fruit Tonic ...	1	Private
24	Liquor ..	5	Government
25	Murabba ...	1	Private
26	Drakshasathawari Rasa-yana.	1	Do
27	Salamisri Halva ...	1	Do
28	Parisgreen ...	3	Government
29	Water ...	61	Do
	Total ...	351	

Sixty-one water samples were received for Chemical Examination as follows:—

No.	Name of the District	No. of Samples	Remarks
1	Bangalore	9	Sent by the Medical Department and Local Bodies.
2	Mysore	4	
3	Kolar	9	
4	Shimoga	3	
5	Kadur	5	
6	Chitaldrug	25	
7	Tumkur	6	
8	Hassan	..	
	Total	61	

One hundred and ninety-eight cases with 852 articles were received for examination as compared with 226 cases and 792 articles in the preceding year, as shown in the appendix.

1. In 76 cases Mammalian blood was detected.
2. In 1 case Aconite was detected.
3. In 3 cases Arsenic was detected.
4. In 1 case Yellow Oleander was detected.
5. In 2 cases unknown vegetable poison was detected.
6. In 1 case Natric and Hydrochloric Acid was detected.
7. In 1 case Sulphur and Potassium Nitrate was detected.
8. In 1 case Potassium Chloride was detected.
9. In 1 case Meconic Acid was detected.

In the Medico-legal Section from the resume of the cases, it will be seen (in the table appended) that the tentative conclusions arrived at last year, are maintained this year also. The periodicity of crime wave is apparent this year also, and Arsenic continues to be the poison of choice.

Pointed attention should be drawn to the very irregular procedures adopted by the police authorities in forwarding substances for medico-legal purposes. It seems necessary to frame special rules for the guidance of the police officers when they have to send materials for chemical examinations as is done in sister Presidencies of Madras and Bombay. Secondly, the inquest and postmortem reports seem to cloud the issue, as regards the nature of poison suspected, and the procedure to be adopted by the Chemical Examiner would be of the type of "hit or miss" method. A greater attention to detail would certainly go a long way in averting the empirical mode of examination. Though the Government have passed orders asking the High Court to forward judgments to the Chemical examiner in cases where his opinion has been called for, no such judgments have yet been furnished.

Statement showing the money value of work done at the Public Health Institute during the year 1931.

No.	Items	No. of Cases	Rate	Amount	Total
I. BACTERIOLOGICAL SECTION.			Rs.	Rs.	
1	Wassermann reaction ...	9902	10	99,020 0 0	
2	Waters ...	1352	10	13,520 0 0	
3	Jams ...	10	10	100 0 0	
4	Grapes ...	1	10	10 0 0	
5	Cerebro-spinal fluid ...	3	10	30 0 0	
6	Preparation of auto-Vaccine ...	53	25	1,325 0 0	
7	Other specimens ...	993	3	2,779 0 0	
					1,16,784 0 0
II. CHEMICAL SECTION.					
1	Water ...	61	25	1,525 0 0	
2	Urine ...	173	3	519 0 0	
3	Blood sugar estimation ...	57	15	855 0 0	
4	Blood calcium estimation ...	11	10	110 0 0	
5	Other specimens ...	49	25	1,225 0 0	
					4,234 0 0
III. MEDICO-LEGAL SECTION.					
	Medico-legal cases ...	198	25	4,950 0 0	4,950 0 0
					1,25,968 0 0
Total ...					

District Monthwar Statement of Examination of
Blood Samples for Widal Reaction for the year 1931.

Name of District	Total No. of Cases	Positive			Negative		
		T	A	B	T	A	B
Mysore ..	47	11	8	3	36	39	44
Bangalore ..	413	168	53	40	245	360	373
Kolar ...	5	2	...	...	3	5	5
Tumkur ...	31	7	5	2	24	26	29
Shimoga ...	4	2	...	...	2	4	4
Kadur ...	15	8	3	1	7	12	14
Chitaldrug ...	8	4	2	1	4	6	7
Hassan ..	22	4	2	1	18	20	21

Districtwar Statement of Examinations of Blood Samples
for Wassermann Reaction for the year 1931 at the
Public Health Institute, Bangalore City.

District	Positive	Negative
Mysore ...	945	1,064
Bangalore ..	3,008	2,487
Kolar ...	251	312
Hassan ...	199	180
Shimoga ...	235	265
Kadur ...	79	105
Tumkur ...	280	301
Chitaldrug ..	102	89

(b) Vaccine and Vaccination.**(1) VACCINE INSTITUTE.**

Calves required for the Institute during the year were as before supplied by an approved contractor. Thirty-three calves remained on 1st January 1931 and 329 calves were purchased during the year under report, making a total of 362 calves available for vaccination as against 382 in the year previous. Of these, 20 were buffalo calves for production of seed lymph against 16 during the year previous.

The gross cost of calves purchased during the year was Rs. 3,804-10-0 as against Rs. 3,977-14-0 during the year previous. The net cost of calves after deducting for the cost of done calves sold was Rs. 3,080-14-0 or an average of Rs. 9-5-10 per calf as against Rs. 3,122-12-0 or an average of Rs. 8-7-5 during the year previous.

Three hundred and fifteen cow calves and 19 buffalo calves were vaccinated during the year under report against 337 cow calves and 17 buffalo calves during the year previous.

Of the calves vaccinated, 11 or 3·3 per cent had to be rejected owing to abnormal reaction against 13 or 3·7 per cent during the year previous. Quantity of pulp collected was 42,673 grains, including 15,178 grains used in manufactures of Glycerine Lymph for seed, experiments, etc., equivalent to 4,26,730 cases as against 32,646 grains, including 12,338 grains used in production of Glycerine lymph for seed, experiments, etc., equivalent to 3,26,460 cases during the year previous. The average yield per calf vaccinated was 132 grains of pulp equivalent to 1,320 cases as against 127 grains of pulp equivalent to 1,270 cases in the year previous.

Foot and mouth disease was observed amongst eight calves in the Institute and two waiting calves died. The Superintendent, Civil Veterinary Department, after post-mortem intimated that no lesions of any contagious disease were observed, but at the same time no definite opinion as to the cause of death could be given. Usual precautions, however, to prevent the possible spread of disease amongst other calves in the stalls had already been taken.

In this connection, mention has to be made that adequate grazing ground and facilities for group segregation of animals in the Institute are still not available. The works necessary for meeting this want to some extent

have been put on hand by the Department of Public Works and it is expected they will be completed at an early date.

The expenditure under feeding amounted to Rs. 788-11-0 or an average of Rs. 2-2-10 as against Rs. 704-2-0 or an average of Rs. 1-13-6 per calf during the year previous, the increase being due to variation in accepted tender rates for straw, etc.

The amount realised by the sale of calves during the year was Rs. 723-12-0 or an average of Rs. 2-2-2 as against Rs. 854-8-0 or an average of Rs. 2-7-11 per calf during the year previous, the fall being due to the fall in the accepted tender rates for sale of "done" calves.

Lanoline Vaccine continued to be supplied during the year. The quantities supplied are detailed below in Table 17.

TABLE 17.

Particulars of issue of Lanoline lymph from the Vaccine Institute, Bangalore, during the year 1931.

District	Vaccinators or Medical Officers and Subordinates	1931	1930
Bangalore	Vaccinators	21,895	25,476
	Medical Officers and Subordinates	2,565	2,533
Mysore	Vaccinators	26,382	32,935
	Medical Officers and Subordinates	2,142	2,878
Kolar	Vaccinators	19,370	23,270
	Medical Officers and Subordinates	354	1,491
Tumkur	Vaccinators	21,080	22,205
	Medical Officers and Subordinates	461	1,138
Shimoga	Vaccinators	18,509	24,385
	Medical Officers and Subordinates	495	1,929
Hassan	Vaccinators	18,910	23,655
	Medical Officers and Subordinates	1,087	1,160
Kadur	Vaccinators	13,056	19,088
	Medical Officers and Subordinates	837	2,047
Chitaldrug	Vaccinators	17,980	18,155
	Medical Officers and Subordinates	808	1,148
Bangalore City	Health Officer	9,020	11,195
Mysore City	Do	11,975	9,180
Rural Health Unit, Mandya.	Do	2,075	2,910
Kolar Gold Fields...	Do	10,430	7,900
Model Range		1,193	1,625
Stations outside Mysore State.		46,920	42,756
	Total	2,47,485	2,82,059

The lymph issued was enough for 2,47,485 cases including 46,920 cases issued outside the State as against 2,82,059 cases and 42,756 cases respectively during the year previous.

Out of a total of 2,47,485 cases for which lymph was issued, results of 1,38,258 primary cases or about 56 per cent of total issues have been reported to the Institute against 47 per cent of the year previous. Although the reporting had improved, it has to be noted that in spite of the supply of "Result Cards" to facilitate prompt reporting our anticipations in this direction have not been realised.

The average percentage of successful primary vaccinations reported between January and June works out to 81.1 per cent against 89 per cent during the corresponding period of the year previous and that between July and December 89.8 per cent against 84.3 per cent during the corresponding period of the previous year. The average for the whole year works out to 86 per cent against 87 per cent of the year previous as per Table 18.

TABLE 18.

Analysis of percentage of successful primary cases of vaccinations by months during the several years.

	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922
January ...	89	86	82	82	92	92	23	93	93	94
February ...	85	86	80	79	83	90	92	92	93	94
March ...	78	91	65	73	47	87	87	63	86	91
April ...	79	89	74	78	48	88	82	75	86	92
May ...	76	93	81	81	71	90	88	90	90	95
June ...	80	93	87	77	81	87	91	85	90	94
	81.1%	89.0%	78.0%	78.0%	70.0%	89.0%	89.0%	83.0%	89.0%	93.0%
July ...	89	81	83	83	71	89	92	92	93	92
August ...	86	88	93	83	84	98	94	89	92	98
September ...	91	86	95	77	83	92	94	85	93	94
October ...	89	84	94	81	84	93	92	92	90	94
November ...	92	80	91	75	86	92	92	83	87	95
December ...	92	87	93	85	84	93	91	94	94	94
	89.8%	84.3%	91.5%	80.6%	82%	22.5%	99.5%	89.5%	91.6%	94.5%
Yearly general average ...	86%	87.0%	85.0%	80.0%	81.0%	94.0%	92.0%	86.0%	93.0%	92.0%

Results classified by districts for the whole year and for the several months are furnished in Tables 19 and 20. The reporting is obviously too defective for any useful comment or inference as to seasonal or geographical variations of results.

TABLE 19.
Districtwar classification of results of Primary Vaccination reported to the Vaccine Institute.

Districts	January to June 1931					July to December 1931				
	Total No. of cases vaccinated	Successful	Unsuccessful	Unknown	Percentage	Total No. of cases vaccinated	Successful	Unsuccessful	Unknown	Percentage
Bangalore ...	9,043	6,021	2,117	905	73.9	8,221	6,658	886	697	88.5
Mysore ...	11,007	8,290	2,250	467	78.7	8,987	7,662	903	422	89.1
Kolar ...	8,147	6,375	1,223	549	83.9	6,811	5,840	548	433	91.4
Tumkur ...	8,071	5,191	2,186	694	70.4	7,645	6,420	637	586	90.9
Shimoga ...	7,359	5,089	1,671	649	75.1	5,776	4,406	879	491	83.3
Hassan ...	9,146	6,581	1,691	924	79.4	5,990	4,823	712	455	87.0
Kadur ...	5,879	3,512	1,327	540	72.6	3,622	2,939	462	221	86.4
Chitaldrug ...	6,651	4,240	1,857	554	69.5	5,148	4,467	496	185	90.0
Model Range, Vaccinator ...	385	346	17	22	95.3	460	443	10	7	97.8
Rural Health Unit, Mandya	699	479	170	50	73.8	1,039	879	114	46	88.5
Stations outside the State. *	...	...	...	...	...	15,672	17,079	1,366	237	92.6

*For the whole year (January to December).

TABLE 20.

Percentage success of Primary Vaccinations classified by districts monthwar during 1931.

District	January	February	March	April	May	June	July	August	September	October	November	December
Bangalore	80	82	73	68	61	82	88	84	91	85	93	92
Mysore ...	81	84	74	74	76	83	88	86	88	98	90	95
Kolar ...	88	89	83	81	77	83	90	90	94	92	93	90
Tumkur ...	81	76	71	56	64	77	91	83	93	91	94	94
Shimoga ...	76	87	78	68	69	77	76	80	87	84	90	82
Hassan ...	86	84	74	74	77	88	89	82	89	87	87	88
Kadur ...	72	83	72	60	69	82	88	82	87	85	89	87
Chitaldrug	78	78	73	54	64	73	88	81	92	90	95	94
Total (Mysore State).	80	83	75	67	70	80	87	83	90	89	91	90

Reports of the vaccinal state of only 19 attacks of small-pox during the year are available. These are tabulated in Table 21. Such records are available for 1,678 cases of small-pox in our State since 1928. Their analysis is furnished in Table 22.

TABLE 21.

Analysis of the vaccinal state of the few cases of small-pox reported from the State in 1931.

District	Age 0-5				Age over 5			
	Vaccinated		Unvaccinated		Vaccinated		Unvaccinated	
	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths
Bangalore	1	...	10	1*	5	1
Kadur	1†	...	...	...	...

*Pregnant-Aborted.

†Got the infection from Kadur and got admitted into E.D. Hospital, Bangalore. Child—10 months old.

No cases of small-pox whose vaccinal state have been recorded are obviously too few for comment.

TABLE 22.

Analysis of the vaccinal state of small-pox cases recorded in Mysore State available up to date.

Age 0-5						Age over 5					
Vaccinated			Unvaccinated			Vaccinated			Unvaccinated		
Attacks	Deaths	Fatality	Attacks	Deaths	Fatality	Attacks	Deaths	Fatality	Attacks	Deaths	Fatality
		Percent			Percent			Percent			Percent
70	11	16	1163	631	54	124	20	16	321	105	33

The advantage possessed by the vaccinated over the unvaccinated as regards the liability to suffer from a severe type of the disease is obvious from a perusal of the above analysis. Incidentally also it furnishes some evidence regarding the efficacy of our paste which had been used for protection in the vaccinated.

The work in the Model Range was continued during the year under the supervision of the Superintendent of the Institute. Ninety-seven per cent of the primary vaccinations done in this Range proved successful as can be seen from Table 19.

Complications and sequelae were reported in four cases and they are analysed in Table 23. Table 24 gives an analysis of 39 cases reported between 1929 and 1931. Owing to paucity of data, any comment is not likely to serve a useful purpose. Some at least of these complications may be due to vaccinators not having taken sufficient precautions against risk of contamination, possibly for want of requisite facilities in the field. To overcome this to a certain extent, a new type of kit box was designed during the year. A pamphlet of instructions for the guidance of vaccinators in its use was drawn up, printed and made available for sale in the Institute at 2 annas a copy as per G. O. No. G. 11936—Sany. 70-30-10, dated 26th May 1931. Twenty-one vaccinators were thus equipped with kit boxes and pamphlets on payment of cost by their respective local bodies as detailed in Table 25. It is hoped that other local bodies will do likewise.

TABLE 23.

Complications and Sequelae reported in 1931.

District	Number of cases	Age			Complications			Period		
		Infant under	1-5	Over 6	Ulcers	Abcess	Erruptions	1st week	2nd week	3rd week
Shimoga	4	3	1	...	2	1	1	...	1	3

The period of occurrence of the complications in the four cases reported (*viz.*, the 2nd and 3rd weeks after vaccination) is significant of injury to vesicles due to want of sufficient care in handling the vaccinated. The vaccinators might be more impressive in imparting necessary instructions to the parents or guardians in the matter during their visits.

TABLE 24.

Complications and Sequelae from 1929 to 1931.

Year	District	No. of Cases	Age				Complications			Period		
			Infant under 1	1-5	Over 5	Ulcers	Abcess	Erruptions	1st week	2nd week	3rd week	
1929	Bangalore	2	1	1	...	1	1	...	...	2	...
	Kolar	12	4	8	...	11	1	...	3	9	...	
	Chitaldrug	1	...	1	...	1	...	...	...	1	...
	Tumkur	5	2	3	...	5	...	...	...	5	...
	Mysore	8	4	4	...	...	...	6	...	8	...
1930	Bangalore	1	...	1	...	1	...	...	...	1	...
	Kolar	4	3	1	...	4	...	...	...	4	...
	Chitaldrug	1	...	1	...	...	...	1	...	...	1
	Tumkur	1	...	1	...	...	...	1	...	1	...
1931	Shimoga	4	3	1	...	2	1	1	...	1	3	
Total		39	17	22	...	25	3	11	3	32	4	

From a detailed study made of the reports of all these cases, it is seen they were all due to sepsis either during vaccination or subsequent injury to vesicles from scratching, etc. Most of these seem to be capable of being prevented by the vaccinator taking more careful precautions during vaccination to prevent sepsis and seeing that the nails of the children are cut both before vaccination and at time of inspection.

TABLE 25.

Statement showing the number of kit-boxes supplied during the year 1931.

Name of Parties			Number of boxes supplied
The President, Municipal Council,	Arsikere	...	1
Do	Chintamani	...	1
Do	Sidlaghatta	..	1
Do	Nanjangud	...	1
Do	Tarikere	...	1
Do	Malvalli	...	1
The President, District Board,	Shimoga District	...	10
Do	Tumkur do	...	5
Total			21

The following statement shows the Income and Expenditure for 1931 as compared with that of the previous year.

Items	1931			1930		
INCOME.						
Sale of vaccinated calves ..	Rs.	a.	p.	Rs.	a.	p.
	723	12	0	854	8	0
Sale of Lymph.—						
Within the State (Half of fixed annual contribution for 1931-32 Rs. 6,938-8-0); For actual supply up to 31st December 1931 to the rest Rs. 7,913-5-8.	14,851	13	8	11,536	4	10
Out Stations ..	4,698	14	0	4,286	5	10
Amount outstanding at the close of the year for supplies during the year. (Half of fixed annual contribution for 1931-32 Rs. 3,034) ; for actual supplies up to 31st December 1931 to the rest Rs. 1,819-0-0.	4,853	0	0	8,496	12	4
Total ..	25,127	7	8	25,173	14	2
EXPENDITURE.						
Salaries	4,894	0	0	4,650	0	0
Travelling Allowance to Officers...	264	12	0	532	14	0
Establishment	6,554	4	0	5,341	14	0
Cost of calves and experimental animals.	3,804	10	0	3,977	14	0
Cost of feeding	788	11	0	704	2	0
Contingencies including equipment.	4,267	4	0	4,061	2	0
Total ...	20,573	9	0	19,267	14	0

Outstandings to the extent of Rs. 21,524-12-4 as per books of this Institute partly from those paying under the old and partly from those under the new contribution levy system remain yet unadjusted by the several local bodies as detailed in Tables 26 and 27, respectively.

TABLE 26.

Statement showing the amounts due from the several Local Bodies and Government Departments for Vaccine Lymph supplied from the Vaccine Institute, Bangalore, up to 31st December 1931.

District	Parties	Amount due up to 31st December 1930	Amount due up to 31st December 1931	Total Amount due up to 31st December 1931
		Rs. a. p.	Rs. a. p.	Rs. a. p.
Bangalore	The President, District Board, Bangalore District ...	6,541 11 2	...	6,541 11 2
	The Municipal Commissioner, Bangalore City ...	..	890 13 4	890 13 4
	The President, Municipal Council, Channapatna ...	9 9 4	...	9 9 4
	The President, Municipal Council, Closepet ...	3 5 4	...	3 5 4
	The President, Municipal Council, Dodballapur ...	16 6 8	6 10 8	23 1 4
	The President, Municipal Council, Hosakote ...	4 2 8	...	4 2 8
	The President, Municipal Council, Magadi ...	23 13 4	7 9 4	31 6 8
	The President, Municipal Council, Nelamangala ...	60 6 8	...	60 6 8
	The President, Municipal Council, Tyamagondlu ...	7 8 0	...	7 8 0
	The President, Municipal Council, Yelahanka ...	38 10 8	...	38 10 8
	The President, Municipal Council, Kankanhalli ...	26 10 8	...	26 10 8
	The President, Municipal Council, Devanhalli ...	0 6 8	7 8 0	7 14 8
	The President, Municipal Council, Vadegenahalli ...	1 10 8	...	1 10 8
	The President, Municipal Council, Sarjapur ...	4 10 8	...	4 10 8
	Kolar	The President, District Board, Kolar District ...	3,559 15 8	...	3,559 15 8
The President, Municipal Council, Bowringpet ...		250 2 4	16 10 8	266 13 0
The President, Municipal Council, Chintamani ...		40 13 4	...	40 13 4
The President, Municipal Council, Gudibanda ...		6 4 0	..	6 4 0
The President, Municipal Council, Malur ...		27 13 4	5 6 8	33 4 0
The President, Municipal Council, Goribidnur ...		7 8 0	...	7 8 0
The President, Municipal Council, Srinivasapur ...		2 8 0	...	2 8 0
The President, Municipal Council, Sidlaghatta ...		30 8 0	10 0 0	40 8 0
Tumkur		The President, District Board, Tumkur District ...	3,902 2 7	2 8 0	3,904 10 7
	The President, Municipal Council, Tumkur ...	79 4 0	...	79 4 0
	The President, Municipal Council, Sira ...	51 4 0	...	51 4 0

TABLE 26.—*contd.*

District	Parties	Amount due up to 31st December 1930	Amount due up to 31st December 1931	Total amount due up to 31st December 1931
		Rs. a. p.	Rs. a. p.	Rs. a. p.
Tumkur	The President, Municipal Council, Koratagere ...	41 13 4	8 12 0	50 9 4
	The President, Municipal Council, Gubbi ...	23 5 4	...	23 5 4
	The President, Municipal Council, Madhugiri ...	55 1 4	...	55 1 4
	The President, Municipal Council, Pavagada ...	32 4 0	...	32 4 0
	The President, Municipal Council, Chiknayakanhalli ...	0 6 8	5 13 4	6 4 0
	The President, Municipal Council, Kunigal ...	4 5 4	...	4 5 4
	The District Medical Officer, Tumkur District ...	0 8 0	...	0 8 0
	Mysore	The President, District Board, Mysore District ...	21 12 4	...	21 12 4
The President, District Board, Mysore District ...		119 12 0	..	119 12 0
The President, Municipal Council, Mysore City ...		...	564 0 0	564 0 0
The President, Municipal Council, Seringapatam ...		94 15 0	0 13 4	95 12 4
The President, Municipal Council, Hunsur ...		5 13 4	...	5 13 4
The President, Municipal Council, Chamarajanagar ...		63 8 0	...	63 8 0
The President, Municipal Council, Malavalli ...		88 6 8	...	88 6 8
The President, Municipal Council, Gundlupet ...		49 9 4	...	49 9 4
The President, Municipal Council, Melkote ...		18 12 0	0 8 0	19 4 0
The President, Municipal Council, Maddur ...		9 2 8	2 1 4	11 4 0
The President, Municipal Council, Bannur ...		17 14 8	3 12 0	21 10 8
The President, Municipal Council, Nagamangala ...		24 2 8	...	24 2 8
The President, Municipal Council, Mandya ...		0 6 8	...	0 6 8
The President, Municipal Council, Yedathore ...		43 9 4	...	43 9 4
The President, Municipal Council, Heggadadevankote ...		27 9 4	...	27 9 4
The President, Municipal Council, Nanjangud ...		28 12 0	...	28 12 0
The President, Municipal Council, Talakad ...		5 0 0	1 4 0	6 4 0
The Sub-Assistant Surgeon, Hampapur L. F. Dispensary ...		5 2 8	...	5 2 8
The Sub-Assistant Surgeon, Bedaguli L. F. Dispensary ...		15 6 0	...	15 6 0
The Sub-Assistant Surgeon, Arenahalli ...		4 2 8	...	4 2 8
The Medical Officer, Mysore Jail Hospital, Mysore ...	7 1 4	3 0 0	10 1 4	
The Medical Officer, Sawar and Barr Dispensary, Mysore ...	9 15 8	...	9 15 8	
The Medical Officer, P. K. T. Sanatorium, Mysore ...	1 5 4	...	1 5 4	

TABLE 26—contd.

District	Parties	Amount due up to 31st December 1930	Amount due up to 31st December 1931	Total amount due up to 31st December 1931
		Rs. a. p.	Rs. a. p.	Rs. a. p.
Mysore	The Executive Engineer, Irwin Canal Works, Hulikere ...	4 13 4	...	4 13 4
	The Executive Engineer, Krishnaraja Sagar Works, Krishnaraja Sagar ...	0 13 4	...	0 13 4
Kadur	The President, District Board, Kadur District ...	3 0 0	223 14 8	226 14 8
	The President, Municipal Council, Kadur ...	20 8 0	...	20 8 0
	The President, Municipal Council, Sringeri ...	3 12 0	...	3 12 0
	E. Thomson Esq., Archullie, Mudigere Post ...	...	3 8 0	3 8 0
Chitaldrug	The President, District Board, Chitaldrug District ...	2,302 1 5	...	2,302 1 5
	The President, Municipal Council, Chitaldrug ...	150 6 8	...	150 6 8
	The President, Municipal Council, Davangere ...	91 8 0	...	91 8 0
	The President, Municipal Council, Hiriya ...	38 14 8	3 13 4	42 12 0
	The President, Municipal Council, Challakere ...	13 0 0	..	13 0 0
	The President, Municipal Council, Jagalur ...	19 2 8	...	19 2 8
	The President, Municipal Council, Hosadurg ...	3 5 4	...	3 5 4
	The President, Municipal Council, Holalkere ...	...	8 4 0	8 4 0
	The District Medical Officer, Chitaldrug District ...	2 8 0	...	2 8 0
	Hassan	The President, District Board, Hassan District ...	2,388 12 6	57 14 8	2,446 11 2
The President, Municipal Council, Hassan Town ...		...	46 6 8	46 6 8
The President, Municipal Council, Holenarasipur ...		5 6 8	...	5 6 8
The President, Municipal Council, Alur ...		7 14 8	...	7 14 8
The President, Municipal Council, Belur ...		25 11 0	...	25 11 0
The President, Municipal Council, Banavar ...		17 13 4	21 10 8	39 8 0
The President, Municipal Council, Chennarayapatna ...		24 8 0	...	24 8 0
The President, Municipal Council, Arkalgud ...		9 5 4	...	9 5 4
The President, Municipal Council, Konanur ...		0 13 4	...	0 13 4
The President, Municipal Council, Channarayapatna Shraavanbelgola ...		20 6 8	...	20 6 8
The District Medical Officer, Hassan District ...		4 2 8	...	4 2 8

TABLE 26—*concl'd.*

District	Parties	Amount due up to 31st December 1930	Amount due up to 31st December 1931	Total amount due up to 31st December 1931
Shimoga	The President, District Board, Shimoga District ...	781 9 4	387 18 4	1,169 6 8
	The President, Municipal Council, Shimoga ...	10 8 0	...	10 8 0
	The President, Municipal Council, Bhadravathi ...	18 12 0	2 8 0	21 4 0
	The President, Municipal Council, Honnali ...	1 10 8	...	1 10 8
	The President, Municipal Council, Channagiri ...	5 0 0	...	5 0 0
	The President, Municipal Council, Shikarpur ...	4 6 8	2 1 4	6 8 0
	The President, Municipal Council, Nyamathi ...	4 2 8	...	4 2 8
	The President, Municipal Council, Nagar ...	2 1 4	...	2 1 4
	The President, Municipal Council, Shiralkoppa ...	9 12 0	4 2 8	13 14 8
	The District Medical Officer, Shimoga District ...	0 14 8	...	0 14 8
	The Assistant Surgeon, Iron Works, Bhadravathi ...	...	19 12 0	19 12 0
	Grand Total ...	21,524 12 4	1,819 0 0	23,343 12 4

TABLE 27.

Statement showing the Fixed Annual Contribution amount due from the several Local Bodies for the year 1931-32 as per G. O. No. G. 9466-87—Sany. 84-29-7 dated 12th March 1931.

District	Name of Parties	Amount due for 1931-32
Bangalore ..	The Municipal Commissioner, City Municipality, Bangalore ..	Rs. 1,776
	The President, Municipal Council, Doddaballapur.	11
	Do do Anekal ...	7
	Do do Kankanhalli.	63
	Do do Nelamangala.	30
	The President, District Board, Bangalore District ...	605
Kolar ...	The President, Municipal Council, Kolar Town.	95
	Do do Bowringpet...	43
	Do do Malur ...	18
Mysore ...	The President, Municipal Council, Melkote	11
	Do do Hunsur ...	23

District	Name of Parties	Amount due for 1931-32
	The President, Municipal Council, Bannur ...	30
	Do do Talkad ...	12
	Do do Nagamangala	12
Tumkur ...	Do do Koratagere...	8
Kadur ...	The President, District Board, Kadur District ...	756
Shimoga ..	The President, Municipal Council, Shiralkoppa ...	3
	The President, District Board, Shimoga District ...	775
Chitaldrug ...	The President, Municipal Council, Chitaldrug Town ...	65
	Do do Hiriyur ...	10
	Do do Malebannur.	3
Hassan ...	The President, District Board, Hassan District ...	1,712
	Total ...	6,068

It was anticipated that fixed annual contribution in place of payment for actual supplies would save scriptorial work and minimise delay in collection of arrears. But only some local bodies have accepted this system and others continue on the old system of payment for actual supplies in accordance with the option permitted in letter No. G. 4755- P. H. 32-31-3 dated 12th December 1931 from the General Secretary to the Government, to the Director of Health. This has led to increased scriptorial work and other incidental inconveniences.

A statement of progress in demand and collection for the several years subsequent to issue of Government Order No. L. 5137-210—San. 19-25-2 dated 18th January 1926 is also detailed in Table 28. It is possible that in some cases dues might have been credited to the Treasury but no intimation of the same has been received in the Institute. Some items might have been shown as outstanding owing to the Institute not having given credit to the same in its books for want of sufficient information to identify the amounts. Even the monthly Departmental Credit Statements sent from the Comptroller are returned unverified often on account of this.

TABLE 28.
Progress of Collection against Demands for Supplies of Lymph in the years 1925-31.

Year	Outstanding demands			Collection			Balance		
	Arrears due	Current year's due	Total	Towards arrears	Towards Current dues	Total	Towards Current dues	Towards arrears	Total
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
1925	23,615 14 11	20,341 4 5	43,957 3 4	3,572 9 4	8,918 6 10	12,481 0 2	11,422 13 7	20,043 5 7	31,466 3 2
1926	31,466 3 2	17,218 11 2	48,684 14 4	1,419 0 0	8,102 11 9	9,521 11 9	9,115 15 5	30,047 3 2	39,163 2 7
1927	39,163 2 7	17,718 8 0	56,881 10 7	5,065 6 4	10,657 3 4	15,722 9 8	7,061 4 8	34,097 12 3	41,159 0 11
1928	41,159 0 11	24,205 9 0	65,364 9 11	7,348 7 6	16,923 3 0	24,271 10 6	7,282 6 0	33,810 9 5	41,092 15 5
1929	41,092 15 5	22,907 7 11	64,000 7 4	19,353 15 9	15,670 3 7	35,023 3 4	7,237 4 4	21,738 15 8	28,976 4 0
1930	28,976 4 0	24,319 6 2	53,295 10 2	7,686 14 8	15,822 9 10	23,509 8 6	8,496 12 4	21,289 5 4	29,786 1 8
1931	29,786 1 8	24,403 11 8	54,189 13 4	8,261 5 4	19,550 11 8	27,812 1 0	4,853 0 0	21,524 12 4	26,377 12 4

The cost of lymph per case calculated as usual on actual issues during the year works out to be Re. 0-1-6 per case against Re. 0-1-3 during the year previous. This includes one-fifth of the cost of non-recurring or unusual expenditure of Rs. 7,507-8-0 incurred during the year 1928 which may more or less be considered an addition to capital. The cost of lymph issued during the year works out to only Re. 0-1-5 per case, against Re. 0-1-2 during the year previous exclusive of such addition.

With a view to ensure selection of a better type of men for training in vaccination, by the local bodies, revised rules for admission were sanctioned in Government Order No. 10116-37—San. 78-29-18, dated 4th April 1931.

Nine candidates for qualifying in vaccination were trained and six were granted certificates during the year against 14 and 11 respectively during the year previous. Besides vaccinators, one sanitary inspector and seven pupil compounders were also given training against one and 15 respectively during the year previous. The usual courses of lectures in vaccination for the Final L. M. P. and M. B. B. S. of the Mysore University were also held during the year.

During the year, 104 Lanoline samples were examined bacteriologically 114 times to ensure their freedom from Pathogenic organisms at the time of issue. Four hundred and forty-nine Glycerine samples were also examined 1897 times.

Lanoline Lymph enough for 7864 cases had to be rejected for defective potency.

One lakh, seventy two thousand, one hundred and fifty doses of anti-cholera vaccine were stocked and 1,67,000 doses were supplied from the Institute leaving a balance of 5,150 doses on hand. Out of 1,300 doses of bili vaccine tablets on hand, 1,117 doses were issued leaving a balance of 183 doses. The value of the above vaccines distributed amounted to Rs. 12,866-6-9; out of this, a sum of Rs. 5,670-8-3 was adjusted during the year.

Curative plague serum bulbs and Agar blood culture tubes supplied from the Parel Laboratory, Bombay, were stocked in the Institute and made available for distribution. Ninety-five plague serum bulbs and 58 Agar tubes were thus stocked. Twenty plague serum bulbs and 15 Agar tubes were issued to the Epidemic Diseases Hospital, Bangalore, during the year under report leaving a balance

of 75 plague serum bulbs and 43 Agar tubes on hand on 31st December 1931.

Incidental to the evolution of standards of potency and purity for our strains of lymph so as to serve as a guide to judge the efficiency of our vaccine in the field, observations and experiments detailed in previous year's reports continued to be made in the Institute during the year. The results noted under different heads are recorded in the several tables of Table 29 [29(a)—29(i).]

Indications of a steady increase in the initial potency of our lymph are revealed by their study.

TABLE 29 (a).

The Vesicular Rates resulting from vaccination of the several strains in different dilutions.

Quarter	Years	1 in 50	1 in 100	1 in 500	1 in 1,000	No. of observations
January to March ...	1929	3'6	3'1	1'3	1'1	*
	1930	4'7	3'9	2'4	1'4	40
	1931	4'8	3'7	2'4	2'2	24
April to June ..	1929	3'1	2'5	1'2	0'8	*
	1930	4'4	3'8	3'0	2'2	30
	1931	4'9	3'9	2'9	1'7	23
July to September ..	1929	4'1	3'2	1'6	1'2	*
	1930	4'3	3'1	2'7	2'6	23
	1931	4'9	4'5	3'8	2'8	24
October to December ..	1929	4'9	4'5	2'7	1'8	*
	1930	4'9	4'6	3'4	2'6	24
	1931	4'9	4'7	3'8	3'3	18
Average ..	1929	3'9	3'3	1'7	1'2	190
	1930	4'5	3'8	2'8	2'2	117
	1931	4'8	4'2	3'2	2'5	89

* Data for 1929 not available quarter by quarter.

TABLE 29 (b).

Average yield in grains per inch of insertion.

Quarters	years	Yield	No. of obser- vation
January to March ..	1929	0'9	*
	1930	1'3	91
	1931	1'5	77
April to June ..	1929	0'8	*
	1930	1'1	85
	1931	1'0	72
July to September ..	1929	1'0	*
	1930	1'1	80
	1931	1'0	82
October to December ..	1929	1'4	*
	1930	1'2	67
	1931	1'0	73
Average ..	1929	1'0	378
	1930	1'2	323
	1931	1'2	304

* Data for 1929 not available quarter by quarter.

TABLE 29 (c).

The Potency Unit of the several Pastes.

Quarters	1929	1930	1931
January to March ...	3'0	3'6	3'8
April to June ...	2'3	3'3	3'6
July to September ...	3'1	3'4	3'6
October to December ...	3'7	3'7	3'8
Average for the year ..	3'0	3'5	3'7

N.B.—A note on unit employed:—

Over an area of about $\frac{1}{4}$ " by $\frac{1}{4}$ " 4 linear incisions each about $\frac{3}{4}$ " long are made on the prepared skin of a calf. For each sample, 4 such insertions are made. If the resulting vesiculation was one continuous patch over the whole area, it was grade 4.

If at least two such lines coalesced and discrete vesicles were present in the other two, it was graded 3.

If at least discrete vesicles resulted all along the four lines, it was graded 2.

If at least one discrete vesicle resulted along one line, it was graded 1.

The arithmetical averages of the values of the four individual insertions was the value given to the reaction in the experiment. The "Calf Factor" was eliminated as far as possible by taking the values of reaction in several calves and calculating the average. The personal factor was minimised by the same observer making the experiments and reading the results of the whole series.

TABLE 29 (d).

Average period of preservation in days after production of seed-lymph prior to vaccination of calves.

Quarters	1929	1930	1931
January to March ...	16	18	7
April to June ...	9	13	6
July to September ...	6	17	5
October to December ...	10	13	6
Average for the year ...	10	15	6

TABLE 29 (e).

Average period of preservation in days of the lymph produced prior to issue.

Quarters	1929	1930	1931
January to March ...	12	15	20
April to June ...	16	24	23
July to September ...	17	18	23
October to December ...	17	19	21
Average for the year ...	16	19	21

TABLE 29 (f).

Average period in days of stabling the calves in the Institute prior to vaccination.

Quarters	1929	1930	1931
January to March ...	9	8	11
April to June ...	8	10	11
July to September ..	8	9	9
October to December ...	6	9	10
Average for the year ...	8	9	10

TABLE 29 (g).

Average reported field result of the several pastes issued out from the Institute.

Quarters	1929	1930	1931
	Per cent	Per cent	Per cent
January to March ...	75.5	88	84
April to June ...	80.3	92	78
July to September ...	90.5	85	89
October to December ...	92.1	84	91
Average for the year ...	85	87	86

TABLE 29 (h).
Effect of passage of air saturated with chloroform vapour through Glycerine Lymph at 14° C.
(In the Ice Jacket), for varying periods and subsequent preservation at 0° C.

I: Initial
F: Final

No. of samples.	Period in days	Pure Glycerine															
		1 Minute					2 Minutes					5 Minutes					
		Purity	Per cent	Potency	Per cent	Purity	Per cent	Potency	Per cent	Purity	Per cent	Potency	Per cent	Purity	Per cent	Potency	Per cent
1	2	8	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
25	I ...	4,920	-99	4.0	-50	4,920	-0	4.0	-65	4,920	-0	4.0	-70	4,920	-0	4.0	-75.0
	F ...	11	...	2.0	...	nil	...	1.4	...	nil	...	1.2	...	nil	...	1.0	...
No. of samples	Period in days	20 Minutes															
		10 Minutes					20 Minutes					30 Minutes					
		Purity	Per cent	Potency	Per cent	Purity	Per cent	Potency	Per cent	Purity	Per cent	Potency	Per cent	Purity	Per cent	Potency	Per cent
25	I ...	19	20	21	22	23	24	25	26	27	28	29	30				
	F ...	4,920	-0	4.0	-80	4,920	-0	4.0	-90	4,920	-0	4.0	-90				
		nil	..	0.8	...	nil	...	0.4	...	nil	...	0.3	...				

The experiments, although too few and inconclusive, seem to indicate, that there is no special advantage in chloroforming the Glycerine Lymph produced under our local conditions at present.

TABLE 29 (i).

Record of observation noted relating to the several possible factors influencing quality of Vaccine Lymph.

Year	Average period in days of stabling the calves in the Institute prior to vaccination	Average period of preservation in days after production of seed lymph prior to vaccination of calves	Average yield per inch of incision	Average potency of several pastes	Average vesicular rate			Average period of preservation in days of the lymph produced prior to issue	Reported Field results of the several pastes issued out from the Institute
					1 in 50	1 in 100	1 in 500		
1929	8	10	1.0	3.0	3.3	1.7	16	85.0	
1930	9	15	1.2	3.5	3.8	2.8	19	87.0	
1931	10	6	1.2	3.7	4.2	3.2	21	86.0	

The problem of general issue of Glycerine lymph in place of the present Lanoline lymph remains yet unsolved as certain structural facilities required for its solution are not yet complete. The Department of Public Works have undertaken the construction of a few of the more urgent of the improvement works. It is hoped that they will be ready for our use before long and a further stage in the solution of the problem will be reached very early.

The more important facts regarding the work of the Institute during the year as compared with that of the previous year are summarised in Table 30 for ready reference.

TABLE 30.

Some of the more important facts regarding the work of the Institute as compared with the previous year.

Particulars	1930			1931		
	Rs.	a.	p.	Rs.	a.	p.
Calves purchased ...	No.	369		No.	309	
Buffalo calves ...	„	16		„	20	
Gross cost ...	3,977	4	0	3,804	10	0
Net cost ..	3,122	12	0	3,080	14	0
Average cost of calf ...	8	7	5	9	5	10
Calves vaccinated ..	No.	337		No.	315	
Buffalo calves vaccinated ...	„	17		„	19	
Calves rejected ..	„	13		„	11	
		(or 3·7%)			(or 3·3%)	
Lymph produced ...	32,646	grs.		42,673	grs.	
Lymph reserved for stock ...	12,338	grs.		15,178	grs.	
Average yield per calf ..	127	grs.		132	grs.	
Cost of feeding calves ..	704	2	0	788	10	0
Cost of feeding per calf ...	1	13	6	2	2	10
Number of calves that died ..	No.	6		No.	2	

Particulars	1930			1931		
	Rs.	a.	p.	Rs.	a.	p.
Sale of calves ...	854	8	0	723	12	0
Average sale price per calf ...	2	7	11	2	2	2
Lymph issued ..	2,82,059 cases.			2,47,485 cases.		
Lymph issued outside Mysore State.	42,756	..		46,920	..	
Issue in May and June (Hot Weather).	Curtailed			Not Curtailed		
Results of primary vaccination reported for.	47% of cases.			56 per cent of cases		
Average percentage success reported.	87%			86%		
Complication and Sequelae reported.	7			No. 4		
Number of new kit boxes issued to vaccinators.	Nil			.. 21		
Cost of lymph issued per case	14 pies.			17 pies.		
Candidates trained in Vaccination.	No.	14		..	9	
Number granted certificates ...	..	11		..	6	
Pupil Compounders trained ...	..	15		..	7	
Sanitary Inspectors ...	..	1		..	1	

(ii) VACCINATION.

The District Board Vaccination Staff works under the District Board and the Municipal Vaccinators, if any entertained, under the respective Municipalities.

During the year, 1,64,355 vaccinations (92,460 male, 71,875 female) were performed by the Vaccinators and 5,532 by the Medical Subordinates making a total of 1,69,867. Of these, 1,47,020 were primary and 22,847 re-vaccinations as compared with 1,77,447 and 33,480 respectively in the previous year.

The number of primary vaccinations done during the year fell short of the number done in the previous year by 30,427. There being no severe and extensive outbreaks of Small-pox, the demand for vaccination was somewhat less.

The number of vaccinations done in the district excluding dispensary vaccinations are given in the following statement as also the reported number of deaths from small-pox in the year 1930 and 1931 :—

Districts	1930	1931	Difference	Deaths from Small-pox		
				1930	1931	Difference
Bangalore ...	36,736	29,028	-7,708	811	256	-555
Mysore ...	38,567	30,894	-7,673	979	468	-511
Hassan ...	21,964	17,676	-4,288	605	371	-234
Kadur ...	21,092	11,601	-9,491	287	76	-211
Shimoga ...	20,255	15,099	-5,156	684	230	-454
Chitaldrug ...	13,039	14,544	+1,505	826	441	385
Tumkur ...	22,635	19,707	-2,928	625	157	-468
Kolar ...	27,945	25,786	-2,159	1,261	297	-964
Total ...	2,02,233	1,64,335	-37,898	6,078	2,296	-3,782

The above statement shows that during the year, the vaccinations done were very much less than in the preceding year in all districts except Chitaldrug. The number of deaths from Small-pox was also less during the year in all districts than in the previous year.

Excluding Kolar District (for which figure was not received) a total of 13,878 vaccinations were done, among Adikarnatakas as shown below :—

Number of Adikarnatakas Vaccinated.

<i>District.</i>	<i>Number Vaccinated.</i>
Bangalore ..	3,697
Mysore ..	3,169
Hassan ..	2,021
Kadur ..	1,321
Shimoga ..	430
Chitaldrug ..	1,439
Tumkur ..	1,801
Kolar ..	Nor furnished
Total ..	<u>13,878</u>

Table 31 gives the details of vaccinations done in the districts. The analysis of figures suffer from incompleteness on account of many of the Municipalities not furnishing their annual statements.

The average number of vaccinations done by each vaccinator amounted to 944 against 1,143 in the previous year.

TABLE 31.
Statement showing Particulars of Vaccination done during the year 1931.

District	Population	Average Number of Vaccinators employed throughout the year	Number of persons vaccinated			Average No. of persons vaccinated by each vaccinator	Primary Vaccination			
			Male	Female	Total		Total	Under one year	Over one and under six years	Total of All Ages
1	2	3	4	5	6	7	8	9	10	11
Bangalore	10,80,413	30	16,289	12,737	29,026	967	25,664	8,203	9,358	23,191
Mysore	15,11,126	29	17,609	13,285	30,894	1,065	27,924	8,688	10,887	22,158
Hassan	5,96,937	21	9,864	7,812	17,676	575	16,707	2,291	8,018	11,309
Kadur	3,47,715	14	6,579	5,022	11,601	829	9,812	1,102	3,798	7,148
Shimoga	5,19,987	21	8,992	6,107	15,099	718	14,435	1,516	5,811	9,525
Chitaldrug	6,56,569	11	8,604	5,940	14,544	1,322	12,083	3,612	6,301	11,523
Tumkur	8,61,405	20	10,948	8,759	19,707	985	18,218	3,514	8,729	13,614
Kolar	8,49,037	28	13,575	12,211	25,786	921	18,010	4,887	6,239	13,171
Total (Mysore State)	64,23,189	174	92,460	71,875	1,54,335	934	1,42,848	83,815	60,131	1,11,639

TABLE 31—contd.

District	Re-vaccination			Percentage of successful cases excluding unknown		Persons successfully vaccinated per 1,000 of population	Percentage of unknown cases to total cases		Average Annual No. of persons successfully vaccinated during previous five years		Average Annual No. of deaths from Small-pox during previous five years			
	Un-known	Total	Successful	Un-known	Primary		Re-vaccination	Primary	Re-vaccination	Number	Ratio per 1,000 of population	Number	Ratio per 1,000 of population	
						12								13	14	15	16	17	18	19	20	21	22	23	24
Bangalore	...	1,935	3,364	599	1,517	97.7	32.4	22.2	7.2	45.1	17,476	16.1	609	0.86
Mysore	...	1,360	2,970	103	379	83.4	4.0	14.7	4.9	12.7	22,677	15.3	1,372	0.97
Hassan	...	1,572	969	197	167	74.7	24.5	19.3	9.4	17.2	11,213	18.8	326	0.55
Kadur	...	807	1,789	401	393	79.4	30.0	21.7	8.2	21.9	7,923	22.8	79	0.23
Shimoga	...	1,770	664	27	80	75.2	4.6	18.4	12.2	12.0	10,913	20.9	239	0.48
Chitaldrug	...	402	2,461	1,804	542	98.6	94.0	20.3	3.3	22.0	9,285	14.1	444	0.77
Tumkur	...	1,519	1,494	138	208	81.5	10.8	13.9	8.3	13.9	12,311	14.3	473	0.61
Kolar	...	713	7,776	3,404	301	76.1	45.5	19.5	3.9	3.8	10,097	11.9	428	0.53
Total (Mysore State)	...	10,079	21,487	6,673	3,587	84.1	37.3	18.4	7.1	16.6	1,01,895	15.8	3,170	0.62

Of the 1,42,848 primary vaccinations, 1,11,639 were successful and 10,079 were unknown and of the 21,487 re-vaccinations, 6,673, were successful and 3,587 unknown. The percentage of successful, excluding the unknown, in primary and re-vaccinations were 84.1 and 37.3 respectively. The former varied from 74.7 in Hassan District to 98.6 in Chitaldrug District and the latter from 4.0 in Mysore District to 94.0 in Chitaldrug District. It is rather surprising to note that such high percentage as 94.0 for successful re-vaccinations should be recorded by Chitaldrug District, obviously a question of wrong judging or incorrect recording.

It may be remarked that in the last five years, for every 1,00,000 persons on the average, 1,580 persons (or 15.8 per 1,000) have been successfully vaccinated and that 62 persons (or .62 per 1,000) died of small-pox every year. This is a poor record for vaccinal state of the community.

TABLE 32.

Statement showing the Dispensary Vaccination in Mysore State during year 1931.

District	Number of Dispensaries	Number of Persons Vaccinated	Primary and Secondary Vaccination					Unknown
			Total	Successful				
				Under one year	Over one and under six years	Total of All Ages		
Bangalore ...	25	725	573	340	172	555	16	
Mysore ...	45	1,745	1,406	584	377	870	268	
Hassan ...	39	702	535	286	96	416	36	
Kadur ...	27	548	437	164	102	333	15	
Shimoga ...	34	346	303	122	86	262	1	
Chitaldrug ...	18	554	393	168	64	293	56	
Tumkur ...	23	508	304	79	108	211	35	
Kolar ...	20	404	221	46	93	164	21	
Total (Mysore State)	231	5,532	4,172	1,789	1,098	3,104	448	

District	Re-vaccination			Percentage of successful cases excluding unknown		Percentage of unknown cases to total cases	
	Total	Successful	Un-known	Primary and Secondary	Re-vaccination	Primary and Secondary Vaccination	Re-vaccination
				Secondary	Primary and Secondary	Re-vaccination	
Bangalore ...	152	95	8	98.8	66.0	2.8	4.2
Mysore ...	339	77	86	76.4	30.4	19.0	25.4
Hassan ...	167	75	25	83.4	52.1	6.7	15.0
Kadur ...	111	69	9	78.9	67.6	3.4	8.1
Shimoga ...	43	25	2	86.7	60.9	0.33	4.6
Chitaldrug ...	161	66	43	87.0	56.0	14.2	26.7
Tumkur ...	204	42	111	78.5	45.1	11.5	54.4
Kolar ...	183	133	37	82.0	91.1	9.5	20.2
Total (Mysore State)	1,360	582	321	83.3	56.0	10.7	23.6

Of the 5,532 vaccinations done by Medical Subordinates, 4,172 were primary and 1,360 re-vaccinations, the success rates being 83.3 and 56.0, respectively.

TABLE 33.

Statement showing the number of persons first vaccinated and the number of those who were successfully vaccinated in each year in the period 1922-31.

Year	District Board		Municipality		Local Fund Dispensary		Total	
	No. vaccinated	No. Successfully vaccinated	No. vaccinated	No. Successfully vaccinated	No. vaccinated	No. Successfully vaccinated	No. vaccinated	No. Successfully vaccinated
1922 ...	88432	74575	16713	14779	5261	4662	105506	94016
1923 ...	115462	105763	17936	15167	5521	4804	138919	126834
1924 ...	103305	105429	21533	14811	5263	4509	135101	124749
1925 ...	120350	102975	20649	17464	4690	4056	145689	124497
1926 ..	93578	70181	30604	17817	2834	2478	127016	90476
1927 ...	89781	70673	20128	16694	3784	3259	113693	90626
1928 ...	138737	103974	24192	18599	5325	4392	168254	126965
1929 ...	158574	125227	16985	14441	6321	4591	181880	144619
1930 ...	173211	124655	29022	18347	8694	5792	210927	148714
1931 ...	119920	95180	22928	16459	4172	3104	147020	114743

Vaccination continued to be compulsory in all urban areas, including City Municipalities and in rural areas in the whole of Shimoga District and parts of Kadur, Hassan, Kolar and Bangalore Districts. Excluding City Municipalities, 655 notices were issued under Compulsory Vaccination Regulation of which 608 were complied with. Similarly, excluding Cities, the number of vaccinations verified by the Inspecting Officers was 36,292.

BUREAU OF ADMINISTRATION.

(a) City Health Organization.

BANGALORE CITY (POPULATION 1,72,357--1931 CENSUS).

Mr. S. Ramachandra Rao continued to be the Health Officer during the year.

The City is 12 square miles in area or about 7,680 acres with 34,657 inhabited houses. The average density of population is estimated at 22 persons per acre and the average number of persons per house is 5.

The City is divided into 9 divisions as in previous years and the following table gives the population, births and deaths with birth and death rates in each division for the year under report: -

Division	Population	Births	Deaths	Birth rate	Death rate
1. High Ground, Palace and Guttahalli.	9,254	129	95	13.9	10.3
2. Balepet (including Railway Quarters).	27,687	617	692	22.2	25.0
3. Manavarthpet and Mill Area	38,227	1,150	816	30.1	21.3
4. Ulsoorpet ...	19,855	1,844	688	92.9	34.7
5. Nagarthpet ...	8,487	240	224	28.3	26.4
6. Visweswarapur, Mavalli, Lal-Bagh and Kalasipalya.	15,819	522	444	33.0	28.1
7. Shankarpur, Gavipur, Fort and Chamarajpet.	21,548	530	523	24.6	24.3
8. Basavangudi and Guttahalli.	12,191	254	498	20.8	40.8
9. Malleswaram, Seshadri-puram and Sriramapuram.	19,289	446	321	23.1	16.6
Total ...	172,357	5,732	4,301	33.2	24.9

The very high birth rate in No. 4 Division is due to the existence of the Maternity Hospital in it.

The total number of births registered with the exclusion of still-births was 5,732 (2,391 male and 2,841 female) giving a birth rate of 33.2 against 48.5 in the previous year. The still-births numbered 170 against 183 in the previous year.

Statement of Births and Deaths Registered in each month of the year 1931.

Month	Births		Total	Deaths		Total
	Sex			Sex		
	Male	Female		Male	Female	
January ...	245	251	496	164	174	338
February ...	228	213	441	135	150	285
March ...	219	203	422	173	161	334
April ...	231	220	451	160	145	305
May ...	224	212	436	163	164	327
June ...	242	240	482	178	185	363
July ...	254	250	504	237	213	450
August ...	249	258	507	206	222	428
September ...	234	222	456	186	190	376
October ...	244	234	478	180	192	372
November ...	239	224	463	182	169	351
December ...	282	314	596	182	190	372
Total ...	2,891	2,841	5,732	2,146	2,155	4,301

Of the total births reported, 1,955 were conducted in the Maternity Hospital and 1,729 by the eleven Municipal midwives. 64·3 per cent of births were thus under skilled aid. The average number of labour cases conducted by the Municipal midwives was 159 as against 123 in the previous year.

Four thousand three hundred and one deaths from all causes were registered yielding a death rate of 24·9 against 4,463 deaths with a rate of 37·6 in the previous year. Eight hundred and forty-seven deaths were reported from the following Public Institutions and these have been included in the Divisions wherein the Institutions are situated:—

1. Central Jail ..	2
2. Epidemic Diseases Hospital ..	212
3. St. Martha's Hospital ..	32
4. Victoria Hospital ..	296
5. Mental Hospital ..	27
6. Maternity Hospital ..	278
Total ..	847

Deaths classified according to diseases for each month of the year:—

Deaths classified according to diseases for each month of the year 1931.

Causes of Death.	Deaths by Month												Total
	January	February	March	April	May	June	July	August	September	October	November	December	
1. Plague	...	2	2	...	...	...	1	2	3	9	14	12	45
2. Cholera	...	...	...	...	2	2	8	12	10	1	...	...	30
3. Small-pox	...	...	1	...	...	...	2	1	1	...	...	1	7
4. Influenza	...	...	...	...	...	...	...	...	...	1	...	2	9
5. Typhoid	...	...	...	...	...	...	...	...	...	...	...	...	7
6. Consumption	4	38	47	26	13	7	16	18	18	15	18	36	304
7. Malaria	7	6	8	2	9	9	12	6	10	10	...	...	74
8. Pneumonia	21	17	20	31	28	30	32	26	27	25	25	21	322
9. Broncho Pneumonia	29	20	21	23	40	41	39	48	23	32	32	48	390
10. Asthma	4	5	9	10	10	7	9	15	7	11	8	15	110
11. Diarrhoea	22	6	18	17	21	20	34	23	22	13	17	12	225
12. Dysentery	19	20	8	9	12	10	17	26	8	12	...	16	157
13. Injuries	...	...	2	...	...	...	...	...	2	...	3	...	11
14. Heart Failure	3	2	2	3	3	4	...	2	2	8	16	...	46
15. Paralysis	2	...	5	4	1	1	1	2	1	3	3	3	26
16. Puerperal Fever	3	...	2	...	8	5	...	...	...	...	...	...	18
17. Rickets	...	...	...	1	1	...	...	...	...	...	...	...	2
18. Dropsy	12	15	13	19	18	16	17	26	18	20	15	17	206
19. Old Age	49	48	52	43	37	39	65	67	52	42	51	55	600
20. Other Fevers	1	...	...	5	...	...	11	4	9	13	18	12	68
21. Premature Births	26	15	12	21	14	19	21	8	17	34	25	15	227
22. Drowning	...	3	1	4	2	2	...	2	1	1	1	...	17
23. Whooping Cough	...	2	1	1	3	1	6	3	1	2	...	...	20
24. Leprosy	3	...	...	2	3	...	4	1	3	2	1	1	20
25. Gastro Enteritis	...	...	...	...	4	2	...	2	2	...	...	...	8
26. Wounds or Accidents	...	1	2	...	...	...	6	...	...	...	...	...	13
27. Diabetes	5	2	1	5	1	2	1	1	...	...	3	1	24
28. Carbuncle	1	1	1	...	3	1	2	...	1	1	3	...	14
29. Measles	3	8	5	5	10	16	23	24	16	16	18	17	161
30. Abortion	...	...	...	...	...	...	...	...	2	2	1	1	4
31. Burns	1	...	8	...	2	1	1	...	...	1	1	1	10
32. Syphilis	1	1	1	...	...	...	1	1	...	...	...	2	9
33. Consumption	9	15	10	15	11	12	20	12	17	20	7	16	164
34. All Other Causes	55	54	82	58	71	114	106	94	95	82	76	68	952
Total	338	285	324	305	327	363	450	428	376	372	351	372	4,301

The agency for the registration of births and deaths remained same as in previous years, consisting of eight Sub-Registrars of which four are also part-time Vaccinators. The Registration work is checked by the Sanitary Inspectors and occasionally by the Health Officer during his round of inspections. The registration however continues defective.

Seven hundred and fifty-nine deaths of infants under one year of age were reported giving an infant mortality rate of 132.4 per 1,000 live births registered against 168.4 in the previous year.

Fifty-three attacks and 30 deaths from Cholera were reported during the year against 44 attacks and 26 deaths in the previous year. The motion and vomit of cases were bacteriologically examined in 16 instances and the result was negative in 11 and positive in 5. Public Water Supplies from different parts of the City including the infected localities were also bacteriologically examined and in no case was any specific vibrio identified. Usual precautionary measures were adopted. Twenty-six thousand eight hundred and forty-two persons were immunised. This gives a rate of 895 immunised for each death that occurred, a highly creditable record.

There were 32 attacks with seven deaths from Small-pox as against 33 attacks with 12 deaths in the previous year. Eight thousand two hundred and seventy-eight vaccinations (6,374 primary and 1,904 re-vaccinations) were performed as compared with 8,823 in the previous year.

Sixty-three attacks with 45 deaths from plague were reported against 59 attacks with 43 deaths in the year previous. Twelve thousand four hundred and thirteen persons were immunised giving a rate of 288 persons inoculated for each death. One hundred and seventy-seven rodents were examined for plague infection and 30 were positive.

There were reported 29 deaths from Typhoid and eight deaths from Influenza. Two hundred and four anti-typhoid preventive inoculations both needle and oral were given.

The disinfection work in the City is done by a gang of 15 men working under a trained Sanitary Inspector. Five hundred and twenty-two houses were disinfected.

The City maintained 5 whole-time Sanitary Inspectors and the number of house-to-house inspections done by them was 8,649 against 8,532 in the previous year. Sanitary defects were noticed in 4,989 premises and 3,755

notices were issued under different sanitary sections of the Municipal Regulation. Terms were complied with in 3,073 cases.

Five Lepers and 54 Vagrants suffering from chronic ailments, detected by the sanitary staff during their rounds, were transported for admission to the Epidemic Diseases Hospital.

Prosecutions for sanitary offences were instituted in 546 cases out of these, 263 ended in conviction, 64 were withdrawn, 25 were acquitted and 194 were pending at the close of the year. The amount of fine realised was Rs. 389-8-0.

The City Health Department organised small Health Exhibition for the Bangalore Woollen, Cotton and Silk Mills, Ltd., Seva Ashram, Malleswaram and Shri Sarada Samaj, Chamarajpet in their respective premises. They proved very attractive and educative.

The management of the City Water Supply remained as in previous years with the Water Supply Department of Government. Samples of water from the Jewell Filters as well as public taps in the City were examined every week. The standard of purity was maintained except in few instances.

One thousand three hundred and ten stray dogs were destroyed against 1,041 in 1930, the cost incurred therefor being Rs. 5-12-6 against Rs. 15-6-0 in the previous year.

The Malaria Unit which is part of City Municipality continued operations during the year. Details of the work will be found under Bureau of Epidemiology and Communicable Diseases.

The following statement of the spleen rates for different areas of the City for a period of three years 1929-31, shows there has been a marked fall in the rate. Whether this is the result of the control operations or a natural decline it is difficult to say. But there is no doubt that the control operations have substantially contributed to the reduction:—

Locality	Spleen rate		
	1929	1930	1931
Lal-Bagh area	14.5	16.4	1.6
Malleswaram	12.8	3.9	Nil
Chamarajpet	6.1	3.7	Nil
Basavangudi	4.2	7.3	0.3
City area	7.3	4.2	1.0

A Lady Health Visitor was entertained till 30th June, the appointment ceasing from 1st July. A statement of her work is given below :—

1. Number of labour cases conducted by the Dais and private midwives and seen by the Lady Health Visitor.	236
2. Number of cases conducted by the Municipal midwives and seen by the Lady Health Visitor.	266
3. Number of cases branded who received attention	20
4. Number of anti-natal cases seen in the mornings.	298
5. Number of women attended the anti-natal clinics.	420
6. Number of Baby Clinics held ..	106
7. Number of babies attended the clinics ..	870
8. Number of other women treated at the dispensaries.	305
9. Number of unprotected children reported ..	248

A Milk Centre in Ganigarpet is maintained by the Civic and Social Progress Association, towards which the Municipality contributes Rs. 360 a year. A Creche is conducted by Mysore Ladies' Conference near the Bangalore Woollen, Cotton and Silk Mills, Ltd. It meets a very useful need in this area of mill labour.

MYSORE CITY (POPULATION 1,07,122—1931 CENSUS).

Mr. G. M. Dominick, M.R.C.S., D.P.H., was in charge of the City up to 17th August from which date Mr. M. G. Srinivasa Peidpett took his place.

Two thousand eight hundred and three births (1,415 male and 1,388 female) were registered during the year yielding a birth rate of 25.15 as against the average of 22.97 for the previous quinquennium. There were 97 still births. The reporting and registration of births continues defective.

Three thousand two hundred and forty deaths were reported against 3,207 in the previous year. The crude death rate was 30.23 against the average of 25.75 for the previous five years. As a rule recorded deaths exceed recorded births year after year. While every death is not brought on the registers, over 50 percent of births are missed,

*Number of births and deaths registered in Mysore City
in each month of the year 1931.*

Month	Number of births	Per cent of total ¹	Number of deaths	Per cent of total	Increase (+) or decrease (-) of births over deaths
January ...	248	8.8	322	9.9	-74
February ...	191	6.8	229	7.1	-38
March ...	219	7.8	245	7.5	-26
April ...	172	6.1	237	7.3	-65
May ...	189	6.7	274	8.4	-85
June ...	214	7.6	254	7.9	-40
July ...	219	7.8	407	12.6	-188
August ...	269	9.7	318	9.8	-49
September ...	264	9.4	264	8.1	...
October ...	280	9.9	286	7.2	+44
November ...	281	10.0	223	8.9	+58
December ...	247	8.8	231	7.1	+16
Total ...	2,803	100.0	3,240	100.0	-437

Two hundred and ninety-six deaths of infants under one year of age were registered. Infant mortality was 105.60 compared with 129.99 in 1930. The chief causes of death were convulsion, debility and premature births.

Causes of deaths	January	February	March	April	May	June	July	August	September	October	November	December	Total
1. Smallpox ...	...	1	1	...	1	..	...	...	...	...	...	...	3
2. Convulsions ...	9	6	7	7	7	2	4	15	6	11	9	12	95
3. Debility ...	5	1	2	2	4	5	4	6	6	7	10	7	59
4. Marasmus ...	1	...	1	3	1	3	1	2	1	...	1	1	15
5. Premature birth ...	9	1	3	7	5	3	3	...	6	1	2	3	43
6. Diarrhoea ...	1	...	3	...	1	3	1	...	...	...	...	1	10
7. Pneumonia ...	2	...	...	2	...	2	4	3	...	...	...	1	14
8. Paralysis ...	1	...	...	...	...	...	...	...	...	...	...	...	1
9. Rickets ...	1	..	1	3	...	1	1	2	...	...	1	...	11
10. Fever ...	1	...	...	...	...	...	...	...	...	...	...	...	1
11. Whooping cough ...	1	...	1	...	...	...	...	...	...	...	...	...	2
12. Dysentery ...	2	...	1	1	...	...	...	...	...	...	...	...	4
13. Measles ...	...	1	2	...	1	...	...	...	...	...	...	...	4
14. Broncho-Pneumonia ...	...	...	...	...	...	...	...	...	...	...	1	...	1
15. Syphilis ...	...	...	...	...	...	...	...	...	...	1	...	...	1
16. Jaundice ...	2	...	...	1	..	...	...	...	...	...	...	...	3
17. All other Causes ...	1	2	3	3	2	5	...	2	...	4	2	5	29
Total ...	36	12	25	29	22	24	18	30	24	20	26	30	296

Statistics of deaths in Mysore City arranged according to the different causes:—

Causes of death	January	February	March	April	May	June	July	August	September	October	November	December	Total
1. Plague ...	28	8	2	1	1	1	9	13	20	11	8	7	109
2. Smallpox ...	...	2	3	2	1	1	...	...	...	...	1	...	10
3. Cholera ...	6	1	1	9	25	41	136	43	6	1	...	...	269
4. Fevers ...	83	54	46	46	43	33	48	43	45	44	...	33	562
5. Dysentery and Diarrhoea.	31	21	27	23	33	34	36	36	34	28	17	22	552
6. Respiratory Diseases.	9	6	9	7	7	7	7	8	5	9	7	9	90
7. Suicide ...	...	...	...	...	1	...	...	...	...	...	...	...	1
8. Wound or accident.	...	3	...	2	2	1	...	1	...	...	1	...	10
9. Snake-bite or killed by wild beasts	...	...	...	...	...	...	...	...	1	...	...	...	1
10. All other Causes ...	165	134	157	147	161	136	161	174	153	143	145	160	1,826
Total ...	322	229	245	237	274	254	407	318	254	236	223	281	3,240

There were reported during the year 156 attacks with 109 deaths from Plague against 224 attacks with 192 deaths in the previous year. The usual control measures as disinfection and inoculation were adopted. Two thousand five hundred and eighty-eight anti-plague inoculations were done. The disease prevailed only sporadically. Plague broke out in the City for the first time in 1898. It has been there ever since. While in the earlier years it accounted for from 30 to 50 per cent of total deaths, in the latter years the percentage dropped to one to five per cent. The disease seems to take epidemic turns, once in every three or four years.

The decline that has occurred may be due partly to the diminished virulence of the bacillus, partly to natural immunity developed in the successive generations of rats and men partly to sanitary improvements effected.

There is scope for further improvements in the way of rat proofing of houses and godowns, opening out of congested areas and quicker and more efficient removal and disposal of City's filth which affords shelter and food for rats. A sustained programme of Anti-rat Campaign may also help to keep the disease well under check. Proposals in this regard have been made to the Municipality.

Three hundred and ninety-four attacks with 269 deaths from Cholera occurred during the year. Of these 39 attacks and 26 deaths were amongst important cases. The

disease showed itself about the middle of January starting from an important focus. It prevailed only sporadically till about the middle of April whereafter it assumed epidemic proportions. By the middle of July the disease was at its height and by about the middle of September it completely subsided.

During 31 years 1901—1931 there have been six epidemic out-breaks from Cholera. It is fortunate that the City has a filtered and chlorinated water supply. But for this there is no knowing what proportions the disease would assume, considering the existance of other favourable conditions.

Better latrine arrangements both private and public, quicker and efficient collections and disposal of filth so as to minimise the fly menace, closing of some of the badly constructed dug wells and draining some of the tanks, are improvements which are urgently called for, not only from the point of view of cholera, but also of other filth and water borne diseases.

Intensive measures to keep the disease under control were adopted. The principal ones amongst them were propaganda, immunisation, and disinfection. Thirty-nine thousand nine hundred and eighty-four anti-cholera inoculations were performed, eight special inoculating officers, including two Lady Doctors being temporarily entertained for the purpose.

Smallpox prevailed sporadically accounting for 40 attacks with 10 deaths, four of the attacks being imported. Eight thousand two hundred and eighty vaccinations were performed of which 1,264 were re-vaccinations. Of the primary vaccinations 5,716 were reported successful.

Two hundred and sixty-eight deaths (82 males and 186 females) were reported from consumption as against the average of 217·2 during the previous five years. Of the deaths from this cause, seven were Christians, 190 Hindus, 71 Muslims. One hundred and eighty seven deaths from Malaria and 52 from Typhoid were also registered.

The health staff visited 4,940 premises. Two thousand seven hundred and sixty-five notices under various sanitary sections of the Municipal Regulations and Bye-laws were issued. Four hundred and fifty-nine prosecutions for non-compliance of the notices were instituted of which 160 ended in conviction, 19 were acquitted, and 249 withdrawn, 31 remaining pending at the end of the year. Total

amount of the realised was Rs. 730 and odd. The three markets and the two slaughter houses were regularly inspected. During the year 69,386 animals were slaughtered in the two slaughter houses of which 44,828 were sheep, 20,391 goats, 20,065 bullocks, 1,318 cows and 784 buffaloes.

Hotels, Eating Houses, Bakeries, Aerated water Factories and other places where articles of food and drink are prepared and exposed for sale, were inspected by the Health Officer, and the Sanitary Inspectors and necessary action taken where defects were noticed.

Licenses were issued to the following concerns which conformed to the Municipal Bye-laws.

Hotels	...	...	40
Coffee Clubs	..	...	120
Bakeries	..	...	11
Aerated Water Factories	..	...	26
Sweetmeat Shops	...	...	49
Private Meat Stalls	...	...	25
Dangerous and offensive trade	...	...	349

During the year 1,537 stray dogs were destroyed as against 1,123 in the previous. No dog bite cases were reported to the Health Office.

The Health Office Laboratory examined the following samples :---

1. Water for Chemical Analysis	...	...	3
2. Water for bacteriological analysis	...	...	405
3. Sample ice	...	...	4
4. Water for cholera	...	...	54
5. Dead rats for plague	...	...	30
6. Dead Squirrels for Plague	..	...	2
7. Dead Bandicoots for Plague	..	..	4
8. Dead Crows for Plague	..	...	2
9. Dead Rabbits for Plague	..	...	2
10. Dead Sparrows for Plague	...	...	3
11. Dead Guinea Pigs for Plague	..	...	3
12. Cholera Motions	..	...	37
13. Cholera Vomit	...	...	1
14. Blood films for Malaria	...	...	4
15. Aerated waters for bacterial contents	...	...	2

Intensive Health propaganda by lantern lectures and distribution of leaflets on Plague, Cholera, Small-pox, Typhoid, Personal Hygiene, etc., was conducted.

Report of the work of the Malaria Control Unit in the City will be found under the Bureau of Epidemiology and Communicable Diseases.

The following organised bodies namely the Gunamba Maternity Trust, the Civic and Social Progress Association

and the Indian Red Cross Society have interested themselves in Maternity and Child Welfare work in the City. The Child Welfare Centres in different parts are operating in this line.

KOLAR GOLD FIELD (POPULATION
85,103—1931 CENSUS).

Three thousand two hundred and sixty-seven births were recorded during the year, yielding a birth rate of 38'38 per mille as against 2,969 births and a birth rate of 33'86 in the previous year. 34'83 per cent of births were in the Sanitary Board Area and 65'17 per cent in the Mining Area. The following table shows the birth rates for 10 years 1922-1931 :—

Year	Rate per mille	Year	Rate per mille
1922	41'73	1927	38'12
1923	38'58	1928	38'67
1924	40'67	1929	38'18
1925	38'01	1930	33'86
1926	39'40	1931	38'38

Of the total births, 761 or 23'29 were conducted in the Government Maternity Hospital, Robertsonpet and Champion Reef Dispensary, 1,354 or 41'44 under the care of qualified midwives and Dais, 1,152 or 35'26 under unskilled aid.

The Mining authorities maintained nine midwives and the Sanitary Board two, one of the latter being attached to the Champion Reef Dispensary.

A total of 2,300 deaths from all causes was recorded, giving a crude death rate of 27'2 per mille as against 2,214 deaths and a death rate of 25'25 in the previous year. The following table shows the death rates for 10 years 1922-1931 :—

Year	Rate per mille	Year	Rate per mille
1922	26'45	1927	21'19
1923	23'08	1928	24'40
1924	28'15	1929	25'05
1925	25'43	1930	25'25
1926	26'18	1931	27'02

Deaths according to the Age Group.

No.	Age Group	Number of deaths	Percentage to total deaths
1	Under 1 year	585	25'47
2	1 — 5	413	17'95
3	5 — 10	72	3'13
4	10 — 15	64	2'78
5	15 — 20	52	2'26
6	20 — 30	193	8'39
7	30 — 40	226	9'82
8	40 — 50	179	7'78
9	50 — 60	113	5'13
10	60 and upwards	397	17'72

As in previous years mortality was highest amongst infants under one year of age.

Deaths distributed according to causes were as follows :—

No.	Causes of Death	Number of deaths	Percentage to total deaths
1	Plague	51	2'21
2	Small pox	3	0'13
3	Malaria, etc.	164	7'13
4	Typhoid	3	0'13
5	Influenza	15	0'65
6	Pneumonia	186	8'08
7	Consumption	80	3'47
8	Diarrhoea and Dysentery	303	13'17
9	Respiratory Diseases	175	7'60
10	Suicide	2	0'08
11	Snake-bite	1	0'04
12	Accidents	182	7'91
13	All other Causes	1,135	49'34
	Total	2,300	100'00

The largest number of deaths were under diarrhoea and dysentery, etc., (13'17 per cent) and Pneumonia (8'08 per cent).

Five hundred and eighty-six children under one year of age died during the year. The infant mortality was 179'36 as against 206'80 in the previous year.

The following table shows the infant mortality for 10 years from 1922—1931 :—

Year	Infant Mortality	Year	Infant Mortality
1922	204'90	1927	184'26
1923	187'80	1928	193'15
1924	198'54	1929	195'93
1925	199'82	1930	206'80
1926	196'53	1931	179'36

The principal causes of infant mortality were as follows:—

Causes of death.	Number.
Small-pox	1
Dysentery	27
Diarrhoea	50
Bowel complaints	3
Malaria	2
Diphtheria	1
Influenza	2
Pneumonia	20
Bronchitis	35
Debility	199
Convulsions	121
Other Fevers	6
Premature Births	10
Drowning	1
Consumption	1
Malnutrition	89
Other Causes	18
Total	586

*Specimens examined at the Health Office
Laboratory, Robertsonpet.*

Specimens.	Number or quantity examined.
Blood for Widal	26
Blood smears for Malarial Parasites	14
Smears from human Buboec for B. Pestis	12
Smears for Gonococci	19
Liver and spleen for Anthrax	60
Liver and Spleen for rats for B. Pestis	34
Urine for Albumin and Sugar	26
Microscopical examination of urine	1
Motion for amoebae	6

Motion for cholera ..	...	23
Sputum for Tubercle Bacilli ..	...	3
Dogs' brains sent to Coonoor	...	33
No. of dogs examined for rabies	...	31
Number of persons recommended for anti-rabic treatment ..	...	78
Sample of Ghee ..	...	3
Water from Bethamangala ..	...	26

The Bethamangala tank supplied water to the Mining Area, Robertsonpet and to the Cooly Colonies adjoining Robertsonpet. The tank contained enough supply throughout the year. In rural parts of the Sanitary Board Area, dug-wells formed the chief source of supply.

Bethamangala water filtered and subsequently chlorinated was invariably satisfactory in quality.

A total of 170 persons were treated in the Epidemic Diseases Hospital, Robertsonpet as against 211 in the year previous. Of these 109 were discharged and cured, and 61 died.

No.	Nature of Disease	Number treated	Cured and Discharged	Number died
1	Cholera	2	2	...
2	Tropical Typhus	4	4	..
3	Plague	83	41	42
4	Pyrexia of unknown origin	17	12	5
5	Small-pox	21	19	2
6	Diphtheria	2	1	1
7	Disease of the Respiratory system except Pneumonia and tubercle of the lungs.	2	2	...
8	Diarrhoea and Vomiting	28	21	7
9	Gastro Enteritis	2	..	2
10	Mumps	2	2	...
11	Diseases of the generative system	2	1	1
12	Diseases of the connective tissue	2	2	...
13	Chicken-pox	1	1	...
14	Abnormal labour	2	1	1
Total		170	109	61

As in previous years all dogs should be licensed under law. Stray dogs are systematically killed. Six hundred

and eighty dogs were destroyed by strychnine. Thirty-one dogs which had inflicted bites on persons were kept under observation for rabies. The brains of 33 dogs were sent to Coonoor for examination. Seventy-eight persons were sent to Civil Hospital for anti-rabic treatment.

Removal of rank vegetation and destruction of cactus were undertaken on a large scale and area to the extent of 2,750 square yards cleansed of these pests.

Four Child Welfare Centres, three on the Mining Area under control of the Mining Board and one in Robertsonpet under the Sanitary Board were working during the year. Following work was done at these centres :—

Sl. No.	Particulars	Number
1	Number of baths given to babies	5,060
2	Number of visits to pregnant women in their homes and in Centres for advice.	2,665
3	Number of confined women seen by the Health Visitor in their homes	2,176
4	Number of visits paid to confined women in their huts.	2,306
5	Number of mothers and babies that attended the clinics.	2,733

(b) District Health Organisations.

Out of the eight districts only two, *viz.*, Mysore and Shimoga have whole-time Health Officers. In other districts, the District Medical Officers are *ex-officio* Sanitary Officers.

Mr. S. Narayana Rao, District Medical Officer, Shimoga, was in charge of the District Health Office till the latter part of November when he was relieved by G. N. Seshadri, the permanent incumbent, on his return from Calcutta.

In August Mr. G. M. Dominick came over from Mysore City to the charge of Mysore District, relieving Mr. M. G. Srinivasa Piedpett, who took his place in the City.

Two of the Health Probationers, Messrs. V. Narasimha Murthy and S. Seshagiri Rao, were withdrawn from the districts and posted for training in City Health work in the Municipalities of Bangalore and Mysore.

The third Probationer, Mr. E. Anantha Rao who was drafted to Tumkur and Chitaldrug Districts, visited all the Municipalities in these districts, and did routine vaccination inspections. He attended to preventive inoculation work in connection with the cholera epidemic which prevailed in severe form in Hiriyur, Davangere and Jagalur Taluks of Chitaldrug District and Kunigal Taluk of Tumkur District.

Mr. V. Narasimha Murthy proceeded to Calcutta in September on deputation for qualifying himself for the D. P. H. of that University. Mr. E. Anantha Rao was withdrawn from District Work in November and posted in charge of the Bureau of Health Education.

Bangalore District.—Twenty-three thousand four hundred and eighteen births with a birth rate of 21·6 and 15,274 deaths with a death rate of 14·1 were registered. The infant mortality rate was 73·6 as compared with 103·9 in 1930.

Plague prevailed rather extensively and accounted for 1,572 deaths. Ninety-three thousand four hundred anti-plague inoculations were done. Five hundred and thirty-eight deaths from cholera and 256 from small-pox were reported. Forty-one thousand and fifty-six anti-cholera inoculations and 29,028 vaccinations were done.

The Taluks of Bangalore, Magadi and Closepet were somewhat severely affected with Malaria. Quinine was freely distributed in these areas.

The Municipalities spent Rs. 2,372-12-0 on drainage, Rs. 5,577-14-0 on drinking water wells, and Rs. 3,514-10-0 on other sanitary improvements.

Two hundred and ninety-nine notices were issued in the Municipalities for sanitary offences, 237 were complied with, 35 were prosecuted and 37 remained pending at the close of the year. Rupees forty-one were realised as fines.

The District Board invested Rs. 5,960 on new wells and repairs to old wells.

Mysore District.—Twenty-four thousand six hundred and ninety-five births giving a birth rate of 21·67 were registered as against 24,830 births with a birth rate of 23·27 in the preceding year.

The total number of deaths registered was 23,648 with a rate of 15·6 as compared with 19,910 deaths and a ratio of 14·19 in 1930.

The deaths among infants under one year of age numbered 1,248 as against 1,322 in 1930 giving infantile mortality rates of 50·54 and 53·1 respectively.

One thousand five hundred and eighty-four deaths from Plague were reported against 1,928 in the previous year. Twenty thousand nine hundred and eighty-seven anti-plague inoculations were performed.

The district was very heavily affected with cholera, accounting for 3,772 deaths as against 91 in 1930. The epidemic which commenced in the latter part of December 1930 continued on till October 1931.

The Taluks of Mysore, Krishnarajpet, T.-Narasipur, Hunsur and Nanjangud were most affected. A total of 53,109 anti-cholera inoculations were done in the district. The local medical staff supplemented by staff from the Central Health Department adopted all relief measures.

Small-pox accounted for 468 deaths as against 1,017 in 1930. Thirty thousand eight hundred and ninety-four vaccinations were performed.

The Municipalities in the district spent a sum of Rs. 8,099-6-0 for drainage, Rs. 10,827-9-0 for the construction of new dug wells, Rs. 5,470-3-8 for improvement of dwelling houses and Rs. 11,062-0-6 on other Sanitary Improvements.

The District Board spent during the year a sum of Rs. 4,240 for sinking of new wells and repairing old ones in the rural parts of the district.

The District Health Officer visited 463 affected villages and towns in addition to 45 schools where he examined 1,873 children.

Hassan District.—Eight thousand nine hundred and ninety-eight births and 7,841 deaths were registered yielding birth and death rates of 13·5 and 13·1 as against 14·02 and 14·07 respectively in the previous year. The infant mortality rate was 50·5 per 1,000 births.

Eight hundred and fifty-three deaths from Plague, 273 from Cholera and 371 from Small-pox were reported. Eight thousand seven hundred and thirty anti-plague, 3,983 anti-cholera inoculations and 17,676 vaccinations were done.

The Municipalities in the district spent Rs. 22,676 on sanitary works, Rs. 6,210 being on drainage, Rs. 12,016 on water works, Rs. 1,914 on improvements on dwelling houses and Rs. 2,536 under other sanitary improvements.

The District Board expended about Rs. 11,230 on well works in rural areas.

The District Medical and Sanitary Officer visited 33 schools, examined 1,566 children and treated 672 for various ailments.

A total of 249 notices under Health clauses of the Municipal Regulations were issued in the Municipalities. Out of these 117 were complied with, 12 were prosecuted and 34 remained pending at the close of the year. Rupees thirty were realised as fines.

Kadur District.—Plague prevailed in Chikmagalur, Kadur and Tarikere Taluks. In all, 65 places were affected. The towns of Chikmagalur and Birur suffered the worst. There were reported a total of 370 attacks with 203 deaths as against 658 attacks and 378 deaths in the previous year. A Sanitary Inspector was deputed by the District Board solely on plague duty in these infected parts. The Medical Officers attached to the Local Fund Dispensaries rendered the necessary medical aid and also conducted inoculations. In all, 10,901 inoculations were performed.

In February, cholera broke out in the Kadur Taluk and steadily extended from place to place. It was worst from March to June, spreading also into the adjoining Tarikere Taluk. Sixty-three villages were affected. There were reported 550 attacks with 353 deaths. The District Board Sanitary Inspectors and Local Medical Officers attended to preventive and curative relief. The Central Department of Health also detailed a mobile corps for treating the waters. Five thousand four hundred and eight anti-cholera inoculations were done. The District Board incurred an expenditure of Rs. 1,683 on special anti-cholera measures. This sum was supplemented by a grant of Rs. 1,000 made to the Board from Government.

Small-pox prevailed only to a minor extent. Three hundred and thirteen attacks with 60 deaths were reported. Eleven thousand six hundred and one vaccinations were done by the local vaccination staff against 19,937 in the previous year. From September onwards the District was free from this disease.

Malaria seems to have prevailed rather severely in this district during the year. Three thousand seven hundred and seven deaths were registered. The District Board distributed quinine pills free in the affected areas to the extent of 221 lbs., costing about Rs. 4,000. There

was great demand for this drug, the rural people having come to recognise its efficacy.

The Municipalities of Tarikere, Birur, Kadur and Narasimharajapur spent Rs. 3,188 on drainage works and the Municipalities of Tarikere and Kadur Rs. 5,220 on water works.

The District Board undertook 57 well works during the year of which 12 were completed. The total expenditure incurred was Rs. 15,300.

Shimoga District.—There were reported during the year 10,954 births and 7,924 deaths yielding birth and death rates of 21·6 and 15·2 against 24·47 and 20·02 respectively in the year previous. The infant mortality was 87·1 against 101·1 in 1930.

Two hundred and twenty-five deaths from Plague, 385 from Cholera and 230 from Smallpox were registered. Four thousand, four hundred and sixty-four anti-plague, 10,757 anti-cholera inoculations and 15,099 vaccinations were done. Cholera affected chiefly in the taluks of Chennagiri and Shimoga.

The Municipalities in the District spent Rs. 4,175 on drainage, Rs. 521 on water supply and Rs. 8,264 on other Sanitary Improvements.

Six hundred and twelve notices for sanitary offences were issued under the Municipal Regulations in the Municipalities. Five hundred and six were complied with, 31 were prosecuted and 75 remained pending at the close of the year. Rupees five were realised as fines.

The District Health Officer visited 14 schools, examined 333 children and treated 89 for ailments.

Chitaldrug District.—Thirteen thousand four hundred and sixty two births and 7,910 deaths were registered yielding birth and death rates of 20·5 and 12·7 as against 23·95 and 15·82 respectively in the preceding year. Infant mortality rate was 79·8 as against 101·1 in 1930.

Plague prevailed only to a small extent accounting for 75 deaths. Four hundred and forty-one deaths from Small-pox and 582 from Cholera were reported. Both these diseases were in the form of epidemics. One thousand, three hundred and ninety-one 1,391 anti-plague, 32,717 anti-cholera inoculations and 14,544 vaccinations were performed in the district.

Malaria of a severe type prevailed in parts of Hiriyur Taluk. The District Board sanctioned out of their funds

a sum of Rs. 500 for the purchase of quinine for free distribution in the affected parts.

The Municipalities in the district expended Rs. 84,372 on Sanitary Improvements, Rs. 12,912 on drainage, Rs. 41,619 on water works, and Rs. 29,841 on other Sanitary Improvements. Under the sanitary sections of the Municipal Regulation, 247 notices for sanitary offences were issued. Two hundred and sixteen were complied with, 94 were prosecuted, and 27 remained pending at the close of the year. The amount of fines realised was Rs. 243-8-0.

The District Medical and Sanitary Officer visited 22 schools, examined 1,216 children and treated 799.

Tumkur District:—Sixteen thousand five hundred and fifty-five births giving a birth rate of 19·2 were registered as against 15,369 births and a rate of 19·38 in 1930. Ten thousand, eight hundred and forty-two deaths yielding a death rate of 12·5 were recorded against 9,855 deaths and a death rate of 12·75 in the preceding year. The infant mortality rate was 91·6 against 94·2 in the previous year.

Three hundred and seventy eight deaths from Plague, 395 from Cholera and 157 from Small-pox were reported. Twenty thousand, eight hundred and three anti-plague, 15,842 anti-cholera inoculations and 19,707 vaccinations were performed. Malaria of malignant type prevailed rather extensively in some of the villages of Pavagada, Madhugiri, Sira, Koratagere and Chiknayakanhalli Taluks. The Sub-Assistant Surgeons concerned rendered medical relief. The District Board supplied quinine pills free of cost.

The Municipalities spent a sum of Rs. 7,850 on drainage, Rs. 2,640 on water supply, and Rs. 6,071 on other Sanitary Improvements. Four thousand seven hundred and forty-one rupees worth of well works were executed by the District Board.

The Municipalities issued 270 notices for sanitary offences, 222 were complied with, 4 were prosecuted and 44 remained pending disposal at the close of the year. A sum of Rs. 6 was realised as fines.

The District Medical and Sanitary Officer visited 21 schools, examined 1,747 children and treated 448 of them for various ailments.

Kolar District:—Sixteen thousand, nine hundred and twenty-four births and 14,563 deaths were registered, the birth and death rates were 19·9 and 17·1 as against

17.8 and 22.4 respectively in 1930. Infant Mortality rate was 110.2.

Eight hundred and twenty seven deaths from Plague, 87 from Cholera and 297 from Small-pox were reported. Twenty-nine thousand four hundred and twenty-eight anti-plague, 1,484 anti-cholera inoculations and 25,786 vaccinations were performed.

The Municipalities invested Rs. 10,453 on drainage, Rs. 22,492 on water works, and Rs. 5,083 on other Sanitary Improvements.

As many as four notices were issued for Sanitary Offences under the Municipal Regulations.

The District Medical and Sanitary Officer visited 219 villages and towns on Cholera, Plague and Smallpox duty. He also inspected 31 schools, examined 1,206 children and treated 256 of these.

BUREAU OF VITAL STATISTICS.

All rates in this report are calculated on 1931 Census population while of previous years on the 1921 Census population.

(a) Births.

In the year under report, a total of 1,19,762 births was reported as against 1,15,057 in the previous year. Of these 61,467 were males and 58,295 females, the ratio of male to female births being 105 to 100. The birth rate during the year was 18.64 against 19.63 in the previous year, the average of the past five years being 19.31.

The highest rate of 21.67 was recorded for Bangalore District and the lowest 10.52 for Kadur District. Reporting of births continues defective in all the districts.

As compared with previous year, increase of births was reported only in Kolar District, and decrease in all the other seven districts. The rate of increase was greatest in Kolar District (2.14) and the greatest rate of decrease (6.64) was in Kadur District.

Births reported during the year are generally in excess of the number of deaths registered. Table 35 indicates the months in which the districts or cities returned excess of deaths over births, such figures being underlined. Deaths exceeded Births in Kadur District while Births exceeded Deaths in all other districts. Deaths exceeded

Births in Mysore District in April and May, Hassan in January, August, September and October; Kadur District in February, March, May, July, August, September, October, November and December; Shinoga District in November and December and Kolar District in January, February, August and December. So, for nine months in the year, Kadur District returned an excess of Deaths over Births, as did Hassan District in previous year for six months. The explanation perhaps is the vagaries of the reporting and recording agency.

There was on the whole a net natural increase of population during the year, equivalent to 3.97 per thousand in Mysore State. In the three cities of Mysore, Bangalore and Kolar Gold Field taken together, the rate of increase was 5.50. The corresponding increases in the previous two years for the State were 4.46 and 4.90 respectively.

The decrease for Mysore City is less pronounced this year than last year, being 4.07 against 8.70 in previous year, per thousand of population. Beside defective reporting and causes of deaths common to all urban areas, recurring out-breaks of Plague, Cholera, and Small-pox seem responsible for this.

Table 36 gives the birth rates recorded in each district in the period 1922-1931.

Table 37 gives the rates computed for the City and Town Municipalities and shows that there are Towns with Birth Rates below 10 per mille of population. Comment is needless and it may safely be taken that the registration of births in the 83 towns having Birth Rates less than 35 is unsatisfactory. It is significant however that the town of Sorab gives a Birth Rate of 61.4, Periyapatna coming next with 41.3.

TABLE 34.—Births registered in the Districts in each month of the year 1931.

District	January	February	March	April	May	June	July	August	September	October	November	December	Number of births Registered			Ratio of births per 1,000 of population			No. of males born to every 100 females
													Male	Female	Total	1931	1930	Mean of previous 5 years	
Bangalore	1,675	1,496	1,643	1,746	1,927	2,184	2,291	2,172	2,069	2,390	1,947	1,898	11,872	11,546	23,418	21.67	23.27	22.36	103
Mysore	1,969	1,685	1,600	1,582	2,157	2,315	2,195	2,172	2,270	2,307	2,277	2,154	12,714	11,979	24,693	16.34	17.73	16.30	107
Hassan	719	659	637	633	788	666	811	655	674	729	637	540	4,131	3,967	8,098	13.56	14.82	14.81	105
Kadur	488	443	419	423	500	567	511	551	421	484	459	392	2,918	2,740	5,658	10.52	17.16	15.37	107
Shimoga	598	887	900	911	1,013	1,090	1,202	963	886	792	673	689	5,780	5,174	10,954	21.06	24.47	20.07	111
Chitaldrug	1,088	1,162	1,109	1,106	1,167	1,267	1,148	1,236	1,120	1,065	1,019	1,030	6,985	6,527	13,462	20.50	23.95	21.59	106
Tumkur	1,088	1,110	1,388	1,327	1,275	1,234	1,499	1,324	1,619	1,787	1,550	1,354	8,505	8,050	16,555	19.21	19.38	21.54	105
Kolar	814	843	1,001	1,298	1,873	1,490	1,749	1,307	1,719	1,992	1,740	1,493	8,612	8,312	16,924	19.93	17.79	21.65	103
Total Mysore State	8,589	8,250	8,697	9,026	10,150	10,763	11,401	10,388	10,758	11,546	10,302	9,550	61,467	58,295	1,19,762	18.64	19.63	19.31	105
Ratio per 1,000 of population.	1.33	1.29	1.35	1.45	1.56	1.67	1.77	1.62	1.67	1.79	1.60	1.46	...	...	18.64	...	...	...	...
Ratio per 1,000 of population in previous year.	1.67	1.42	1.47	1.53	1.63	1.62	1.81	1.78	1.67	1.80	1.66	1.58	...	...	19.63	...	...	...	...

TABLE 35.
Number of Births and Deaths reported in the Districts and Cities during the year 1931.

Districts including Cities	January			February			March			April			May			
	B	D	Difference*	B	D	Difference*	B	D	Difference*	B	D	Difference	B	D	Difference	
																2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
Bangalore	1,675	1,213	+462	1,496	1,033	+463	1,643	1,041	+602	1,746	1,089	+707	1,927	1,027	+900	
Mysore	1,969	1,885	+84	1,685	1,577	+108	1,600	1,300	+300	1,582	1,587	-5	2,157	2,724	-567	
Hassan	719	738	-19	659	541	+118	637	562	+75	633	550	+88	788	587	+151	
Kadur	488	398	+90	443	479	-36	419	543	-124	423	402	+21	500	538	-38	
Shimoga	998	765	+233	887	691	+196	900	628	+272	911	539	+372	1,013	610	+403	
Chitaldrug	1,038	510	+528	1,162	535	+627	1,109	585	+524	1,106	665	+441	1,167	730	+437	
Tumkur	1,088	881	+207	1,110	709	+401	1,388	850	+538	1,327	817	+510	1,275	851	+424	
Kolar	814	1,145	-331	848	946	-98	1,001	880	+121	1,298	1,055	+243	1,373	1,221	+152	
Total (Mysore State)	8,589	7,535	+1,054	8,290	6,511	+1,779	8,697	6,389	+2,308	9,026	6,656	+2,370	10,150	8,288	+1,862	
Bangalore City	489	338	+151	425	285	+140	444	334	+110	444	310	+134	445	329	+116	
Mysore City	246	322	-74	191	229	-38	219	245	-26	172	237	-65	189	274	-85	
K. G. F. (City)	246	207	+39	176	188	-12	206	155	+51	238	138	+100	268	224	+44	
Total (Cities)	988	867	+116	792	702	+90	869	734	+135	854	685	+169	902	527	+375	

TABLE 35. - contd.

District including Cities	June				July				August				September												
	17		18		19		20		21		22		23		24		25		26		27		28		
	B	D	Difference	D	Difference	B	D	Difference	B	D	Difference	B	D	Difference	B	D	Difference	B	D	Difference	B	D	Difference	B	D	Difference
Bangalore	2,184	1,190	+944	2,291	1,634	+657	2,172	2,172	1,517	2,172	+657	2,172	2,172	1,517	2,172	+657	2,099	1,217	+882	2,099	1,217	+882	2,099	1,217	+882
Mysore	2,315	2,239	+26	2,195	2,159	+36	2,172	2,172	2,100	2,172	+86	2,172	2,172	2,100	2,172	+86	2,270	2,149	+121	2,270	2,149	+121	2,270	2,149	+121
Hassan	666	550	+116	811	724	+87	655	655	850	655	+87	655	655	850	655	+87	674	912	-238	674	912	-238	674	912	-238
Kadur	567	499	+68	511	513	-2	551	551	605	551	-2	551	551	605	551	-2	421	552	-131	421	552	-131	421	552	-131
Shimoga	1,090	627	+463	1,202	629	+573	963	963	686	963	+573	963	963	686	963	+573	836	640	+196	836	640	+196	836	640	+196
Chitaldrug	1,267	624	+640	1,143	757	+386	1,236	1,236	772	1,236	+386	1,236	1,236	772	1,236	+386	1,120	815	+305	1,120	815	+305	1,120	815	+305
Tumkur	1,284	740	+494	1,499	896	+603	1,324	1,324	840	1,324	+603	1,324	1,324	840	1,324	+603	1,619	861	+745	1,619	861	+745	1,619	861	+745
Kolar	1,490	1,161	+326	1,749	1,013	+736	1,307	1,307	1,349	1,307	+736	1,307	1,307	1,349	1,307	+736	1,719	1,472	+247	1,719	1,472	+247	1,719	1,472	+247
Total (Mysore State)	10,763	7,633	+3,080	11,401	8,325	+3,076	10,380	10,380	8,659	10,380	+3,076	10,380	10,380	8,659	10,380	+3,076	10,758	8,621	+2,137	10,758	8,621	+2,137	10,758	8,621	+2,137
Bangalore City	497	363	+134	524	440	+124	521	521	423	521	+124	521	521	423	521	+124	450	373	+77	450	373	+77	450	373	+77
Mysore City	214	254	-40	219	407	-188	269	269	316	269	-188	269	269	316	269	-188	264	264	...	264	264	...	264	264	...
K. G. F. (City)	280	158	+122	295	217	+78	247	247	194	247	+78	247	247	194	247	+78	297	201	+96	297	201	+96	297	201	+96
Total (Cities)	991	775	+216	1,038	1,064	-26	1,037	1,037	935	1,037	-26	1,037	1,037	935	1,037	-26	1,011	898	+113	1,011	898	+113	1,011	898	+113

TABLE 35.—*concl'd.*

District including Cities	October			November			December			Total			Excess of births over deaths per 1000 of population	
	B	D	Difference	B	D	Difference	B	D	Difference	B	D	Difference	1931	1930
	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Bangalore	2,890	1,479	+911	1,947	1,352	+595	1,898	1,532	+366	23,418	15,274	+8,144	7.53	7.14
Mysore	2,307	1,905	+402	2,277	1,905	+372	2,154	2,066	+88	24,698	23,648	+1,045	0.07	3.54
Hassan	729	786	-57	637	547	+90	540	494	+46	8,098	7,841	+257	0.43	0.75
Kadur	481	579	-95	459	598	-139	372	558	-186	5,658	6,264	-606	1.74	1.03
Shimoga	792	756	+36	678	693	-20	659	710	-21	10,954	7,924	+3,030	5.82	4.45
Chitaldrug	1,065	657	+408	1,019	605	+414	1,030	655	+375	13,462	7,910	+5,552	8.42	8.79
Tumkur	1,787	1,154	+633	1,550	1,053	+497	1,354	1,181	+170	16,555	10,842	+5,713	6.63	7.18
Kolar	1,992	1,394	+598	1,740	1,319	+421	1,493	1,604	-111	16,924	14,562	+2,362	2.65	1.49
Total (Mysore State)	11,546	8,710	+2,836	10,302	8,075	+2,227	9,550	8,808	+742	1,19,762	94,265	+25,497	3.97	4.46
Bangalore City	492	372	+120	455	351	+104	581	372	+209	5,767	4,290	+1,477	8.57	10.97
Mysore City	280	236	+44	281	223	+58	247	231	+16	2,803	3,240	-437	4.07	8.70
K. G. F. (City)	320	196	+124	379	172	+207	315	250	+65	3,267	2,300	+967	11.36	8.61
Total (Cities)	1,092	804	+288	1,115	746	+369	1,143	853	+290	11,837	9,830	+2,007	5.50	4.90

TABLE 36.

Birth rates recorded in each district in the ten years 1922-31.

District	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
Bangalore ...	18.48	18.42	18.82	19.48	23.34	19.57	22.26	23.34	23.27	21.67
Mysore ...	14.40	16.07	15.63	15.20	18.56	16.05	13.57	15.60	17.73	16.34
Hassan ...	16.36	14.69	14.72	13.72	15.73	18.98	13.81	15.70	14.82	13.56
Kadur ...	16.30	15.98	14.99	13.90	14.74	14.16	16.18	14.18	17.16	10.52
Shimoga ...	18.74	19.61	20.25	15.13	17.84	17.69	20.05	20.30	24.47	21.06
Chitaldrug ...	19.86	17.87	20.88	20.99	21.20	20.59	20.19	22.02	23.96	20.50
Tumkur ...	19.77	20.18	19.72	17.90	23.50	21.53	21.19	23.13	19.88	19.21
Kolar ...	21.53	25.61	20.14	21.72	24.89	23.00	23.00	19.58	17.79	19.93
Total (Mysore State)	17.91	18.04	18.05	17.16	20.52	18.66	18.46	18.46	19.63	18.64

TABLE 37.

Birth Rates reported in Town Municipalities in Mysore State during the year 1931.

Below 5 per mille (0)—	24. Belur ...	17.1
Nil.	25. Koppa ..	17.2
Between 5 and 10 (3);—	26. Arsikere ...	17.5
1. Malvalli ...	27. Mugur ..	17.5
2. Bannur ...	28. Devanhalli ...	17.9
3. Bhadravathi ...	29. Chikballapur ...	18.6
Between 10 and 15 (10);—	30. Yelahanka ..	18.7
4. Jagalur ...	31. Mulbagal ...	19.1
5. Harnahalli ...	32. Closepet ...	19.4
6. French-Rocks ...	33. Tarikere ...	19.9
7. Hunsur ..	Between 20 and 25 (12);—	
8. Arkalgud ..	34. Chicknaikanahalli.	20.3
9. Gundlupet ...	35. Saligrama ...	20.5
10. Yedatore ...	36. Hiriur ...	21.3
11. Talakad ...	37. Nyamathi ...	21.4
12. Birur ...	38. Magadi ..	21.3
13. Heggaddevankote.	39. Sravanabelagola.	21.5
Between 15 and 20 (20)— <i>contd.</i>	40. Kunigal ...	21.7
14. Seringapatam ...	41. Hoskote ..	21.8
15. Melkote ...	42. Sidlaghatta ...	21.9
16. Sringeri ...	43. Channarayapatna.	22.4
17. Chickmagalur ...	44. Ajjampur ...	23.4
18. Kankanhalli ...	45. Tumkur ..	24.5
19. Chellakere ...	Between 25 and 30 (19)—	
20. Davanagere ...	46. Chennapatna ...	25.1
21. Kadur ...	47. Sagar ...	25.1
22. Shimoga ...	48. Shikaripur ...	25.4
23. Nanjungud ..	49. Ramasamudra ...	25.6
	50. Hassan ...	25.6

Between 25 and 30 (19)—			78. Madhugiri ...	32'1
51. Shiralkoppa ..	25'9		79. Thirthahalli ..	32'2
52. Mandya ...	26'0		80. Harihar ..	32'5
53. Mysore City ..	26'1		81. Hosdurga ..	33'3
54. Hole-Narasipur.	26'2		82. Bangalore City ..	33'4
55. Anekal ...	26'7		83. Goribidnur ..	33'4
56. Yelandur ...	27'2	Between 35 and 40 (12)—		
57. Sira ...	27'4	84. Honnali ..	35'0	
58. Koratagere ...	27'6	85. Mudigere ...	35'4	
59. Chintamani ..	27'9	86. Dodballapur ...	35'6	
60. Channagiri ...	28'1	87. Nagar ...	35'2	
61. Kolar ...	28'4	88. Pavagada ..	36'0	
62. Bagepalli ...	29'6	89. Chamrajnagar ..	36'6	
63. Gudibanda ...	29'6	90. Nelamangala ...	36'9	
64. Thayamagondlu.	29'8	91. T. Narasipur ...	37'0	
Between 30 and 35 (19)—			92. Sarjapur ...	37'0
65. Kumsi ...	30'1	93. Nagamangala ..	37'3	
66. Srinivaspur ...	30'1	94. Alur ...	37'6	
67. Krishnarajapete.	30'2	95. Kolar Gold Field.	38'4	
68. Turuvekere ...	30'4	Between 40 and 45 (1)—		
69. Chitaldrug ..	30'5	96. Periyapatna ...	41'3	
70. Malur ...	30'8	Between 45 and 50 (0)—		
71. Bowringpet ..	31'3	Nil,		
72. Molakalmuru ..	31'5	Between 50 and 55 (0)—		
73. Konnanur ..	31'5	Nil,		
74. Narasimarajapur	31'8	Between 55 and 60 (0)—		
75. Vadigenhalli ..	31'9	Nil,		
76. Saklespur ..	31'5	Between 60 and 65 (1)—		
77. Holalkere ...	32'1	97. Sorab ...	61'4	

(b) Deaths.

(i) MORTALITY STATISTICS.

During the year, 94,265 deaths, giving a death rate of 14·67 were reported against 88,903 with a death rate of 15·17 in the previous year.

As compared with previous year, there was some decrease in the number of deaths in Bangalore, Hassan, Shimoga, Chitaldrug, and Tumkur Districts, while in other districts, increases were registered, the largest rate of increase (1·88) occurring in Kadur District.

Table 38 shows that the monthly mortalities during the year were less than those of the corresponding months in the previous year except for May, August, September, October and equal for June. The highest monthly rate 1·37 was recorded in December and the lowest 1·00 in March, the corresponding rate in the previous years being 1·50 in January and 1·12 in February. It may generally

be stated that the mortality has been comparatively high from July to January.

Table 39 gives the death rates recorded in each district in the period 1922—1931.

Table 40 gives the number of deaths registered in the district, according to communities. It may be seen that the death rate for Musalmans varies from 8·28 to 18·93 per mille of Muslim population and the highest rate (18·93) was recorded in Mysore District as against the highest rate of 20·28 in the previous year. Kadur and Kolar Districts recorded the highest death rates, *viz.*, 17·03 and 15·99 for Hindus.

Table 41 gives the number of deaths registered in each district according to age and sex. It shows that in the age group 0—1, although the female population exceeds the male population, the number of deaths of male infants exceeded the number of female infant deaths in all districts without exception, as observed last year. The same is the case in the next three age groups, *viz.*, 1—5; 5—10; 10—15; with a few exceptions in some of the districts. But in the next age group 15—20, the change from excess of male deaths to excess of female deaths in all districts is rather striking, although the female population of this age group is less than the male population, the female deaths exceeded the male deaths in all districts. The same is true in next two age groups 20—30; and 30—40. In the age groups 40—50, 50—60 and 60 and over, male deaths again predominate. It may be observed here that female deaths predominate only in the child-bearing period 15—40.

The death rates in different age periods are similar to the rates of last year both among males and females as shown below in Table 42.

Death rates computed for City and Town Municipalities are classified in table 43. There are Towns in Mysore State with such low death rates as below 10. As in the case of Births the registration of deaths in 72 towns for which the computed death rates are below 20, is obviously highly defective and unsatisfactory. The town of T.-Narasipur has reported the highest death rate of 30·5 in the year under report.

TABLE 38.
Deaths registered in the Districts in each Month of the year 1931.
(As per Monthly Returns.)

District	January	February	March	April	May	June	July	August	September	October	November	December	Total	Ratio of deaths per 1,000 of population	
														1931	1930
Bangalore	1,213	1,033	1,041	1,039	1,027	1,190	1,634	1,517	1,217	1,479	1,352	1,532	15,274	14.13	16.13
Mysore	1,685	1,577	1,300	1,589	2,724	2,289	2,159	2,100	2,149	1,905	1,905	2,066	23,618	15.65	14.19
Hassan	738	541	562	550	587	550	724	850	912	786	547	494	7,841	12.13	14.07
Kadur	398	479	543	402	538	499	513	605	552	579	598	558	5,264	18.01	16.13
Shimoga	765	691	628	539	610	627	629	636	640	755	693	710	7,924	15.24	20.02
Chitaldrug	510	535	585	665	730	624	757	772	815	657	605	655	7,910	12.05	15.82
Tumkur	881	709	850	817	851	740	896	810	864	1,154	1,056	1,184	10,842	12.57	12.75
Kolar	1,145	946	890	1,055	1,221	1,164	1,013	1,349	1,472	1,334	1,319	1,604	14,552	17.15	16.30
Total (Mysore State)	7,535	6,511	6,389	6,656	8,283	7,683	8,325	8,669	8,621	8,710	8,075	8,803	94,265	14.67	15.17
Ratio of deaths per 1,000 in each month.	1.17	1.01	1.00	1.04	1.22	1.19	1.28	1.35	1.34	1.35	1.26	1.37	14.67	...	...
Corresponding ratio for previous year.	1.50	1.12	1.21	1.17	1.19	1.19	1.23	1.25	1.24	1.25	1.39	1.38	15.17	...	...

(c) Deaths.

TABLE 39.

Death rates recorded in each District in the ten years 1922-1931.

District	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
1	2	3	4	5	6	7	8	9	10	11
Bangalore ...	19.44	16.88	16.09	15.05	12.34	12.51	17.10	16.78	16.13	14.13
Mysore ...	10.68	14.47	13.64	18.02	13.23	12.78	13.98	11.67	14.19	15.65
Hassan ...	16.25	21.57	30.36	20.33	15.04	13.13	15.64	13.36	14.07	13.13
Kadur ...	14.32	19.62	27.42	23.05	20.50	18.26	20.10	14.59	16.13	18.01
Shimoga ...	15.26	19.62	23.55	20.18	24.45	21.26	19.67	17.78	20.02	15.24
Chitaldrug ...	10.38	11.85	18.48	15.81	14.68	12.32	12.49	15.41	15.82	12.05
Tumkur ...	12.74	14.38	14.73	14.64	12.09	12.31	14.58	14.22	12.75	12.57
Kolar ...	18.32	15.04	17.35	16.57	14.40	15.05	15.97	13.80	16.30	17.15
Total (Mysore State)	14.52	16.62	21.18	17.05	14.87	11.73	15.64	14.23	15.17	14.67

TABLE 40.
Deaths registered in the Districts according to Communities in the year 1931.

District	Population according to Census of 1931						Number of deaths registered				Ratio of deaths per 1,000 of population			
	Mohamme- dans	Hindus	Other classes	Total	6	7	8	9	10	11	12	13	Total	
													Moha- medans	Hindus	Other Classes	Total
1	2	3	4	5	6	7	8	9	10	11	12	13		
Bangalore	80,107	9,78,081	22,225	10,80,413	998	14,027	254	15,274	12.89	14.34	11.43	14.18		
Mysore	61,257	14,32,969	16,900	15,11,126	1,160	22,271	217	23,648	18.93	15.53	12.84	15.65		
Hassan	21,487	5,67,139	8,311	5,96,937	217	7,375	249	7,841	10.10	10.36	30.00	13.13		
Kadur	19,430	3,19,277	9,008	3,47,715	329	5,437	498	6,264	16.93	17.03	55.27	18.01		
Shimoga	40,960	4,64,350	14,677	5,19,987	429	7,284	261	7,924	10.47	15.71	10.96	15.24		
Chitaldrug	36,841	6,14,755	4,973	6,56,569	303	7,197	410	7,910	8.23	11.70	82.45	12.05		
Tumkur	44,890	8,06,673	10,342	8,61,405	373	10,270	199	10,842	8.40	12.73	19.24	12.57		
Kolar	65,531	7,58,632	24,874	8,49,037	927	12,132	1,508	14,562	14.15	15.99	60.43	17.15		
Total (Mysore State)	3,70,003	59,41,876	1,11,310	64,23,189	4,731	85,943	3,591	94,265	12.76	14.46	32.26	14.67		
Total for the previous year	...	...	...	...	4,892	79,375	4,636	88,903	15.51	14.66	35.96	15.17		

TABLE 41.
Deaths registered in the Districts according to Age and Sex in the year 1931.

District	Age and Sex											
	Under 1 year			1-5			5-10			10-15		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7	8	9	10	11	12	13
Bangalore	889	836	1,725	901	924	1,825	434	475	909	382	397	709
Mysore	723	525	1,248	1,306	1,199	2,505	926	908	1,834	748	718	1,466
Hassan	457	376	833	422	418	840	262	248	510	220	186	406
Kadur	352	282	634	323	316	639	196	197	393	159	183	342
Shimoga	525	430	955	513	453	966	243	236	479	225	222	447
Chitaldrug	589	486	1,075	576	538	1,114	269	273	542	182	159	341
Tumkur	813	714	1,527	633	543	1,176	283	267	550	274	188	462
Kolar	1,011	855	1,866	853	847	1,700	381	381	762	337	336	675
Total (Mysore State)	5,359	4,504	9,863	5,527	5,238	10,765	2,994	2,985	5,979	2,527	2,391	4,918
Population 1931	85,057	88,166	1,73,223	8,61,324	3,76,398	7,37,722	4,32,320	4,33,208	8,65,528	4,12,400	3,86,678	7,99,078
Ratio per 1,000 living	63.0	51.1	56.9	15.3	12.9	14.5	6.9	6.9	6.9	6.1	6.2	6.1

TABLE 41—contd.

District	Age and Sex											
	15—20			20—30			30—40			40—50		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
	14	15	16	17	18	19	20	21	22	23	24	25
Bangalore	407	517	924	692	923	1,615	644	736	1,380	665	570	1,235
Mysore	653	806	1,459	1,315	1,778	3,033	1,504	1,404	2,908	1,864	991	2,855
Hassan	202	220	422	503	642	1,145	508	516	1,024	397	323	720
Kadur	189	193	382	404	534	988	513	452	965	428	277	705
Shimoga	217	309	526	499	691	1,190	518	467	985	419	322	741
Chitaldrug	203	329	532	340	515	855	380	351	731	328	268	596
Tumkur	280	383	663	430	688	1,118	475	487	962	438	399	837
Kolar	283	377	660	638	757	1,395	642	622	1,264	591	505	1,096
Total (Mysore State)	2,434	3,134	5,568	4,821	6,526	11,349	5,184	5,025	10,219	4,630	3,655	8,285
Population 1931	2,98,872	2,30,098	5,88,880	5,53,905	5,82,364	11,36,269	4,80,801	4,11,738	8,92,539	3,25,455	2,59,987	5,85,443
Ratio per 1,000 living	8.2	10.8	9.4	8.9	11.2	9.9	10.7	12.2	11.4	14.2	13.9	14.1

TABLE 41—concl'd.

District	Age and Sex											
	50-60			60 upwards			All Ages					
	Male	Female	Total	Male	Female	Total	Male	Female	Total			
	26	27	28	29	30	31	32	33	34			
Bangalore	548	488	1,031	2,018	1,838	3,851	7,575	7,699	15,274			
Mysore	1,087	897	1,984	2,519	2,277	4,796	12,145	11,503	23,648			
Hassan	348	297	645	693	603	1,296	4,012	3,829	7,841			
Kadur	278	210	488	410	368	778	3,252	3,012	6,264			
Shimoga	363	247	610	529	496	1,025	4,051	3,873	7,924			
Chitaldrug	254	252	516	906	702	1,608	4,027	3,883	7,910			
Tumkur	386	361	747	1,465	1,335	3,400	5,383	5,365	10,842			
Kolar	539	471	1,010	2,186	1,948	4,134	7,461	7,101	14,562			
Total (Mysore State)	3,803	3,228	7,031	10,721	9,567	20,288	48,000	46,265	94,265			
Population 1931	1,79,598	1,65,944	3,45,542	1,54,911	1,44,054	2,98,965	32,84,554	31,38,635	64,23,189			
Ratio per 1,000 living	21.1	19.4	20.3	69.1	66.7	67.8	14.6	14.7	14.6			

TABLE 42.

Death rates in the different age groups in the year 1931.

Age period	Death rate					
	1931			1930		
	M.	F.	Total	M.	F.	Total
Under 1 year ..	63'0	51'1	57'0	75'4	61'1	68'1
1—5 years ...	15'3	12'9	14'6	22'1	19'5	20'8
5—10 do ...	6'9	6'9	6'9	7'4	6'9	7'1
10—15 do ...	6'1	6'2	6'1	6'4	6'8	6'6
15—20 do ..	8'2	10'8	9'4	9'4	12'3	10'8
20—30 do ...	8'9	11'2	9'2	8'9	11'1	10'0
30—40 do ...	10'7	12'2	11'4	10'2	12'0	11'0
40—50 do ...	14'2	13'9	14'1	13'9	12'4	13'2
50—60 do ...	21'1	19'4	17'4	17'2	16'7	16'9
60 and over ..	69'1	66'7	67'5	50'1	47'1	48'6
All Ages ...	14'6	14'7	14'6	15'2	15'1	15'2

TABLE 43.

Death rates reported in Town Municipalities in Mysore State during the year 1931.

Below 5 per mille (2)—			Between 15 and 20 (18)—		
1	Shikarpur	3.9	53	Harihar	14.8
2	Talakad	4.6	54	Chickballapur	14.8
Between 5 and 10 (19)—			55	Sorab	15.0
3	Magadi	5.4	56	Tirthahalli	15.3
4	Bannur	5.9	57	Chintamani	15.8
5	Sagar	5.9	58	Koratagere	15.8
6	Saligrama	6.9	59	Kumsi	15.8
7	Shimoga	6.9	60	Heggaddevankote	16.8
8	Nyamathi	7.1	61	Turuvekere	16.8
9	Tyamadondlu	7.0	62	Yelahanka	16.9
10	Sira	7.4	63	Koppa	17.2
11	Bhadravathi	7.6	64	Madhugiri	17.4
12	Kankanhalli	7.7	65	Nagar	17.6
13	Malavalli	8.2	66	Narasimharajapur	17.9
14	Davangere	8.3	67	Hassan	17.9
15	Malur	8.4	68	Yedatore	17.9
16	Harnahalli	8.5	69	Anekal	18.5
17	Mulbagal	8.9	70	Devanhalli	18.7
18	Konanur	9.1	71	Melkote	18.7
19	Dodballapur	9.6	72	Sarjapur	19.1
20	Chennagiri	9.8	Between 20 and 25 (11)—		
21	Chitaldrug	9.9	73	Molakalmuru	20.0
Between 10 and 15 (33)—			74	Chickmagalur	20.1
22	Hosadurga	10.5	75	Mugur	20.7
23	Birur	10.6	76	Nanjangud	20.8
24	Kunigal	10.8	77	Kolar	20.8
25	Mandya	10.9	78	Chennapatna	21.6
26	Jagalur	11.1	79	Arsikere	22.9
27	Closepet	11.2	80	Bowringpet	23.2
28	Sringeri	11.3	81	Hiriyur	23.6
29	Sravanabelgola	11.4	82	Arkalgud	24.8
30	Ramasamudra	11.6	83	Bangalore City	24.9
31	Holalkere	11.7	Between 25 and 30 (9)—		
32	Goribidnur	11.9	84	Hole-Narsipur	25.2
33	French-Rocks	11.9	85	Periyapatna	26.1
34	Nelamangala	12.0	86	Ajjampur	27.1
35	Kadur	12.0	87	Kolar Gold Field	27.2
36	Shiralkoppa	12.2	88	Gundlupet	27.9
37	Chellakere	12.2	89	Hunsur	27.8
38	Srinivasapur	12.8	90	Yelandur	28.0
39	Tumkur	12.9	91	Hoskote	28.6
40	Nagamangala	13.2	92	Alur	29.5
41	Belur	13.3	Between 30 and 35 (3)—		
42	Gudibanda	13.5	93	Mysore City	30.2
43	Seringapatam	13.7	94	Mudigere	31.1
44	Honnali	13.8	95	Vadigenhalli	32.2
45	Pavagada	13.8	Between 35 and 40 (2)—		
46	Bagepalli	13.9	96	Krishnarajpet	35.6
47	Chamarajanagar	14.3	97	T.-Narasipur	39.5
48	Tarikere	14.1			
49	Chicknaikanahalli	14.2			
50	Chennarayapatna	14.5			
51	Saklespur	14.7			
52	Sidlaghatta	14.7			

(ii) **Infantile Mortality.**

During the year, 9,863 deaths of infants under one year of age were registered against 10,810 in the previous year. The infant mortality rates in the two years were 82.3 and 94.0 respectively per thousand births, figures too good to be true. Sample surveys made showed rates varying from 150 for rural areas to 300 in city areas.

Reported figures of deaths of infants under one year of age are given for each district in Table 44. As compared with last year, the rate has decreased in all districts except Hassan and Kadur. In Mysore District, the rate for the year was 50.5, a rate hardly reached by any advanced country in the world. A serious effort should therefore be made to overhaul the reporting agency.

Table 45 gives the infant mortality rates for each district in the period 1922-1931.

(iii) **GENERAL HISTORY OF CHIEF DISEASES.***

Table 46 gives the number of deaths reported under each of the chief causes listed, with the corresponding percentages on total deaths.

Table 47 gives the number of deaths from each of these chief causes reported in the districts and Table 48 contains the statistics of deaths with death rates under the different causes in City and Town Municipalities.

* Until such time as the reporting of Vital Statistics is recognised in the districts, the following rule may be observed in respect of accuracy of reported statistics.

"In case of City Municipalities, select the figures supplied by the Health Officers, in the case of villages, the figures compiled in the Bureau of Vital Statistics from the daily returns of the Presidents of District Boards, and in the case of districts, those furnished by the Presidents of District Boards."

TABLE 44.

Deaths of Infants under one year of age reported in the districts for each month of the year 1931.

District	January	February	March	April	May	June	July	August	September	October	November	December	Total		Ratio of Infant deaths per 1,000 births		Mean of previous 5 years	No. of male Infant deaths for every 100 female infant	
	1931	1930	Male	Female	Total	1931	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931			
																			1931	1930
Bangalore	156	118	118	132	134	123	173	158	122	156	141	188	889	886	1,725	73.6	103.9	91.6	106
Mysore	128	74	69	76	94	121	86	108	99	109	126	163	723	525	1,248	50.5	53.1	56.6	136
Hassan	79	78	46	54	72	59	70	81	78	69	70	77	457	376	833	102.8	100.6	90.6	121
Kadur	30	38	45	40	51	63	74	70	47	63	56	57	352	282	634	112.1	86.3	80.9	125
Shimoga	94	79	65	67	91	66	100	104	67	92	58	72	525	430	955	87.1	93.9	116.6	122
Chitaldrug	63	89	77	102	108	90	95	105	103	49	78	116	559	486	1,075	79.6	101.1	96.4	121
Tumkur	106	105	100	87	108	114	103	113	117	202	172	200	813	714	1,527	91.6	94.2	92.6	113
Kolar	162	115	120	112	127	140	169	172	169	166	159	255	1,011	855	1,866	110.2	143.3	115.7	118
Total (Mysore State) ...	823	636	640	670	780	782	870	906	802	906	860	1,128	5,359	4,504	9,863	82.3	94.0	90.9	119
Ratio of infant deaths per 1,000 births ...	95.8	83.9	73.6	74.2	76.8	72.6	76.3	87.2	74.5	78.4	83.4	118.1	87.1	77.2	82.3	...	...	...	...

TABLE 45.

Rates of Infant Mortality in each district in the ten years 1922-1931.

District	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
Bangalore ...	95.1	94.5	128.1	105.3	77.6	79.2	100.0	97.6	103.9	73.6
Mysore ...	51.1	58.4	77.1	62.8	47.6	46.6	78.2	57.4	53.1	50.5
Hassan ...	92.2	105.2	146.7	127.3	103.1	74.8	96.8	79.4	100.6	102.8
Kadur ...	111.6	121.3	162.9	132.0	124.5	103.9	94.2	76.4	86.3	112.1
Shimoga ...	98.9	107.2	127.4	145.7	147.6	128.1	115.6	108.2	93.9	87.1
Chitaldrug ...	77.8	88.7	108.1	102.1	94.2	85.0	98.0	104.0	101.1	79.8
Tumkur ...	91.1	72.7	104.1	85.3	88.9	86.5	91.6	101.9	94.2	91.6
Kolar ...	100.4	104.3	124.9	126.1	105.7	116.0	107.1	106.3	143.3	110.2
Total Mysore State.	85.9	88.1	114.5	102.9	88.1	85.0	96.8	90.3	94.0	82.3

TABLE 46.

Number of deaths reported from the following chief diseases in the year 1931.

Disease	Number of deaths	Percentage on total deaths	
		1931	1930
Plague ...	5,715	6.1	7.7
Small-pox ...	2,296	2.4	6.9
Cholera ..	6,385	6.7	0.6
Fevers ...	40,399	42.8	39.6
Dysentery and Diarrhoea ...	3,899	4.1	4.6
Respiratory Diseases ...	3,239	3.4	2.7
Injuries ...	1,552	1.6	1.3
All other causes ...	30,780	32.6	36.6
Total (Mysore State) ...	94,265	100.0	100.0

TABLE 47.
Deaths reported from Plague, Small-pox, Cholera and from other chief causes of death during the year 1931.

District	Epidemic Diseases			Fever	Dysentery and Diarrhoea	Respiratory Diseases	Injuries				All other causes	Total	
	Plague	Small-pox	Cholera				Suicide		Wound or accidents	Snake bite or killed by wild beasts			Total
							M.	F.					
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Bangalore	1,572	256	538	3,960	811	1,251	17	14	168	35	234	6,652	15,274
Mysore	1,584	468	3,772	9,053	1,256	527	23	31	225	57	336	6,652	23,648
Hassan	853	371	273	4,182	155	91	13	14	75	6	108	1,808	7,841
Kadur	201	76	353	3,784	126	101	6	3	20	5	34	1,589	6,261
Shimoga	225	290	385	3,349	455	323	13	17	54	14	98	2,859	7,924
Chitaldrug	75	441	532	3,825	175	180	33	24	72	80	159	2,473	7,910
Tumkur	378	157	395	5,576	327	195	10	6	144	55	215	3,599	10,842
Kolar	627	297	87	6,670	594	571	7	5	315	41	368	5,148	14,562
Total (Mysore State)	5,715	2,296	6,385	40,399	3,899	3,239	122	114	1,073	243	1,552	30,780	94,265

TABLE 48.
Statement of Births and Deaths under Different Causes registered in City and Town Municipalities during the year 1931.

Serial Number	Municipalities Major and Minor	Population according to Census of 1931			Births			Deaths						
		Male	Female	Total	Male	Female	Total	Birth Rate	No. of deaths registered			Death Rate		
									Male	Female	Total		Mean of previous five years	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
BANGALORE DISTRICT.														
1	Bangalore City	91,680	80,677	172,357	2,772	2,995	5,767	33.4	2,118	2,172	4,290	24.9	3,802	22.03
2	Channarayana	7,151	6,707	13,858	200	149	349	25.1	139	151	290	21.6	118	8.08
3	Dodballapur	4,509	4,344	8,853	165	150	315	35.6	34	51	85	9.6	80	9.03
4	Devanahalli	3,132	3,020	6,152	57	53	110	17.9	57	58	115	18.7	82	13.32
5	Kankanhalli	3,732	3,471	7,203	63	56	119	16.5	27	29	56	7.7	57	7.9
6	Anekal	3,102	3,205	6,307	88	81	169	26.7	54	63	117	18.5	91	14.4
7	Closetpet	3,445	3,126	6,571	69	59	128	19.4	44	30	74	11.2	64	9.8
8	Magadi	3,127	3,208	6,335	63	72	135	21.3	20	14	34	5.4	45	7.1
9	Hoskote	2,578	2,882	5,460	57	51	108	21.8	50	92	142	28.6	87	17.5
10	Vadigenhalli	1,910	1,910	3,820	57	65	122	31.9	50	73	123	32.2	55	14.4
11	Tyanganondlu	1,945	1,878	3,823	62	52	114	29.8	14	13	27	7.0	81	21.2
12	Sarjapur	1,541	1,432	2,973	51	59	110	37.0	32	26	57	19.1	70	23.6
13	Yelahanka	1,678	1,637	3,315	42	20	62	18.7	30	26	56	16.9	43	12.9
14	Nelamangala	1,977	1,843	3,820	79	71	141	36.9	21	22	46	12.0	56	14.4
15	Sulebele	849	842	1,691	79	71	141	Figures not furnished.	21	22	46	12.0	42	24.9
16	Bangalore District R.C.	321,229	407,146	828,375	8,056	7,613	15,669	16.9	4,882	4,880	9,762	11.7	8,811	12.2
	Total	453,585	526,828	10,80,413	11,872	11,546	23,418	21.6	7,575	7,699	15,274	14.1	13,577	14.9
MYSORE DISTRICT.														
17	Mysore City	56,772	50,870	107,642	1,415	1,388	2,803	26.1	1,606	1,634	3,240	30.2	2,599	24.2
18	Seringapatam	2,155	3,145	5,300	45	51	96	15.2	39	48	87	13.7	143	22.7
19	Nanjangud	4,277	3,938	8,215	70	70	140	17.0	84	87	171	20.8	74	9.0
20	Chamrajnagar	4,981	4,607	9,588	189	161	350	36.6	75	62	137	14.3	105	11.0
21	Melvalli	4,302	4,046	8,348	34	26	60	7.2	51	18	69	8.2	89	10.6
22	Hunsur	3,461	3,313	6,774	51	33	84	12.4	83	102	185	27.3	126	18.6

TABLE 48.—contd.

Serial Number	Municipalities Major and Minor	Cause of Death														Deaths per 1,00,000 of population								
		Cause of Death							Injuries							All other causes	Plague	Smallpox	Cholera	Fever	Dysentery and Diarrhoea	Respiratory diseases	Injuries	All other Causes
		Plague	Small-pox	(holera	Fever	Dysentery and Diarrhoea	Respiratory Diseases	Suicide			Wounds			Accidents or Snake bite or killed by wild beasts	Total									
								Male	Female	Total	Male	Female	Total											
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36				
BANGALORE DISTRICT.																								
1	Bangalore City	45	7	30	452	428	963	...	...	38	5	43	2,322	26	4	18	262	248	559	25	1,346	
2	Channarayana	110	...	28	33	13	8	1	...	...	...	4	94	794	...	202	237	94	57	29	678
3	Deballapur	...	...	20	40	7	3	...	...	1	...	1	14	...	...	226	474	78	34	11	158
4	Devanahalli	...	6	...	18	19	2	...	2	1	...	2	55	211	...	...	292	309	32	82	894	
5	Kankanhalli	...	...	...	12	8	...	...	1	...	...	1	38	27	...	...	166	41	...	13	527
6	Anekal	33	2	...	20	2	4	...	...	...	...	...	56	523	...	...	317	31	63	...	888
7	Closepet	1	...	...	10	1	...	...	...	...	1	61	15	15	...	...	152	15	...	15	928
8	Magadi	1	...	1	15	...	...	...	...	...	...	17	15	15	...	15	236	...	...	...	268
9	Hoskote	29	...	15	26	4	3	1	...	...	1	62	585	585	...	302	564	80	60	20	1,248	
10	Vadigenhalli	38	20	...	15	1	...	...	1	1	...	48	995	995	...	...	393	26	...	26	1,255
11	Tyranagondlu	...	...	...	14	3	...	...	...	...	...	10	10	...	...	...	366	78	...	...	261
12	Sarjapur	...	3	...	18	4	3	...	...	...	...	29	29	...	...	...	605	134	101	...	975
13	Yelahanka	23	...	...	10	...	4	...	5	5	...	14	14	694	...	...	301	120	120	151	422
14	Nelamangla	...	...	1	13	...	2	...	1	1	...	28	28	...	...	26	340	26	52	26	733
15	Sulebele		
16	Bangalore District R. C.	1,277	218	443	3,262	325	259	13	18	119	29	171	3,804	154	25	53	393	39	31	21	459			
	TOTAL	1,572	256	538	3,960	811	1251	17	14	168	35	234	6,652	145	23	49	366	75	116	21	615			
MYSORE DISTRICT.																								
17	Mysore City	109	10	269	562	352	90	1	...	10	1	12	1,836	102	9	251	524	328	84	11	1,713			
18	Seringapatam	...	...	23	25	6	4	2	...	2	...	2	27	...	...	365	397	95	63	32	428
19	Nanjangud	...	...	44	22	31	12	3	...	3	...	3	59	...	...	535	268	377	146	36	718
20	Chamrajnagar	12	6	7	37	5	1	6	...	6	...	6	63	126	63	73	398	52	10	63	660			
21	Malvalli	...	...	49	49	1	6	...	...	...	...	...	13	...	...	...	584	12	72	...	156
22	Hunsur	28	9	47	38	8	10	1	...	...	1	44	44	413	136	694	561	117	148	14	649	

TABLE 48—contd.

Serial Number	Town Municipalities Major and Minor	Population according to Census of 1921			Births			Deaths							
		Male	Female	Total	Male	Female	Total	Birth Rate	No. of deaths registered						
									Mean of previous five years					Death Rate	Number of Death	Death Rate
1	2	3	4	5	6	7	8	9	10	11	12	13	14				15
MYSORE DISTRICT—contd.															
23	Bannur	2,525	2,881	4,906	23	19	42	8.5	14	17	31	5.9	71	14.5	
24	Ramasandra	2,466	2,524	4,990	61	67	128	25.6	34	24	58	11.6	...	...
25	Gundlupet	3,145	2,614	5,759	36	37	73	12.6	94	67	161	27.9	85	14.8	
26	Talakadu	2,243	2,278	4,521	29	30	59	13.0	8	18	21	4.6	35	7.7	
27	Mugur	1,946	1,995	3,941	35	34	69	17.5	42	40	82	20.7	61	15.5	
28	T. Narsipur	1,466	1,340	2,806	61	43	104	37.0	61	50	111	39.5	43	15.4	
29	Nagamangala	1,892	1,888	3,780	63	78	141	37.3	30	20	50	13.2	65	17.2	
30	Periyapatna	1,635	1,581	3,216	63	70	133	41.3	47	87	84	26.1	71	22.1	
31	Saligrāma	2,090	2,073	4,163	37	48	85	20.4	15	14	29	6.9	81	19.4	
32	Melkote	1,338	1,395	2,733	24	18	42	15.4	22	29	51	18.9	61	22.3	
33	Saragur	1,027	1,042	2,069	...	...	...	Figures not furnished.	...	...	...	...	...	...
34	Maddur	1,608	1,485	3,093	...	...	...	Figures not furnished.	...	...	...	...	...	...
35	French-Rocks	1,681	1,885	3,016	22	14	36	11.9	24	11	35	11.9	62	20.5	
36	Yedatore	1,758	1,591	3,349	25	18	43	12.8	39	21	60	17.9	34	10.1	
37	Yelandur	1,698	1,765	3,453	55	39	94	27.2	44	53	97	28.0	47	13.6	
38	Heggaddevankote	657	593	1,250	6	11	17	13.6	14	7	21	16.8	31	24.8	
39	Krishnarajapet	1,349	1,401	2,750	48	35	83	30.2	43	55	98	35.6	72	26.1	
40	Mandya	3,160	2,798	5,958	84	71	155	26.0	22	43	65	10.9	52	8.7	
41	Mysore District R. C.	650,085	648,963	12,99,053	10,238	9,618	19,856	15.3	9,654	9,051	18,705	14.4	14,648	12.0	
	Total	760,610	750,516	15,11,126	12,714	11,979	24,693	16.3	12,145	11,503	23,648	15.6	18,264	13.0	
HASSAN DISTRICT.															
42	Hassan	5,468	5,076	10,544	130	140	270	25.6	89	100	189	17.9	129	12.2	
43	Hole-Narsipur	4,166	4,072	8,238	102	114	216	26.2	92	116	208	25.2	156	18.9	
44	Arsikere	3,717	2,894	6,611	58	58	116	17.5	86	66	152	22.9	81	12.2	

TABLE 48—contd.

Serial Number	Town Municipalities Major and Minor	Causes of Death											Deaths per 1,00,000 of population												
		Plague	Small-pox	Cholera	Fever	Dysentery and Diarrhoea	Respiratory Diseases	Suicide		Injuries		All other causes	Plague	Small-pox	Cholera	Fever	Dysentery and Diarrhoea	Respiratory diseases	Injuries	All other Causes					
								Male	Female	Total	Wounds or Accidents										Snake bite or killed by wild beasts	Total			
23	Mysore DISTRICT—contd.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36			
24	Bannur	...	8	...	23	1	1	...	...	...	...	...	1	8	...	65	...	468	20	20	...	20	65	
25	Hamasmudra	...	...	12	31	...	1	...	...	...	...	1	...	13	...	...	240	...	...	20	...	20	260	
26	Grundlapet	48	9	2	48	4	...	...	...	...	2	...	2	48	888	156	31	838	69	...	...	...	34	838
27	Talakadu	...	4	...	10	...	...	...	...	...	1	...	1	6	...	88	...	221	...	...	...	...	22	133
28	Mugur	...	...	33	14	...	...	...	...	...	2	...	2	29	...	...	887	355	102	...	...	...	51	756
29	T.-Narsipur	...	...	58	9	...	5	...	...	...	2	...	2	21	...	...	2063	321	86	174	...	...	...	136
30	Nagamsangala	...	1	5	10	8	3	...	...	...	...	...	...	21	...	26	132	265	212	79	...	...	...	555
31	Periyapatna	12	...	...	54	4	...	...	...	...	...	...	...	14	378	...	...	1679	124	...	...	...	...	435
32	Saligrana	...	...	...	8	2	1	...	...	...	...	...	...	18	...	...	...	192	48	24	...	...	...	432
33	Melkote	...	...	2	16	2	4	...	...	...	1	...	2	25	...	...	73	571	73	146	...	...	...	914
34	Saragur
35	Maddur
36	French-Rocks	1	...	8	15	2	2	...	...	...	...	...	...	7	33	...	265	497	66	66	...	...	...	232
37	Yedatore	5	...	29	13	2	...	...	...	...	2	...	2	9	149	...	866	388	59	...	...	...	...	268
38	Yelandur	8	...	23	9	2	4	...	...	...	...	...	...	51	231	...	666	260	57	115	...	...	...	1477
39	Heggadevankote	...	...	...	7	...	3	...	...	...	...	...	...	11	...	...	...	560	...	240	...	...	...	880
40	Krishnaraajpet	...	1	65	19	...	4	1	8	...	36	2369	691	...	145	86	291
41	Mandya	15	...	3	25	...	1	1	...	2	19	252	...	50	419	...	17	34	818
41	Mysore District R. C.	1,346	425	3,142	8,069	8,821	375	323	26	49	193	155	207	4,290	103	32	242	617	62	29	29	23	330		
	Total	1,584	468	3,772	9,053	1,256	527	23	31	54	225	57	336	6,652	105	31	249	599	83	35	22	22	440		
42	HASSAN DISTRICT.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
43	Hassan	14	8	3	12	2	24	1	...	1	130	132	28	28	113	19	227	9	9	1233
44	Hole-Narsipur	21	1	26	29	26	13	2	...	3	89	255	12	315	352	315	158	36	36	1080
44	Arsikere	8	18	29	46	7	5	6	...	7	32	121	272	435	696	106	75	106	106	484

TABLE 48.—contd.

Serial Number	Municipalities Major and Minor	Population according to census of 1931					Births			Deaths				
		Male	Female	Total	Male	Female	Total	Birth Rate	No. of deaths registered			Mean of previous five years		
									Male	Female	Total		Male	Female	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HASSAN DISTRICT.														
46	Arkalnad	2,481	2,427	4,908	30	31	61	12.5	53	69	122	24.8	95	19.3
46	Chennarayapatna	1,733	1,740	3,473	88	39	77	22.4	81	19	50	14.5	57	16.4
47	Belur	1,654	1,614	3,278	32	24	56	17.1	25	20	45	13.3	42	12.8
48	Sravanabelgola	1,197	1,174	2,371	29	22	51	21.5	18	9	27	11.4	23	9.7
49	Saklespur	1,725	1,200	2,925	56	36	92	31.5	20	23	43	14.7	147	16.1
50	Harnahalli	1,248	1,211	2,459	13	15	28	11.4	12	9	21	8.5	89	15.9
51	Alur	1,041	955	1,996	34	41	75	37.6	32	27	59	29.5	50	25.0
52	Konanur	1,458	1,179	2,637	47	46	93	31.5	10	14	24	9.1	34	12.9
53	Banavar	1,627	1,500	3,127	3,562	3,401	6,963	Figures not furnished.						
54	Hassan District, R. C.	273,221	271,149	544,370	12.8	3,544	3,544	12.8	3,544	3,357	6,901	12.6	7,325	13.6
	TOTAL	300,746	296,191	596,937	4,131	3,967	8,098	13.5	4,012	3,829	7,841	13.1	8,322	14.2
KADUR DISTRICT.														
55	Chikmagalur	6,741	5,484	12,225	99	90	189	15.4	141	106	247	20.1	182	14.8
56	Tarikere	4,293	3,918	8,211	89	75	164	19.9	62	54	116	14.1	133	18.6
57	Birur	2,628	2,481	5,109	30	38	68	13.3	24	29	53	10.6	47	9.2
58	Kadur	1,935	1,587	3,522	38	26	64	16.7	25	21	46	12.0	44	11.5
59	Ajjampur	1,700	1,555	3,255	39	37	76	23.4	47	41	88	27.1	23	6.9
60	Narsimharajapura	1,212	1,020	2,232	39	32	71	31.8	15	25	40	17.9	37	16.6
61	Mudgere	911	636	1,607	29	28	57	35.4	27	23	50	31.1	54	33.3
62	Koppa	536	335	871	7	8	15	17.2	8	7	15	17.2	31	35.6
63	Sringeri	1,872	1,207	3,079	18	22	40	15.5	14	15	29	11.3	55	21.3
64	Shivane	1,171	1,157	2,328	2,530	2,384	4,914	Figures not furnished.						
65	Kadur District R. C.	161,890	143,586	305,476	2,918	2,740	5,658	16.0	2,889	2,691	5,580	18.2	5,357	17.9
	TOTAL	184,389	163,326	347,715	2,918	2,740	5,658	16.2	3,252	3,012	6,264	18.0	6,017	17.6
SHIMOGA DISTRICT.														
66	Shimoga	11,055	9,605	20,661	188	162	350	16.9	84	58	142	6.9	273	13.4
67	Shikarpur	2,480	2,392	4,872	65	59	124	25.4	12	7	19	8.9	73	14.9
68	Sagar	3,316	2,380	5,696	71	72	143	25.1	16	18	34	5.9	74	12.9

TABLE 48—contd.

Serial Number	Municipalities Major and Minor	Population according to Census 1931						Births			Deaths																
		3		4		5		6		7		8		9		10		11		12		13		14		15	
		Male	Female	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
69	CHENNAIGIRI	1,912	1,827	3,739	58	48	106	28.1	22	15	37	9.8	85	22.7													
70	Nyamati	1,704	1,658	3,362	38	39	72	21.4	10	14	24	7.1	66	19.6													
71	Tirthaballi	1,991	1,547	3,538	69	45	114	32.2	33	21	54	15.3	67	18.9													
72	Bhadravati	5,313	3,824	9,137	44	46	90	9.8	37	33	70	7.6	85	9.3													
73	Shiralkoppa	1,498	1,357	2,855	43	31	74	26.9	20	15	35	12.2	32	11.2													
74	Kumsi	1,128	1,032	2,160	35	30	65	30.1	17	17	34	15.8	49	22.2													
75	Sorab	826	836	1,661	60	42	102	61.4	18	20	38	15.0	38	22.8													
76	Honnali	2,021	1,947	3,968	78	61	139	35.0	36	27	63	13.8	72	18.1													
77	Nager	590	487	1,077	21	17	38	35.2	12	7	19	17.6	26	24.1													
78	Shimoga District, R. C.	241,147	216,114	457,261	5,015	4,522	9,537	20.8	3,785	3,641	7,376	16.1	9,218	20.8													
	TOTAL	274,981	245,006	519,987	5,780	5,174	10,954	21.6	4,051	3,873	7,924	15.2	10,158	20.6													
79	CHITALDRUG DISTRICT, Davangere	12,069	11,086	23,155	205	184	389	16.7	84	108	192	8.3	287	25.9													
80	Chitaldrug	5,640	5,092	10,732	171	157	328	30.5	60	46	106	9.9	170	15.8													
81	Haribar	3,527	3,357	6,884	129	95	224	32.5	56	46	102	14.8	87	12.6													
82	Holakere	1,652	1,591	3,243	61	43	104	32.1	22	16	38	11.7	54	16.6													
83	Jagalur	1,879	1,828	3,707	17	22	39	10.5	18	23	41	11.1	34	9.2													
84	Molakalmuru	1,751	1,580	3,331	53	52	105	31.5	35	32	67	20.0	58	13.4													
85	Saikanhatti	1,505	1,397	2,902	26	30	56	not furnished	25	29	54	23.6	48	17.5													
86	Hiriyur	1,436	1,312	2,748	34	30	64	16.6	22	25	47	12.2	33	8.6													
87	Cheilakere	2,055	1,791	3,846	67	50	117	33.3	20	17	37	10.5	39	11.1													
88	Hosdurga	1,804	1,708	3,512	67	50	117	33.3	20	17	37	10.5	39	11.1													
89	Chitaldrug R. C.	303,468	289,041	592,509	6,170	5,864	12,034	20.8	3,674	3,541	7,215	12.2	7,107	12.6													
	TOTAL	336,783	319,783	656,566	6,935	6,527	13,462	20.5	4,027	3,883	7,910	12.7	7,958	13.8													

TABLE 48—*contd.*

Serial Number	Municipalities Major and Minor	Population according to Census of 1921						Births			Deaths								
		Male		Female		Total	Male	Female	Total	Births Rate	No. of deaths registered		Mean of previous five years						
		3	4	5	6	7	8	9	10	11	12	13	14	15					
90	TUMKUR DISTRICT,																		
91	Tumkur	9,880	8,360	18,196	232	215	447	24.5	134	102	236	12.9	238	13.1					
92	Sira	3,506	3,388	6,894	101	88	189	27.4	28	23	51	7.4	60	8.7					
93	Chiknayaikanhalli	3,316	3,296	6,612	77	57	134	20.3	55	29	94	14.2	88	13.3					
94	Madhugari	3,060	2,805	5,865	97	91	188	32.1	58	44	102	17.4	77	13.2					
95	Gubbi	2,884	2,779	5,663	52	56	108	19.0	54	48	97	17.1	88	15.5					
96	Tiptur	2,798	2,362	5,160			Figures not furnished						93	18.0					
97	Kanigal	2,757	2,384	5,141	72	44	116	21.7	30	28	58	10.8	53	9.9					
98	Koratagere	1,494	1,485	2,969	42	40	82	27.6	23	24	37	15.8	47	15.8					
99	Turuvekre	1,078	1,058	2,136	29	36	65	30.4	18	18	36	16.8	21	9.8					
100	Pavagada	1,419	1,331	2,750	36	63	99	36.0	20	18	38	13.8	47	17.1					
	Tumkur District R. C.	406,362	392,813	799,775	7,767	7,360	15,127	18.9	5,057	5,026	10,083	12.6	8,377	11.8					
	Total	439,144	422,261	861,405	8,505	8,050	16,555	19.2	5,477	5,365	10,842	12.5	9,908	11.9					
101	KOLAR DISTRICT,																		
102	Kolar Gold Field	45,051	40,052	85,103	1,656	1,611	3,267	38.4	1,278	1,027	2,300	27.2	2,152	25.3					
103	Kolar	8,196	7,965	16,161	229	230	459	28.4	163	174	337	20.8	178	11.0					
104	Chikkallapur	5,833	5,675	11,508	109	106	215	18.6	89	82	171	14.8	129	11.2					
105	Sidlaghatta	3,220	3,148	6,368	75	65	140	21.9	45	49	94	14.7	82	12.6					
106	Bowringpet	3,411	3,257	6,668	109	100	209	31.3	80	75	155	23.2	87	13.0					
107	Mulbagal	3,055	3,076	6,131	57	60	117	19.1	32	23	55	8.9	64	10.4					
108	Chintamani	2,546	2,439	4,985	77	62	139	27.9	43	36	79	15.8	88	17.6					
109	Srinivasapur	1,927	1,885	3,812	52	63	115	30.1	30	19	49	12.3	47	12.3					
110	Gudibanda	2,382	2,224	4,606	89	65	154	33.4	38	17	55	11.9	47	10.2					
111	Malur	1,460	1,343	2,803	42	41	83	29.6	19	19	38	13.5	54	19.2					
112	Bagcopalli	2,251	2,219	4,770	72	75	147	30.8	26	14	40	8.4	52	10.7					
113	Kolar District R. C.	1,185	1,043	2,228	35	31	66	29.6	17	14	31	13.9	23	10.3					
	Total	353,496	340,396	693,894	6,010	5,803	11,813	17.0	5,606	5,352	11,158	16.7	9,020	13.0					
	Total	434,313	414,724	849,037	8,612	8,312	16,924	19.9	7,461	7,101	14,562	17.1	12,036	14.2					
	Total of Municipalities	473,056	429,420	902,476	12,119	11,780	23,839	26.4	8,959	8,526	17,485	19.3	15,694	20.3					
	Total of Rural Circles	2,811,498	2,793,215	5,520,713	49,348	46,565	95,913	17.3	39,041	37,733	76,780	13.9	71,116	13.9					
	Total (Mysore State)	3,284,554	3,138,635	6,423,189	61,467	58,295	119,762	18.6	48,000	46,265	94,265	14.6	87,026	14.8					

TABLE 48—concl'd.

Serial Number	Town Municipalities Major and Minor	Cause of Death												Deaths per 1,00,000 of population													
		Plague		Small-pox		Cholera		Fever		Dysentery and Diarrhoea		Respiratory Diseases		Injuries		All other causes		Plague	Small-pox	Cholera	Fever	Dysentery and Diarrhoea	Respiratory Diseases	Injuries	All other causes		
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female									Male	Female
90	TUMKUR DISTRICT	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
91	Tumkur	8	1	2	34	11	17	...	...	...	5	1	6	160	44	14	...	186	60	98	33	...	...	...	...	878
92	Sira	2	1	2	18	...	...	...	...	...	2	...	2	27	...	...	29	261	...	14	...	...	...	...	...	292
93	Chikayakanhalli	...	...	...	29	13	3	...	...	...	3	...	4	43	30	...	...	438	198	45	...	...	...	...	...	659
94	Madhugiri	...	8	...	35	5	4	...	...	...	1	...	1	49	...	136	...	...	85	68	...	...	...	...	...	885
95	Gubbi	19	...	1	50	1	...	...	...	...	...	...	...	26	338	...	...	...	18	...	...	...	...	...	...	459
96	Tiptur
97	Kunigal	...	...	12	12	...	...	...	...	...	1	4	5	29	...	...	224	224	...	...	...	...	...	...	...	543
98	Koratagore	...	...	10	25	...	...	...	...	...	2	1	3	9	...	...	366	842	...	...	...	...	...	...	...	803
99	Turuvekere	...	...	2	26	...	...	...	...	...	...	...	...	8	...	...	98	1217	...	...	...	...	...	...	...	395
100	Pavagada	349	148	368	5,339	297	170	10	6	16	129	48	193	3,219	43	18	46	291	...	...	...	...	...	...	...	1055
	Tumkur District R. C.	378	157	395	5,576	327	195	10	6	16	144	55	215	3,599	44	18	45	646	37	22	24	24	24	24	24	402	
101	Total	51	3	...	183	304	438	1	3	4	172	10	186	1,135	59	8	...	215	375	514	218	...	...	...	...	1,333
102	KOLAR DISTRICT.	105	10	...	77	6	2	1	...	1	1	1	3	134	649	61	...	476	37	12	16	...	...	...	...	829
103	Kolar Gold Field	7	...	...	52	4	...	...	...	...	5	...	5	103	61	...	...	452	34	...	43	...	...	...	...	895
104	Chikballapur	...	...	...	43	9	1	...	...	...	...	...	...	41	...	...	...	675	141	15	...	...	...	...	...	644
105	Sidlaghatta	14	1	...	68	9	9	1	...	1	...	1	2	52	209	15	...	1019	135	135	...	...	...	...	...	779
106	Powringpet	3	...	...	35	1	1	...	...	...	...	...	...	15	49	...	...	571	16	16	...	...	...	...	...	244
107	Mulbagal	8	...	...	23	1	...	...	...	...	2	...	2	45	160	...	...	461	20	40	...	...	...	...	...	902
108	Chintamani	...	...	...	24	5	1	...	...	...	...	...	...	19	...	...	...	629	131	26	...	...	...	...	...	498
109	Srinivasapur	...	...	...	30	3	5	...	...	...	...	...	...	17	...	...	...	651	65	108	...	...	...	...	...	360
110	Goribidnur	...	...	...	20	2	...	...	...	...	2	...	2	11	107	...	...	713	71	...	...	...	...	...	...	892
111	Gudibanda	...	...	...	23	4	...	...	...	...	...	...	...	13	...	...	...	482	84	...	...	...	...	...	...	272
112	Malur	...	...	...	15	1	1	...	...	...	1	...	1	13	...	...	...	673	44	44	...	...	...	...	...	582
113	Bagepalli	686	288	87	6,077	245	113	4	2	6	182	29	167	3,550	91	40	12	875	35	16	24	24	24	24	24	511	
	Kolar District R. C.	827	297	87	6,670	594	571	7	5	12	315	41	368	5,148	97	35	10	785	69	67	43	...	...	...	...	606
	Total	930	152	884	3,577	1,414	1,735	10	10	20	307	31	358	8,435	103	16	98	885	156	192	89	...	...	...	...	931
	Total of Municipalities	4,785	2,144	5,501	36,822	2,485	1,504	112	104	216	766	212	1,194	22,345	96	39	99	566	45	27	21	...	...	...	...	405
	Total of Rural Circles	5,715	2,296	6,885	40,399	3,899	3,239	122	114	236	1,078	243	1,522	30,780	88	36	99	629	61	50	24	...	...	...	...	479

PLAGUE.

Plague was in evidence in all parts of the State in the year under report. A total of 5,715 deaths was reported against 6,843 in the previous year. As per daily returns 3,163 attacks and 1,899 deaths were reported as shown in Table 4². The taluks severely affected were Gundlupet (126) Mandya (124), Mysore (117), Tarikere (113), Kolar (110), Chintamani (106).

From Table 50, it is seen that the incidence of plague was low in May and that the plague season coincided with the months of January, February, March and August to December, the rainy and cold months.

The highest death rate 1.45 was recorded in Bangalore district and the lowest (0.10) in Chitaldrug district. As per daily returns, Chitaldrug was the least affected and Mysore, Kolar and Bangalore were somewhat severely affected. In all 430 places were reported as infected. The following places reported more than 20 deaths during the year:—

List of places severely affected with Plague in the year 1931.

Taluk	Place	Attacks	Deaths
Bangalore District—			
Bangalore	Bangalore City	65	45
Anekal	Anekal Town	55	25
	Attibele	37	28
Chennapatna	Chennapatna Town	43	36
Mysore District—			
Mysore	Mysore City	153	108
Hunsur	Kattamalavadi	29	24
Mandya	Kottali	20	22
Gundlupet	Hongala	33	24
	Gundlupet Town	66	42
Hassan—			
Hole-Narsipur	Hole-Narsipur Town	36	20
Arakalgud	Arakalgud „	56	29
Kadur District—			
Chikmagalur	Chikmagalur Town	84	47
Tumkur District—			
Gubbi	Gubbi „	54	28
Kolar District—			
Bowringpet	Kolar Gold Field	91	53
Chintamani	Chintamani Town	32	31
Kolar	Kolar „	142	98

The severity of the disease as determined by the fatality rates varied in the districts as indicated below:—

Districts.	Number of deaths per 100 attacks.	
	1931	1930
Bangalore	62	62
Mysore	64	69
Hassan	53	41
Kadur	60	61
Shimoga	61	57
Chitaldrug	62	62
Tumkur	60	71
Kolar	55	58
	—	—
Total (Mysore State)	60	62
	—	—

During the year the fatality rate for Plague was 60 against 62 in the previous year. The lowest rate (53) was for Hassan District and the highest (64) for Mysore District.

Appendix (b) gives a complete list of places affected with Plague, with details of attacks and deaths for each month as per daily report received from the Presidents of District Boards and compiled in the Bureau of Vital Statistics.

A total of 2,11,565 anti-plague inoculations was done against 1,42,717 in the previous year.

TABLE 49.
 Attacks and Deaths registered from Plague in the districts in each month of the year 1931.
 (As per Daily Returns.)

District	January		Febv.		March		April		May		June		July		August		Sept.		October		Novr.		D ec.		Total		
	A	D.	A	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Bangalore	12	6	21	9	17	9	7	5	...	...	4	2	44	30	58	33	108	65	80	46	71	49	95	66	517	320
Mysore	133	98	122	64	61	44	10	13	2	2	...	...	46	25	55	39	83	51	141	64	116	82	111	83	880	566
Hassan	23	16	16	5	12	1	...	...	1	0	...	...	31	16	27	14	28	20	14	7	30	19	16	7	198	105
Kadur	55	34	27	19	9	5	...	...	...	...	...	...	30	21	15	14	31	17	72	37	48	30	81	44	368	221
Shimoga	39	27	14	9	9	6	...	...	...	...	...	...	...	...	...	...	17	11	...	...	3	1	25	11	107	65
Chitaldrug	27	17	2	2	...	...	...	...	...	...	...	...	...	...	3	1	9	2	20	15	9	5	3	8	73	45
Tumkur	69	43	24	21	10	7	4	1	...	...	...	...	1	1	...	...	31	20	38	19	75	43	57	29	309	184
Kolar	47	27	58	35	49	25	22	5	33	14	9	2	16	8	24	14	114	53	125	68	76	59	188	83	711	393	
Total (Mysore State)	405	268	284	164	167	97	43	24	36	16	13	4	163	101	182	115	421	239	490	256	428	289	256	326	3163	1899	

TABLE 50.
Deaths registered from Plague in the districts in each month of the year 1931.
(As per Monthly Returns.)

District	January	February	March	April	May	June	July	August	September	October	November	December	Total deaths			Ratio of Deaths per 1,000 of Population			Death Rate per 1,000 in previous 5 years
													Male	Female	Total	Male	Female	Total	
Bangalore	64	70	55	10	...	29	85	157	221	303	234	344	727	845	1,572	1.60	1.60	1.45	1.25
Mysore	198	138	75	19	25	41	159	152	192	192	180	213	722	862	1,584	0.94	1.14	1.04	1.17
Hassan	73	30	47	21	25	43	48	172	138	105	71	80	414	439	853	1.03	1.05	1.04	1.05
Kadur	32	15	5	...	...	...	3	15	16	41	31	43	83	118	201	0.45	0.72	0.57	0.66
Shimoga	68	22	10	4	1	8	37	27	14	13	3	18	113	112	225	0.41	0.45	0.43	1.49
Chitaldrug	16	12	1	...	...	1	1	2	40	...	...	2	36	39	75	0.10	0.12	0.10	1.19
Tumkur	119	28	15	3	...	...	9	11	20	36	56	51	188	190	387	0.42	0.44	0.43	0.60
Kolar	19	51	38	19	10	8	16	63	122	145	128	208	386	441	827	0.89	0.06	0.97	0.66
Total (Mysore State)	589	366	245	76	61	130	358	599	763	835	733	959	2,669	3,046	5,715	0.81	0.97	0.82	0.99

SMALL-POX.

Six hundred and one attacks and 127 deaths from Small-pox were reported by the Presidents of District Boards in their daily returns as shown in Table 51. According to the monthly returns given in Table 52 the deaths numbered 2,296. The taluks of Tarikere (24), Kadur (16), Chikmagalur, (13) were somewhat heavily infected. Mysore City alone reported as many as 40 attacks and 10 deaths and Kalsapur in Kadur District 42 attacks and 5 deaths. On the whole the infection was not so heavy as in the previous year.

In all 92 places were reported infected as against 195 in the previous year. As per monthly reports the highest number of deaths 468 was reported in Mysore District and the lowest 76 in Kadur District. The incidence of Small-pox was rather high from January to July and then there was tendency towards decline.

The severity of the disease in each district is shown by the fatality rates computed from the daily reports.

District	Number of deaths per 100 attacks.	
	1931	1930
Bangalore	24	38
Mysore	33	36
Hassan	27	17
Kadur	20	26
Shimoga	12	26
Chitaldrug	22	17
Tumkur ... ..	...	40
Kolar	14	34
Total Mysore State ...	21	25

Generally speaking the fatality rates in the year under report were less than those for the preceding year. The highest rate was 33 in Mysore District and the lowest 0 in Tumkur District. The average for Mysore State was 21 against 25 in the previous year.

Appendix (c) gives a list of places affected with Small-pox.

Satistics of Vaccination against small-pox are discussed in the section on Vaccine Institute under the Bureau of Laboratories. A total of 1,64,335 vaccinations were done.

TABLE 51.

Attacks and Deaths registered from Small-pox in the districts in each month of the year 1931.
(As per Daily Returns.)

District	January		Febry.		March		April		May		June		July		August		Sept.		October		Novr.		Decr.		Total			
	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.		
Bangalore	2	1	4	1	2	0	6	2	1	1	3	1	7	1	1	0	8	1	34	8
Mysore	9	4	8	6	18	4	16	2	4	1	2	1	...	...	...	...	...	...	...	...	1	1	...	...	...	58	19
Hassan	15	2	5	1	9	3	9	3	8	1	...	...	22	7	...	...	1	0	6	1	...	...	11	5	...	86	23
Kadur	20	6	24	3	75	19	75	6	45	5	13	0	18	8	9	2	11	3	5	0	1	0	22	11	...	318	63	
Shimoga	11	2	13	0	17	1	6	1	26	8	1	1	68	8
Chitaldrug	8	2	1	0	9	2
Tumkur
Kolar	16	1	5	2	1	0	2	0	1	0	1	0	2	1	...	...	...	...	...	...	...	...	...	...	...	28	4
Total (Mysore State)	71	15	42	12	118	27	117	13	64	8	18	1	82	23	11	4	16	4	18	2	3	1	41	17	...	601	127	

TABLE 52.
Deaths registered from small-pox in the districts in each month of the year 1931.
(As per Monthly Returns.)

District	January	February	March	April	May	June	July	August	September	October	November	December	Total			Ratio of Deaths per 1,000 of Population			Mean death rate per 1000 in previous 5 years
													Male	Female	Total	Male	Female	Total	
Bangalore	27	22	56	39	34	25	18	13	7	1	6	8	123	133	256	0.27	0.25	0.23	0.99
Mysore	35	52	28	34	99	38	36	16	28	31	32	39	237	231	468	0.31	0.30	0.31	4.71
Hassan	56	61	38	32	39	38	34	17	23	13	14	6	206	165	371	0.68	0.55	0.62	0.62
Kadur	1	4	22	3	6	1	26	3	1	...	...	9	35	41	76	0.19	0.25	0.22	0.26
Shimoga	32	26	25	26	10	35	20	24	11	3	4	14	112	118	230	0.41	0.48	0.44	0.51
Chitaldrug	22	26	31	56	75	52	35	21	15	44	20	44	229	212	441	0.65	0.66	0.67	0.71
Tumkur	18	20	35	23	10	15	20	7	2	2	3	2	76	81	157	0.17	0.20	0.18	0.73
Kolar	48	51	34	18	17	38	13	6	15	20	12	25	184	163	297	0.31	0.40	0.35	0.70
Total (Mysore State)	289	262	269	231	290	242	202	107	102	114	91	147	1,152	1,144	2,296	0.35	0.36	0.36	0.67

CHOLERA.

As forecasted in 1930, cholera prevailed as a State wide epidemic during the year under report. Five thousand four hundred and seventy-one attacks and 3,183 deaths from cholera were reported as per daily returns (Table 53). According to monthly returns given in Table 54, the deaths numbered 6,385 as compared with 567 in the previous year. Comparatively speaking Mysore District was heavily infected, Chitaldrug District coming next in order of severity. The taluks heavily infected were Mysore (297), Krishnarajapet (217), Kadur (217), T.-Narsipur (190), Seringapatam (165), Kunigal (165), and Davangere (163). Mysore City alone reported as many as 398 attacks with 257 deaths. The peak occurred in the month of May as usual and the curve gradually declined in the subsequent months.

In the year under report 2,22,378 anti-cholera inoculations were done.

Table 53 gives figures in respect of attacks and deaths as per daily returns and Table 54 contains statistics of deaths as per monthly reports. (Appendix D) gives particulars of 694 places affected with cholera in different parts of the State.

During the year, the following places reported more than 20 deaths from cholera :—

District	Taluk	Place	Attacks	Deaths	
Bangalore ..	Bangalore ...	Bangalore City ..	51	29	
Mysore ...	Mysore ..	Mysore City ...	398	257	
	Seringapatam ...	Seringapatam Town	120	62	
	T.-Narsipur ...	Bannur Town ...	141	48	
	Krishnarajapet	Mugur Town ..		72	29
		Sindhughatta ...		84	48
		Krishnarajapete ..		92	67
	Hunsur ...	Hosaholalu ..	25	21	
	Nanjangud ...	Hunsur Town ...	41	25	
	Yelandur ...	Nanjangud Town ...		45	20
Yelandur Town ...			31	21	

District	Taluk	Plague	Attacks	Deaths
Hassan ...	Arkalgud ...	Arakalgud Town ...	40	21
	Hole-Narsipur ...	Hole-Narsipur Town.	46	24
Kadur ...	Kadur ...	Honagarahalli ...	35	22
		Byaladahalli ...	37	25
		Asandi ...	58	27
Shimoga ...	Tarikere ...	Baguvalli ...	41	24
	Shimoga ...	Thippalapur ...	20	20
Chitaldrug ...	Davangere ...	Mitti ...	41	16
		Kundavada ...	81	35
Tumkur ...	Jagalur ...	Jagalur Town ...	31	23
	Tiptur ...	Kanakuppe ...	36	31
	Kunigal ...	Sobaganahalli ...	69	34
Kolar ...	Chintamani ...	Holagere ...	28	20
		Kaiwara ...	44	34
		Bowringpet ...	43	28
		Koppa ...	38	27
	Malur ...	Chiknayakanhalli ...	51	37

The severity of the disease as computed from the fatality rates was as follows :—

District	No. of deaths per 100 attacks	
	1931	1930
Bangalore ...	64	62
Mysore ...	58	48
Hassan ...	54	57
Kadur ...	58	...
Shimoga ...	62	...
Chitaldrug ...	50	35
Tumkur ...	64	67
Kolar ...	68	66
Total (Mysore State) ...	58	57

The highest rate (68) was in Kolar District and the lowest (50) in Chitaldrug District. The average rate for the State was 58 as against 57 in the previous year.

TABLE 53.
Attacks and Deaths registered from Cholera in the districts in each month of the year 1931.
(As per Daily Returns.)

District	January		Febry.		March		April		May		June		July		August		Sept.		October		Novr.		Decr.		Total				
	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.			
Bangalore	...	1	4	1	6	3	1	1	11	8	56	41	92	49	66	48	47	38	15	7	...	...	...	...	...	...	298	192
Mysore	...	207	108	160	67	65	27	135	80	624	356	552	338	357	247	148	86	95	106	57	12	4	3	2468	1440	...	...	...
Hassan	...	5	4	...	...	...	35	19	106	54	83	40	49	29	33	22	5	4	...	...	...	...	...	...	...	316	172	
Kadur	65	45	195	95	77	47	116	67	38	35	20	9	1	2	35	16	10	7	...	...	...	...	...	557	323		
Shimoga	14	11	53	43	56	32	26	15	3	...	4	4	62	40	53	26	10	3	281	174	...	...
Chitaldrug	73	39	55	29	273	113	95	65	278	129	71	46	2	1	4	2	851	424	...	...
Tumkur	30	19	3	2	190	105	132	86	4	5	25	15	11	11	10	8	38	34	...	...	...	444	285		
Kolar	...	20	13	71	48	24	12	...	...	...	...	78	55	63	45	...	...	...	...	...	...	...	...	...	...	256	178	
Total Mysore State	...	232	126	300	161	329	156	265	160	1173	672	972	601	839	522	434	283	476	256	274	165	108	73	18	8	5471	3183

TABLE 54.
Deaths registered from Cholera in the districts in each month of the year 1931.
(As per monthly Returns.)

District	January	February	March	April	May	June	July	August	September	October	November	December	Total			Ratio of Deaths per 1,000 of Population		Mean ratio in the previous year per 1,000	
													Male	Female	Total	Male	Female		Total
Bangalore	22	5	8	3	56	66	216	60	54	46	7	...	266	272	538	0.58	0.51	0.50	0.07
Mysore	175	77	28	314	1,218	688	506	338	258	121	26	28	2,068	1,704	3,772	2.72	2.27	2.49	0.04
assan	9	4	22	36	47	42	59	38	12	4	...	...	161	112	273	0.53	0.38	0.45	0.08
Kadur	...	46	105	55	81	35	8	...	16	7	...	...	186	167	353	1.01	1.02	1.01	0.03
Shimoga	...	...	...	...	65	89	32	27	46	78	45	3	194	191	385	0.70	0.77	0.74	0.07
Chitaldrug	...	5	...	...	66	54	193	132	132	...	...	...	365	217	582	1.08	0.67	0.88	0.05
Tumkur	2	...	39	...	158	50	3	22	36	84	1	...	219	176	395	0.59	0.42	0.48	0.06
Kolar	16	43	9	...	...	...	1	...	18	...	...	...	58	29	85	0.14	0.07	0.12	0.04
Total (Mysore State)	224	180	206	408	1,691	1,019	1,018	617	572	340	79	31	3,517	2,868	6,385	1.07	0.91	0.99	0.08

TABLE 55.

Statement of Vaccinations and anti-plague and anti-cholera inoculations done in Mysore State during the year 1931 :—

District or Cities	Anti-Plague Inoculations	Anti-Cholera Inoculations	Vaccinations against Small-pox
Bangalore District ...	93,400	41,056	20,750
Mysore do ...	20,987	53,109	22,614
Hassan do ...	8,730	3,983	17,676
Kadur do ...	10,901	5,408	11,601
Shimoga do ...	4,464	10,757	15,099
Chitaldrug do ...	1,391	32,717	14,544
Tumkur do ...	20,973	15,119	14,544
Kolar do ...	29,428	1,484	15,778
District Total ...	1,37,769	1,90,274	1,53,633
Bangalore City ...	12,413	26,842	8,278
Mysore do ...	2,588	39,984	8,280
Kolar Gold Field ...	6,290	1,919	10,008
Cities Total ...	21,291	68,745	26,566
Total (Mysore State) ..	2,11,565	2,22,378	1,64,335

Fevers.

During the year 20,687 male and 19,712 female deaths were reported under fevers as against 18,156 and 17,056 deaths respectively in the previous year. In passing it may be remarked that there is a noticeable decrease in the number of deaths in the months of February and March ; and of the eight districts, Kadur has contributed the highest rate (10·88) and Bangalore the lowest (3·67). In the previous years also the highest rate of 8·93 was recorded in Kadur District and the lowest 4·49 in Bangalore District. The highest 11·35 and lowest 4·82 mean rates in the previous five years have occurred in the same districts, probably indicating that these districts have respectively the highest and lowest fever death rates in Mysore State. Malaria probably accounts for major portion of fever deaths.

Dysentery and Diarrhoea.

Table 57 gives the number of deaths reported under Dysentery and Diarrhoea in the districts in each month of the year. The disease appears to reach a maximum in January and in the period July to August. The lowest incidence is in April. A large number of deaths was reported in Mysore (1,256) and Bangalore (811) Districts and lowest in Hassan and Kadur Districts, viz., 155 and 126, respectively.

Respiratory Diseases.

Table 58, which gives the reported deaths from Respiratory diseases, includes also deaths from consumption and so it is not possible to discuss the latter separately here. However a separate Table in case of the Princess Krishnammanni Tuberculosis Sanatorium in Mysore, is given below in Table 59.

TABLE 56.
Deaths registered from Fevers in the Districts in each month of the year 1931.
(As per Monthly Returns.)

District	January	February	March	April	May	June	July	August	September	October	November	December	Total deaths			Ratio of deaths per 1,000 of population			Mean death rate per 1,000 in previous 5 years
													Male	Female	Total	Male	Female	Total	
Bangalore	301	263	270	278	282	355	406	409	259	370	400	372	1,995	1,965	3,960	4.89	3.73	3.67	4.82
Mysore	748	641	624	644	652	627	698	816	767	843	976	1,017	4,659	4,394	9,053	6.12	5.85	6.00	6.27
Hassan	375	288	303	300	310	225	371	431	543	475	290	271	2,140	2,042	4,182	7.11	6.89	7.00	9.68
Kadur	206	292	272	206	257	319	324	414	362	358	422	352	2,053	1,731	3,784	11.13	10.59	10.88	11.95
Shimoga	247	283	260	200	167	239	255	264	282	361	390	401	1,668	1,681	3,349	6.07	6.88	6.44	9.76
Chitaldrug	256	261	357	356	320	273	280	354	351	380	350	287	1,957	1,868	3,825	5.81	5.84	5.67	6.17
Tumkur	393	382	465	464	383	419	479	469	429	530	538	625	2,879	2,697	5,576	6.55	6.38	6.47	6.35
Kolar	410	325	328	552	708	679	466	688	660	606	599	647	3,336	3,334	6,670	7.66	8.04	7.85	5.67
Total (Mysore State)	2,386	2,735	2,879	2,995	3,079	3,136	3,279	3,845	3,653	3,925	3,965	3,972	20,687	19,712	40,399	6.33	6.28	6.27	6.69

TABLE 57.
Deaths registered under Dysentery and Diarrhoea in the Districts in each month of the year 1931.

District	January	February	March	April	May	June	July	August	September	October	November	December	Total deaths			Ratio of deaths per 1,000 of population			Mean death rate per 1,000 in previous 5 years
													Male	Female	Total	Male	Female	Total	
Bangalore	82	64	46	42	67	59	109	85	46	72	68	71	420	391	811	0.98	0.74	0.75	0.82
Mysore	96	78	73	81	84	129	129	125	144	126	83	108	681	575	1,256	0.89	0.76	0.83	0.60
Hassan	28	17	9	4	12	12	9	7	16	21	8	12	84	71	155	0.27	0.20	0.26	0.24
Kadur	9	13	11	9	10	14	5	12	14	15	9	5	65	61	126	0.35	0.37	0.39	0.34
Shimoga	40	25	31	38	43	19	34	46	44	51	37	47	223	232	455	0.81	0.95	0.87	1.07
Chitaldrug	13	14	7	4	23	6	25	33	7	13	11	19	100	75	175	0.30	0.23	0.26	0.45
Tumkur	38	26	13	19	13	20	84	28	13	41	44	38	171	156	327	0.40	0.37	0.38	0.35
Kolar	96	48	44	26	42	41	68	69	33	39	44	42	312	282	594	0.71	0.68	0.70	0.81
Total (Mysore State)	404	285	234	223	294	300	413	405	317	378	304	342	2,056	1,843	3,899	0.62	0.59	0.61	0.59

TABLE 58.

Deaths registered from Respiratory Diseases in the Districts in each month of the year 1931.

District	January	February	March	April	May	June	July	August	September	October	November	December	Total Deaths			Ratio of deaths per 1,000 of population			Mean death rate per 1,000 in previous 5 years
	January	February	March	April	May	June	July	August	September	October	November	December	Male	Female	Total	Male	Female	Total	
Bangalore	88	71	94	110	108	85	131	130	106	116	92	120	589	662	1,251	1.30	1.25	1.15	1.21
Mysore	36	38	43	41	51	46	49	45	34	54	48	42	308	219	527	0.40	0.29	0.34	0.61
Hassan	7	4	13	8	4	8	10	14	8	4	5	6	63	28	91	0.20	0.09	0.15	0.12
Kadur	13	2	8	6	12	...	7	3	...	9	14	27	50	51	101	0.27	0.31	0.29	0.22
Shimoga	36	43	15	8	33	29	11	15	25	24	42	42	210	113	323	0.76	0.46	0.62	0.60
Chitaldrug	13	5	8	7	11	9	17	17	11	37	21	24	102	78	180	0.30	0.24	0.27	0.65
Tunkur	2	6	8	5	13	21	30	14	21	36	15	24	105	90	195	0.24	0.21	0.44	0.28
Kolar	66	48	37	40	42	31	60	48	43	59	35	62	383	238	571	0.74	0.57	1.31	0.44
Total (Mysore State)	261	217	226	225	274	229	315	286	248	339	272	347	1,760	1,479	3,239	0.53	0.47	0.50	0.43

TABLE 59.

Particulars of 264 In-patients admitted at the Princess
Krishnajammanni Tuberculosis Sanatorium.

Particulars	Sex	Number of In-patients	Percentage of total
Number of Admissions ..	Male ...	143	54'2
	Female ...	118	44'7
	Boys ...	...	...
	Girls ..	3	1'1
Total ..		264	100'0
Number cured ..	.	5*	1'8
Number arrested ..	...	64	24'4
Number improved ..	...	45	17'0
Number stationary ..	...	27	10'2
Number worse ..	...	47	17'8
Number that died ..	...	25	9'5
Quiscent ..	...	22	8'3
Number discharged other- wise.	...	11	4'2
Number of patients kept for observation.	...	18	6'8
Total ..		264	100'0

* Absconding one case, Psoas abscess C. T. B. of left Sacro-Iliac joint one case, Chronic appendicitis one case, T. B. Laryngitis Primary two cases.

Injuries.

From the monthly returns received from the Presidents of District Boards, a total of 1,552 deaths was reported under this head against 1,775 in the previous year. There were 236 suicides (122 males and 114 females). One thousand and seventy-three died from wounds and accidents and 243 from Snake-bite.

The Inspector-General of Police in Mysore has kindly furnished the following statistics of suicides and deaths from injuries for the year 1931 as shown below :—

Cause of Death	Number	Total
Suicides by.—		
Hanging	58	...
Drowning	164	...
Other means	70	292
Deaths from snake-bite and Wild-Beasts.—		
Snake-bite	24	...
Wild-beasts	8	...
Gored by animals	12	44
Accidents and Injuries.—		
Gun shot	10	...
Fall from height	37	...
Fire	68	...
Abortion	1	...
Mining, Railway and Motor accidents	98	...
Other causes	189	403
Total .. .. .	...	739

One-hundred and thirteen persons were prosecuted against cruelty to animals in the State during the year, out of which 112 were convicted. One ended in acquittal.

Rabies.

The following is a statement of anti-rabic cases treated in the hospitals :—

Statement of anti-rabic cases treated in the hospitals.

Hospital or Institution	Number treated
Victoria Hospital, Bangalore	377
Krishnarajendra Hospital, Mysore	156*
Civil Hospital, Kolar Gold Field	37
District Hospital, Kolar	42
Do Chikmagalur	10
Do Chitaldrug	14
Total	636

* Figure represents number treated from January to September 1931.

In the year under report, 3,416 dogs were destroyed in the three cities as detailed below :—

Statistics of Stray Dogs Destroyed in City Municipalities.

City	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total 1931
Bangalore ...	255	404	255	227	1,141
Mysore ...	531	461	399	248	1,639
Kolar Gold Field ...	77	102	214	243	636
Total ...	863	967	868	718	3,416

Leprosy.

The number of patients admitted into the Leper Hospital, Bangalore, was 345 against 354 in the previous year. Including 101 patients that remained under treatment at the close of the previous year, the total number treated during the year was 446.

Of these 446 patients, 310 were discharged the disease being either relieved or stationary, 18 improved, 26 worsened and 21 died during the year. Seventy-one patients remained in the Hospital at the close of the year.

The total expenditure, including pay and allowance to the Medical Staff amounted to Rs. 20,005 as against Rs. 20,695 in the previous year. The cost per patient was Rs. 44·8 per year.

Maternal Mortality in the State.

A total of 5,269 labour cases were reported conducted in the several medical institutions in the State during the year, with 100 deaths, yielding a Maternal Mortality rate of 18·98 per 1,000 cases conducted.

The following is a statement of the causes of deaths :—

Enteric Fever	6
Anæmia	6
Anæmia and Heart Failure ..	8
Peritonitis	5
Difficult and complex Labour ..	6
Protracted Labour	1
Obstructed Labour	5
Ruptured Uterus	4
Puerperal Septicæmia	22
Hæmorrhage	3
Placenta Previa	1
Eclampsia	6
Valvular Disease of the Heart ..	11
Consumption	2
Collapse	4
Nephritis	1
Ectopic gestation	1
Shock	3
Dysentery	1
Diarrhœa	3
Multiple abscess of abdominal wall ..	1
	<hr/>
Total	100
	<hr/>

Septicæmia accounts for the largest number of deaths from an individual cause.

All other Causes.

As usual there was a very large number of deaths reported under this vague general head. In the year under report, 30,780 or 32·7 per cent of all deaths were returned thus un-classified. The Standard Certificate of Death and the International List of Causes have already been drawn up and approved by Government. They will be introduced no sooner the printed forms are ready.

Maternity and Child Welfare work done by Certain Voluntary Associations in the State.

Sree Gunamba Maternity and Child Welfare Trust, Mysore.—The work of this body is generally managed by a Committee presided over by Sir Charles Todhunter, K.C.S.I., J.P. The Chief object of the Trust is to cater to the welfare of the mothers and children. It maintained four centres. During the year 36,669 babies attended the Centres. Sixteen thousand eight hundred and fifty-seven were given baths, 2,734 treated for minor ailments and 81 vaccinated. The Honorary Lady Doctors conducted 30 anti-natal and 11 infant clinics. One hundred and twenty pregnant women and 283 infants were examined. The nurses attached to the Centres paid 402 domiciliary visits and conducted 2,086 labour cases.

Civic and Social Progress Association, Mysore.—This runs a Child Welfare Centre. The management is in the hands of a Committee with a retired Surgeon of the Mysore Service as the President. A trained nurse is attached to the centre. Poor children were given milk free daily. One-thousand five hundred and fifty-five children were given baths and 42 were vaccinated. The minor ailments of children were attended by the nurses who also conducted 12 labour cases.

Civic and Social Progress Association, Bangalore. During the year 40 infants were fed daily, with sterilised milk. One thousand oil baths, 1,200 ordinary baths were also given. The nurse in charge paid 180 domiciliary visits. An Honorary Lady Doctor conducted weekly clinics and attended to minor ailments of children in addition to recording their weights and prescribing the feeds.

Mahila Seva Samaja, Bangalore.—This is a voluntary association supported by subscriptions and contributions from the trustees of the late *Rao Bahadur A. Rangaswamy Iyengar*. The Institution commands the honorary services of Lady Doctors, trained Midwives, and a band of willing workers. Baby and Mothers' clinics are held once a week. The Midwives pay on an average of 30 home visits. From time to time First Aid Classes are held for women. During the year they organised a Baby Show which was largely attended. The Association finds scholarship for midwifery and sick nursing.

Shimoga Milk Centre.—This is maintained by the Municipality. On an average ten babies are given baths and feeds daily.

Mrs. P. C. Brunt of the Wesleyan Mission has recently started a Baby Clinic in Shimoga. It receives help from the Municipality as well as from Maternity and Child Welfare Bureau, Headquarters, Simla.

A Day Creche is conducted under management of the Mysore State Ladies Conference, Bangalore; Secretary is Sri S. Nanjamma. It is located in a building close to the Binny Mills. An Ayah is in charge. There was a nurse in previous years. She was dispensed with as a measure of retrenchment.

About 18 to 20 babies attend the Creche daily. They are admitted at 8 A.M. and discharged at 6 P.M. They are bathed and fed according to visiting Doctor's instructions. Clean clothing is also provided. Once a week they are weighed and record kept.

At mothers gathering once a week general advice is given. A pre-natal clinic has just been started and promises to be popular.

Ladies of the Conference make occasional visits to the adjoining slum areas and advise, as regards domestic and personal cleanliness.

Under auspices of the Conference a Baby Show was held at which 2,000 babies attended. Prizes were given to the best babies.

ANNUAL REPORT OF THE INDIAN RED CROSS SOCIETY, MYSORE STATE BRANCH, 1931.

Miss Norah Hill, Organising Secretary of the Indian Red Cross Society and General Secretary, St. John Ambulance Association, Headquarters, Simla, visited the State Branch in January 1931. She delivered a public address in Bangalore, dwelling on the aims and objects of the Society.

The Executive Committee met twice in the year under report. Amin-ul-Mulk Sir Mirza M. Ismail who was the Chairman of the Red Cross Society for ten years and of the Ambulance Committee for 16 years having expressed his inability to continue as such, Sir Charles Todhunter took charge of the Chairman's work during the latter part of the year.

During the period under report, new branches were started at Mysore, Tumkur, Kolar and Chikmagalur. The Branch at Kolar Gold Fields has kept up its activities, at a high standard as usual. Forty new members were enrolled at Kolar, Tumkur and Chikmagalur.

The State Branch was able to enrol only two new members, notwithstanding repeated appeals. A vigorous attempt at collecting arrears of subscription from the existing members was made. At the close of the year, Rs. 159 remained over uncollected.

During the year under report, the following Institutions received donations from the State Branch:—

	Rs.
1. Sri Gunamba Maternity and Child Welfare Trust, Mysore 	300
2. Civic and Social Progress Association, Bangalore ...	100
3. Kengeri Ashram 	100
4. Seva Ashram, Bangalore 	50
5. Mysore State Ladies Conference for a Health Exhibition and Baby Show 	50

The total receipts of the Society including fixed Deposits and the balance carried forward from previous year were Rs. 10,123-9-2 and expenditure Rs. 1,333-5-3 leaving a balance of Rs. 8,786-3-11 at the close of the year of

which Rs. 7,400 are in Fixed Deposit, Rs. 1,385-10-10 in current account and Rs. 4-9-1 cash.

A spare magic lantern was given over to Kengeri Ashram where it was put to very good use. Pamphlets on the organisation of local centres, were supplied to local branches along with Red Cross Posters and pamphlets. The Journal "Red Cross" was subscribed for, for the use of local branches. Health songs and pamphlets dealing with Maternity and Child Welfare written in simple Kannada were distributed in boys and girls schools all over the State. The educational officers were also provided with copies. The manual of Mackenzie School Course and the First Laws of Health were used as supplemental text books as in previous years. Junior Red Cross pamphlets were supplied to High Schools to serve as incentive for starting Junior Red Cross Centres. Posters on elements of Hygiene were exhibited in the cities of Bangalore and Mysore.

With the generous co-operation of the Senior Surgeon, ambulance classes were started in some of the High Schools. Brigade rules were supplied to the Superintendent, Intermediate College, Mysore, and to the Scout Headquarters, Bangalore, with a request to see if Cadet divisions could be opened in these places.

Membership subscriptions for the ambulance section of the organisation of the Indian Red Cross Society were not separately collected this year, as some of the members expressed unwillingness to pay two subscriptions to one and the same organisation.

First Aid Instruction Classes were at work as usual in a dozen High Schools. Instruction in First Aid was also imparted to the Scout Brigade and to the members of the College Rover's Association. The latter is conducting a Home Nursing Class also. Three hundred students received instruction in First Aid this year but the number that took the examination is only about 50 per cent. Instruction in First Aid in Tamil and English was given as usual, in the Kolar Gold Fields Centre for about 75 pupils in each section.

One team from the Mysore Scout Brigade was sent up to compete for the Lahore Ambulance Competition of 1932.

In the month of November, the Secretariat of the Indian Red Cross Society, Mysore State Branch was

transferred to the Publicity Branch of the Department of Health, with the Director of Health as Honorary Secretary.

Mrs. O'Brien having pleaded her inability to function as Joint Honorary Secretary, Mrs. Kamalamma Dasappa was requested to take up the office which she kindly agreed to do.

With a view to enlarge the membership and create a general interest in Child Welfare work, it was proposed to celebrate a Baby Week at Mysore during the second week of March 1932. Efforts are also in progress to open Red Cross Centres in the District Headquarters. Letters of appeal for co-operation and help were addressed to all the Deputy Commissioners and Presidents of District Boards.

A SHORT NOTE ON THE CHIEF METEOROLOGICAL FEATURES IN THE MYSORE STATE DURING THE CALENDAR YEAR 1931.

TEMPERATURE.

The mean maximum temperature was above normal during all the months in the year except in August and December. The monthly mean was four degrees in excess at Mysore during February and March; the excess was large for all stations during February and May. The mean temperature for December was about 1.5 deg. below normal. April was as usual the warmest month and the monthly mean was nearly 2 degrees above normal. The mean annual temperature was 1.2 degree above normal.

The mean minimum temperature was generally above normal for all the months; the excess was large in March, April and December. The excess at Hassan was as much as 5½ degrees for December. January was the coldest month in the year and the mean temperature for the month was 0.8 degree above normal. The mean temperature for the year was 1.5 degree above normal.

The range of temperature was greatest in February and least in August and the values for these months were respectively 28.0 degrees and 13.1 degrees.

The mean daily temperature was above normal throughout the year and the excess over normal was large from February to May. The annual mean was 1.4 degrees above normal.

The maximum temperature was 100 degrees and over on an unusually large number of days. It was 100 degrees or over on 26 days at Chitaldrug (1 in March, 13 in April and 12 in May); seven days at Mysore (two in March and five in April); and five days at Bangalore (one in April and four in May). The highest temperature for the State was 103.3 degrees recorded at Chitaldrug on the 24th April and this was only 0.4 degree less than the highest on record. The highest temperature on record at Bangalore, *viz.*, 102.4 degrees was registered on the 21st May. The thermometer rose to 101.0 degrees at Mysore on the 24th April; this was also the highest on record for this station. The maximum for the year for Hassan was 98.4 degrees recorded on the 29th April 1931.

The lowest temperature for the State was 51·4 degrees recorded at Hassan on the 31st December. Bangalore comes next with 53·5 degrees registered on the 9th January. The thermometer fell to 55·3 degrees at Mysore on the 31st December and on the same day and the previous day, a temperature of 56·1 degrees was recorded at Chitaldrug.

HUMIDITY.

Humidity was markedly above normal during February, April, November and December. Cloudiness was greater than usual except at Mysore; December was usually cloudy. The cloud amount at Hassan and Mysore was much below the normal in February.

RAINFALL.

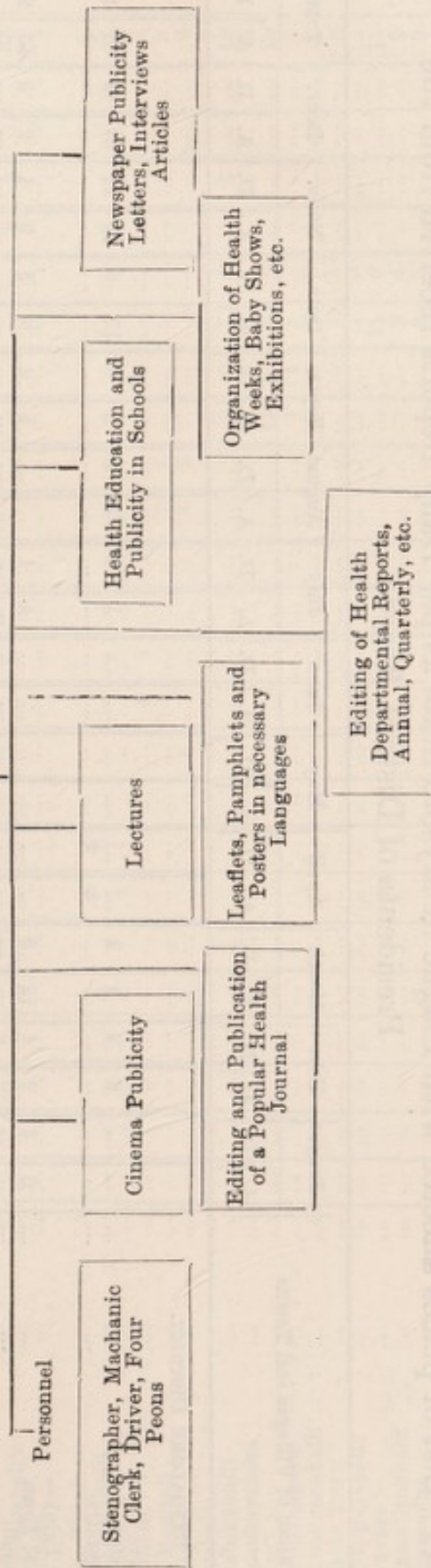
The following statement gives the annual rainfall for the various districts in the State and its departure from the normal. The annual totals were fairly large excess in all the Malnad districts. The yearly totals were in moderate to large defects in the Malnad districts; the deficit was large in the Bangalore, Kolar and Tumkur Districts, averaged for the whole State, the annual total was normal.

Comparison of actual and average yearly rainfall in the State.

District	Actual in inches	Departure in inches	Percentage departure
Bangalore	23·53	-7·42	-21
Kolar	22·49	-5·72	-20
Tumkur	21·28	-4·87	-19
Mysore	25·98	-2·18	-8
Hassan	48·00	+9·27	+24
Shimoga	66·99	+10·01	+18
Kadur	83·58	+10·13	+14
Chitaldrug	21·35	-0·60	-3
State	36·19	+0·07	Nil

APPENDIX A.
 ORGANISATION AND DUTIES OF THE BUREAU OF HEALTH EDUCATION, MYSORE DEPARTMENT OF HEALTH.
 DIRECTOR OF HEALTH.
 SUPERINTENDENT.
 Also.
 (HONORARY ASSISTANT SECRETARY, INDIAN RED CROSS SOCIETY, MYSORE STATE BRANCH.)
 ADMINISTRATION OF THE BUREAU.

PUBLICITY OFFICER.



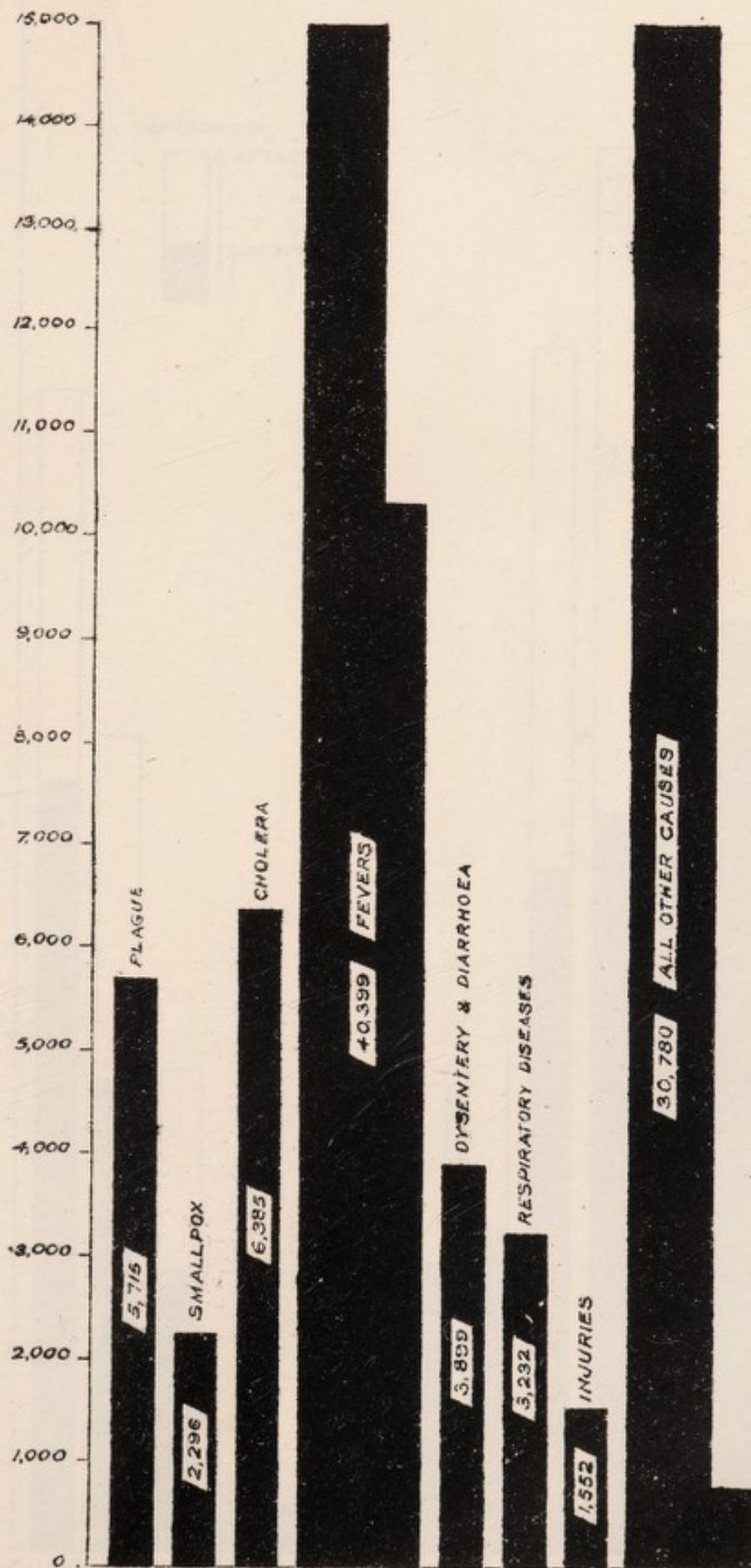
SHIMOGA DISTRICT.	
Shimoga Taluk.—	3
Holebannur	1
Nagasandra	20
Mydolu	14
Holtihalu	9
Jannapura	7
Bhadravathi Town	1
Haramaghatta	3
Koppa	2
Kodakal	...
Shikaripur Taluk.—	3
Nelavagal	0
Honnalli Taluk.—	1
Kumsalur	...
Chennagiri Taluk.—	...
Vaddarahalli	1
Hutha	4
Malalahal	8
Bannihalli	5
Maravanji	3
Ponduvaramutt	1
Hadigere	1
CHITALDRUG DISTRICT.	...
Holalkere Taluk—	...
Holalkere Town	2
Curugigeru	1
Madderu	1
Karekandavadi	3
Arehallihatti	2
Bandihal	4
Madalur	3
Kesavapura	1
Maballi	1
Gerahalli	1
	2

1891-92

	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531
January (1st day)																									
February																									
March																									
April																									
May																									
June																									
July																									
August																									
September																									
October																									
November																									
December																									
Total																									

1891-92

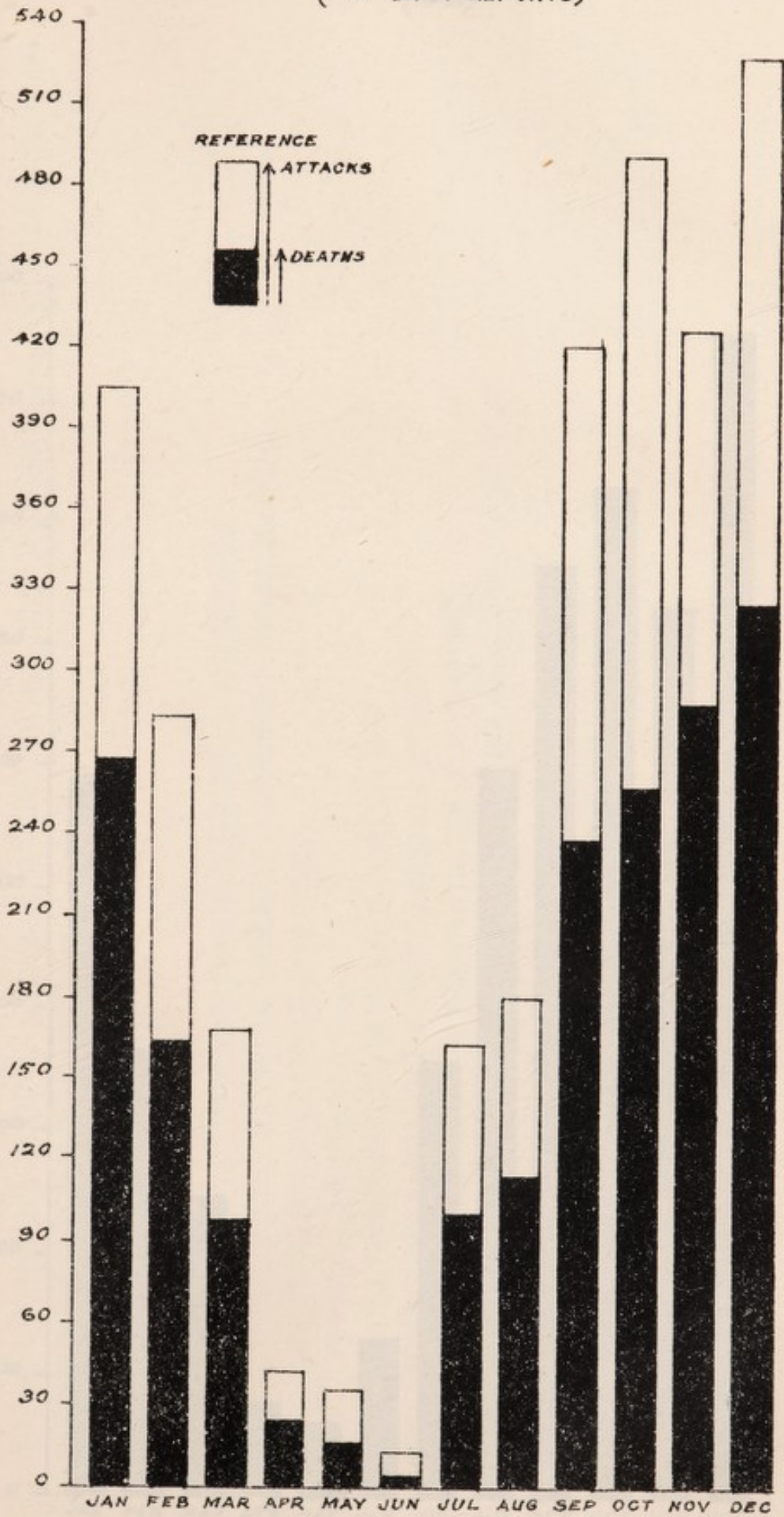
REPORTED DEATHS FROM CHIEF DISEASES IN MYSORE STATE
(1931)



(1901)



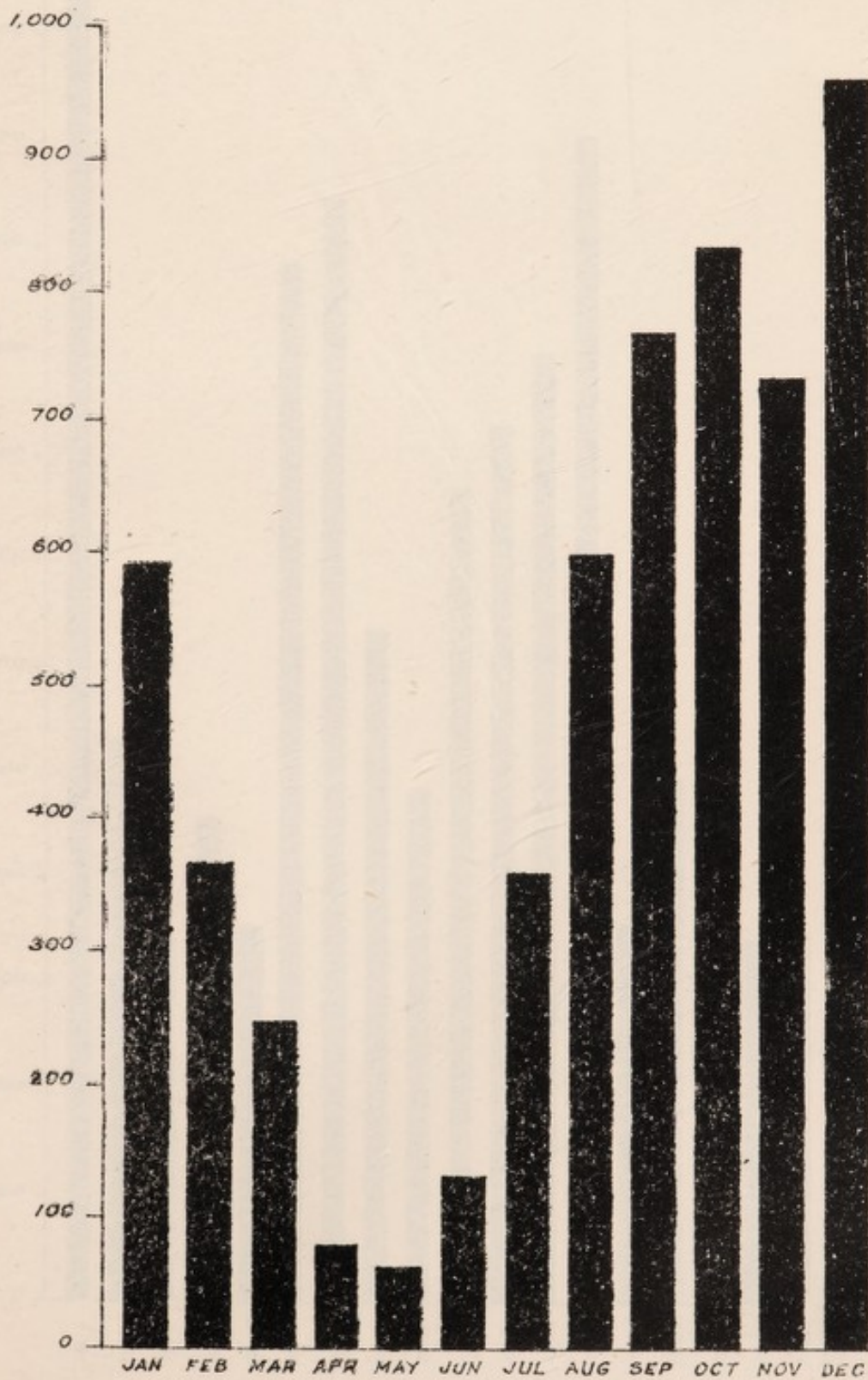
ATTACKS & DEATHS FROM PLAGUE IN MYSORE STATE
(1931 DAILY REPORTS)



ATTACKS & DEATHS FROM TYPHOID IN MICHIGAN STATE
(1921 DAILY REPORTS)



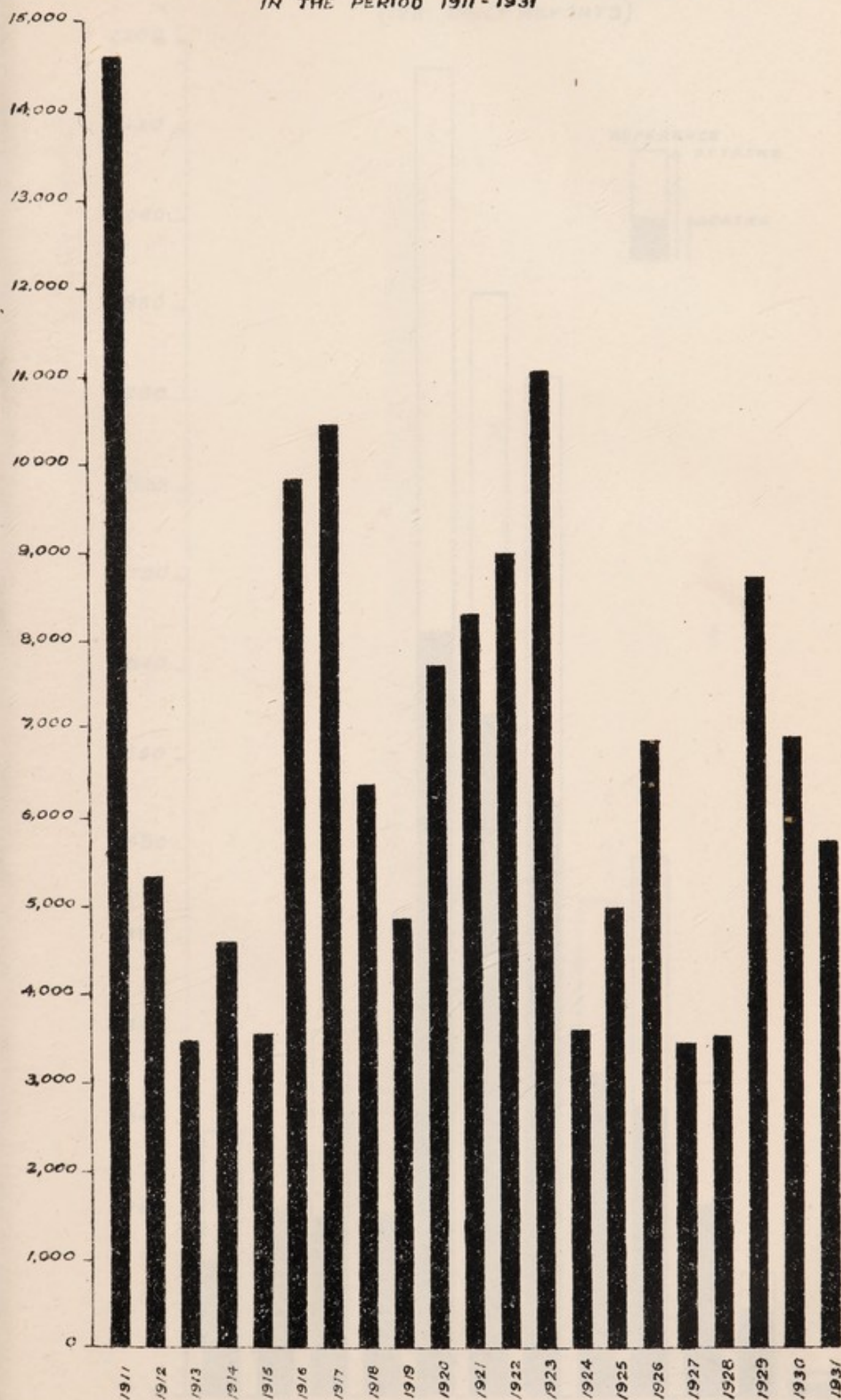
MONTHLY INCIDENCE OF PLAGUE
(1931)



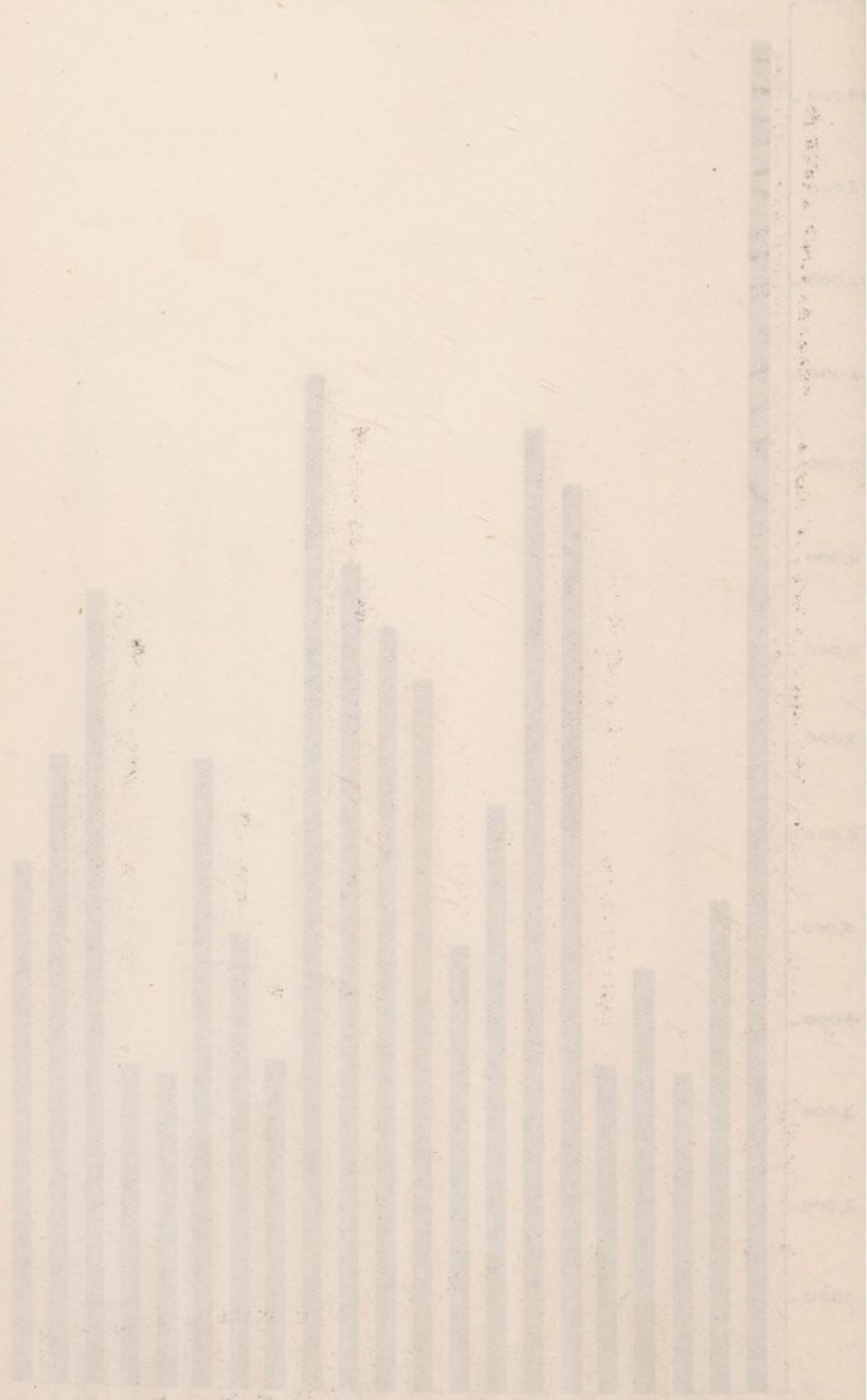
MONTHLY INDEX OF TRADE
(1927)



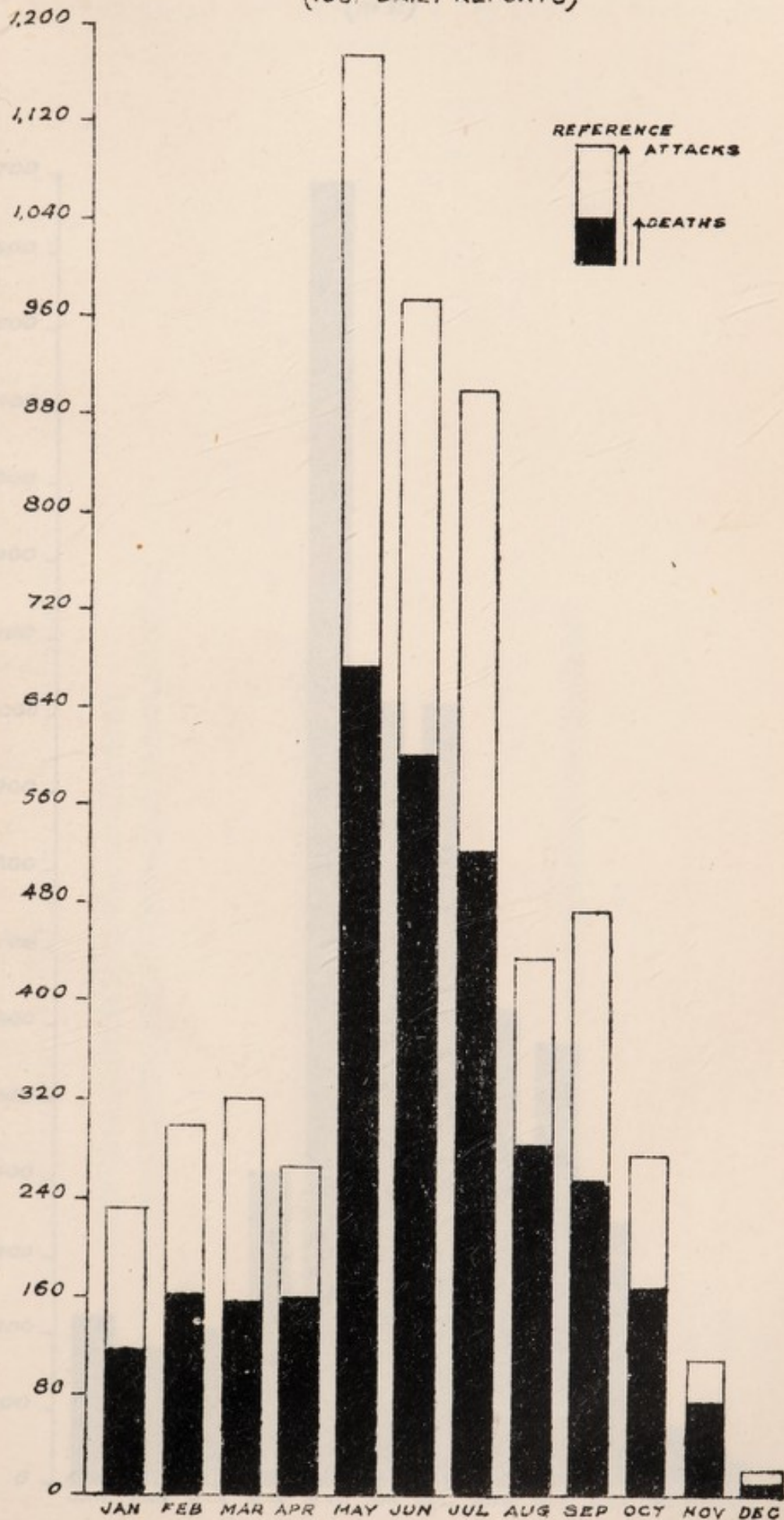
RELATIVE VARIATION OF DEATHS FROM PLAGUE IN MYSORE STATE
IN THE PERIOD 1911-1931



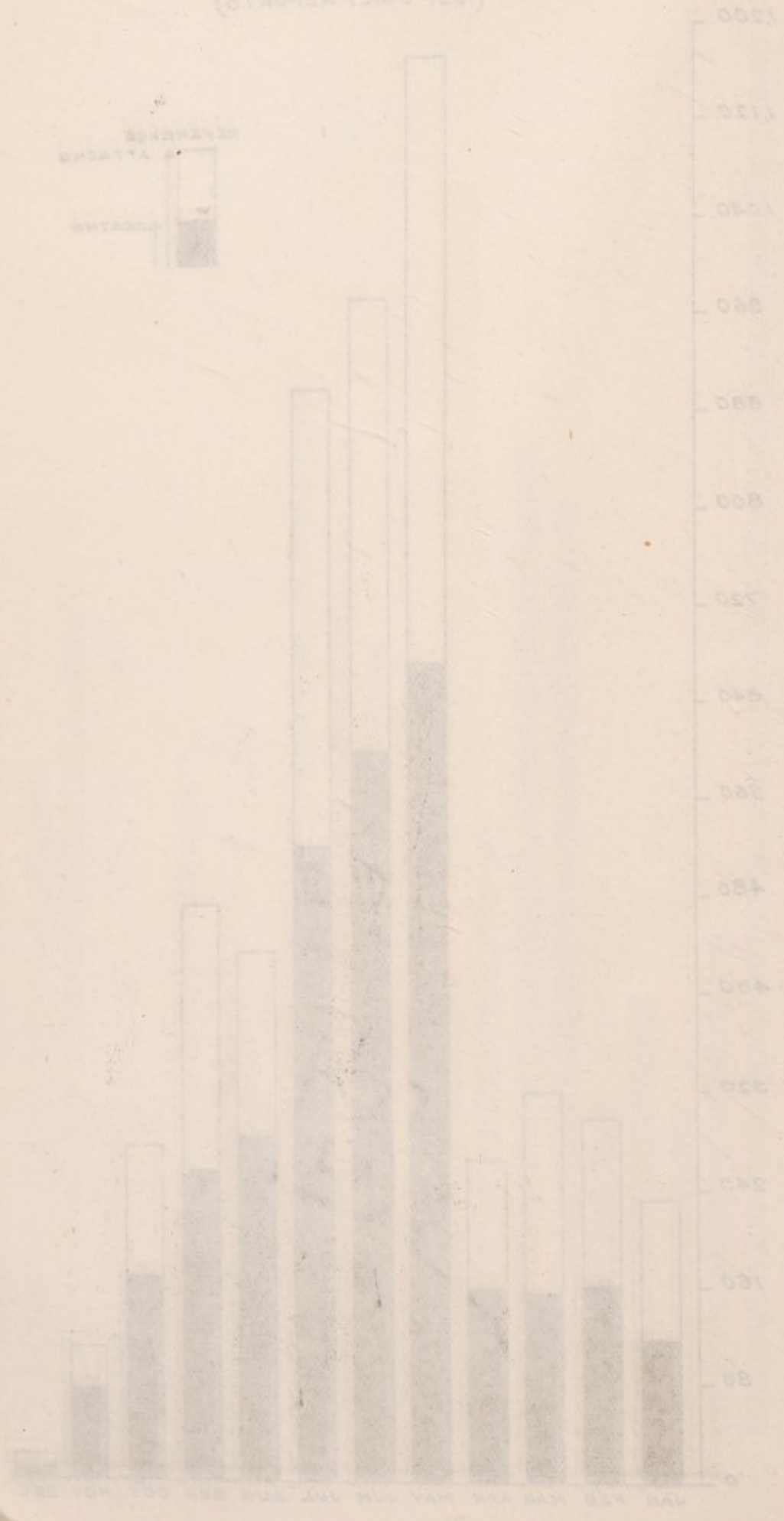
RELATIVE WEAR OF BEAMS FROM PLANT IN MISSOURI STATE
 IN THE PERIOD 1911-1921



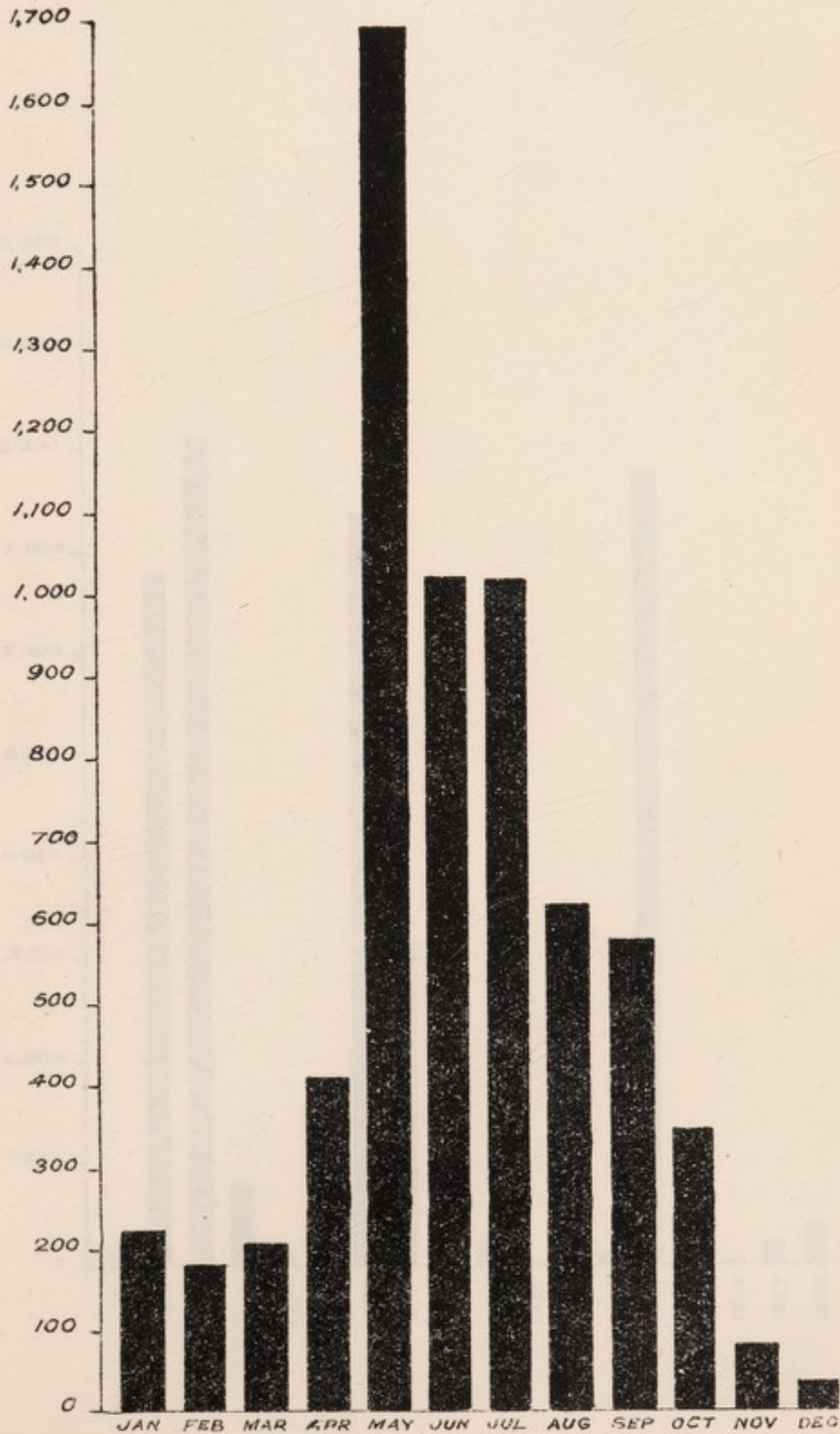
ATTACKS & DEATHS FROM CHOLERA IN MYSORE STATE
(1931 DAILY REPORTS)



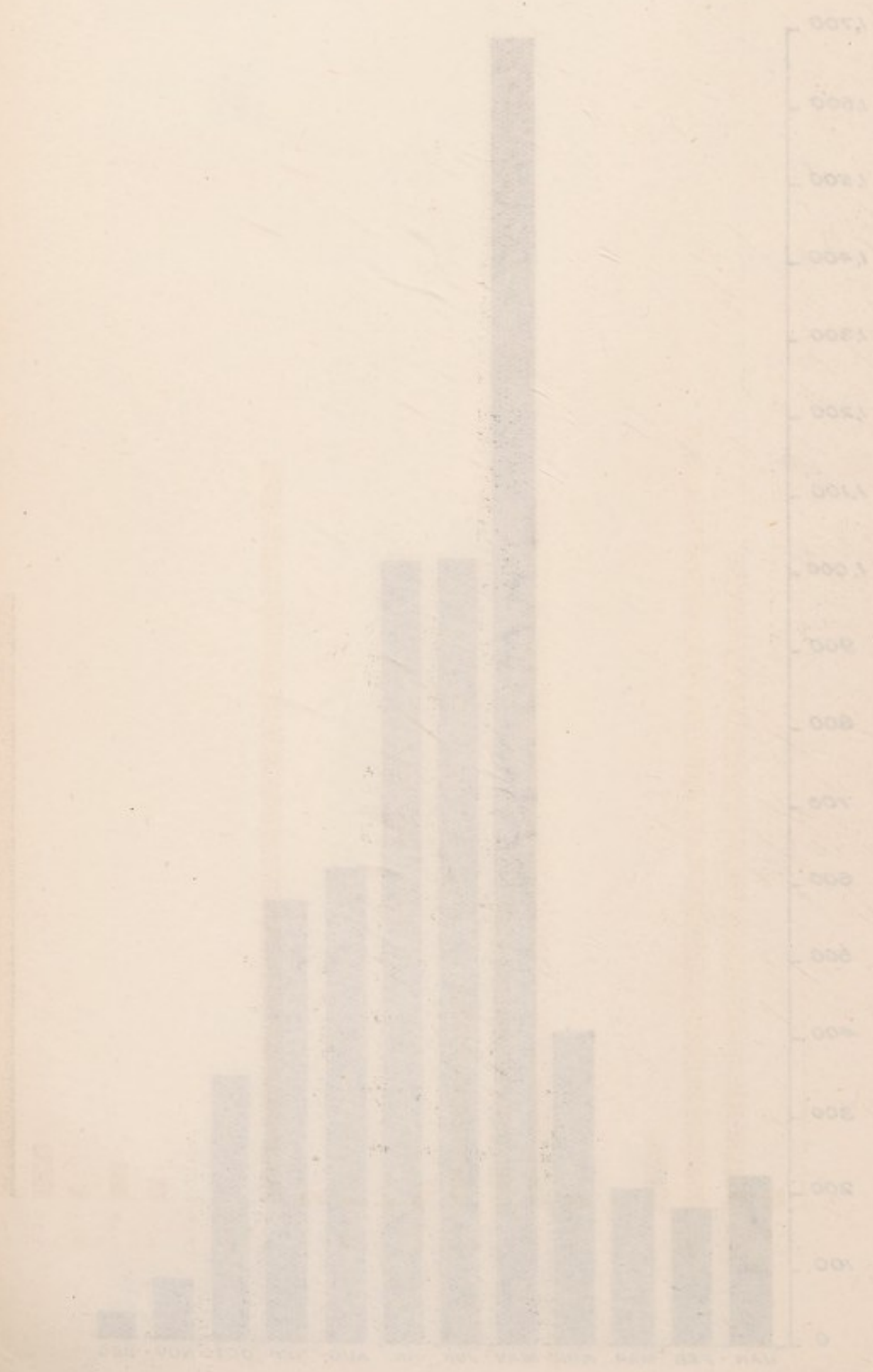
ATTACKS & DEATHS FROM CHOLERA IN HYDERABAD STATE
(1921 DAILY REPORTS)



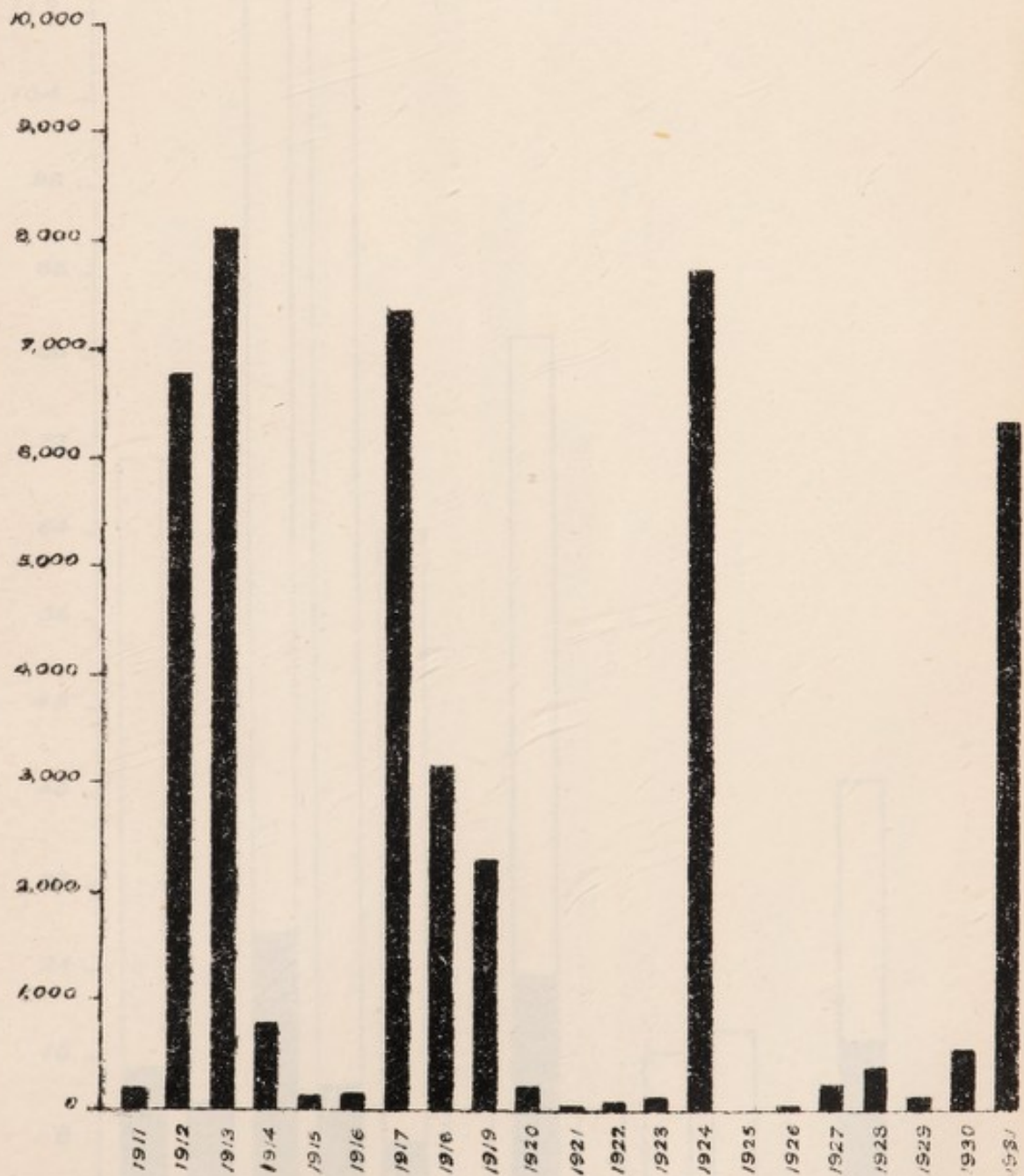
MONTHLY INCIDENCE OF CHOLERA
(1931)



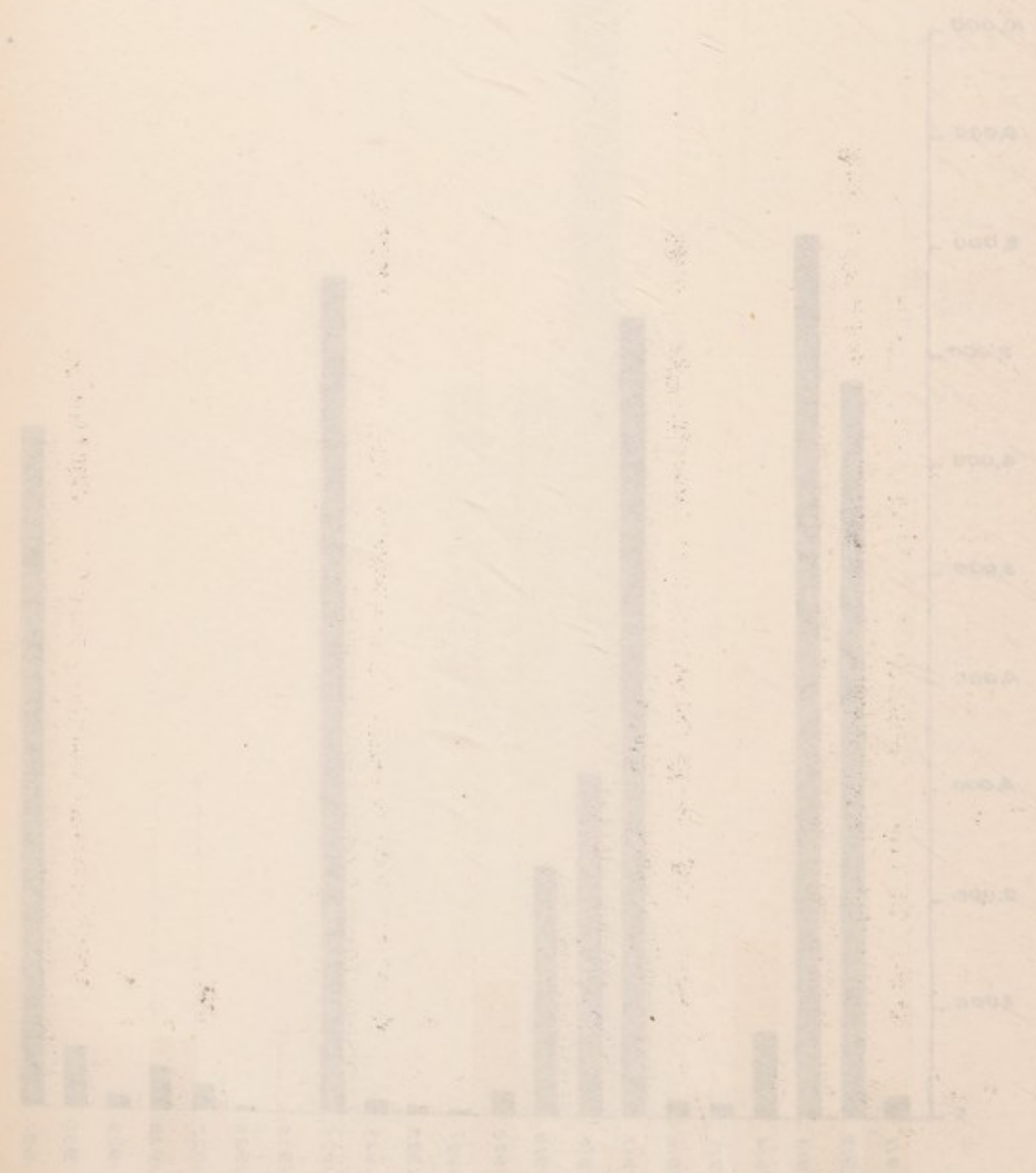
MONTLY INCIDENCE OF CHOLERA
(1931)



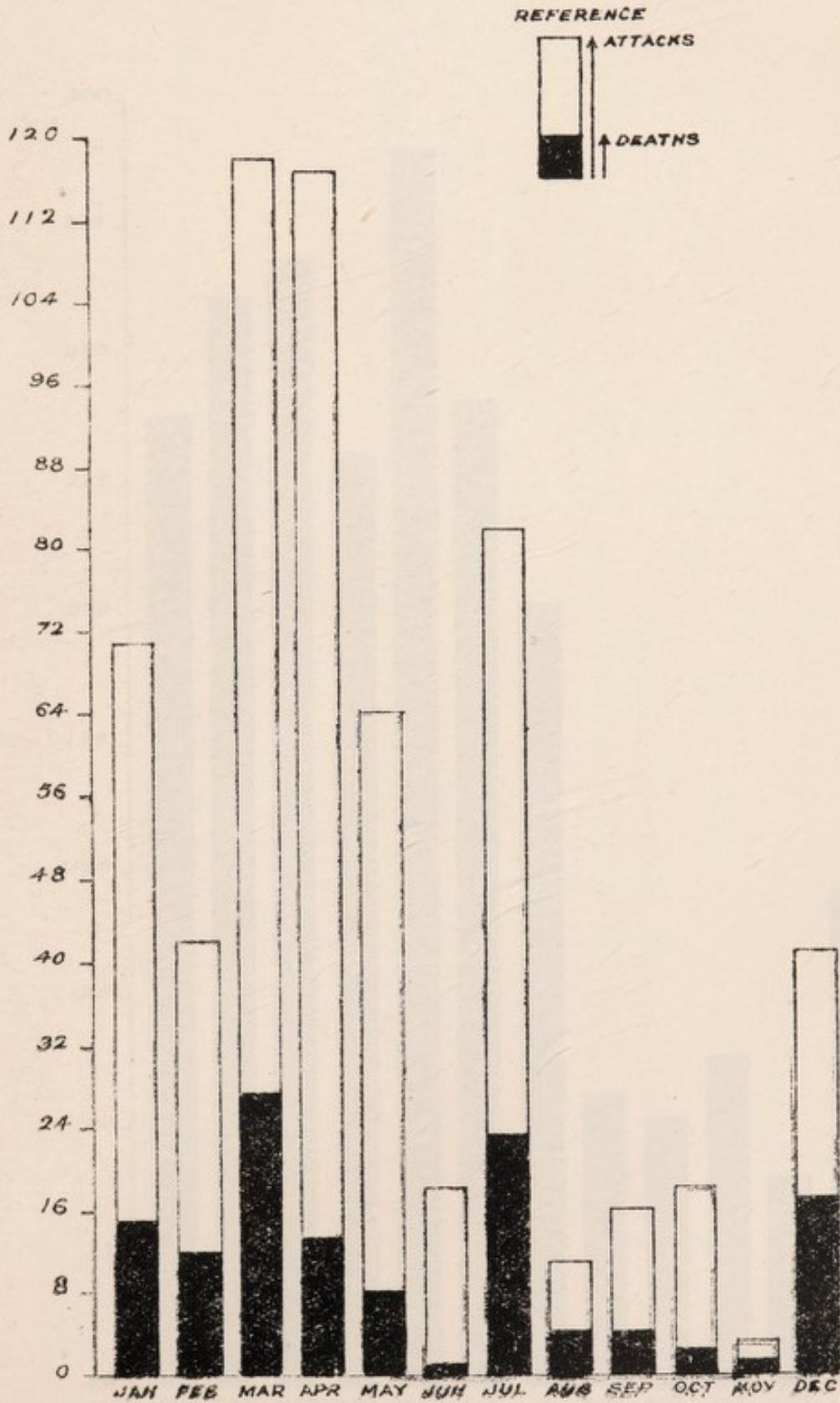
RELATIVE VARIATION OF DEATHS FROM CHOLERA IN MYSORE STATE
IN THE PERIOD 1911-1931



RELATIVE VARIATION OF DEATH FROM CHOLERA IN MISSOURI STATE
 IN THE PERIOD 1841-1851



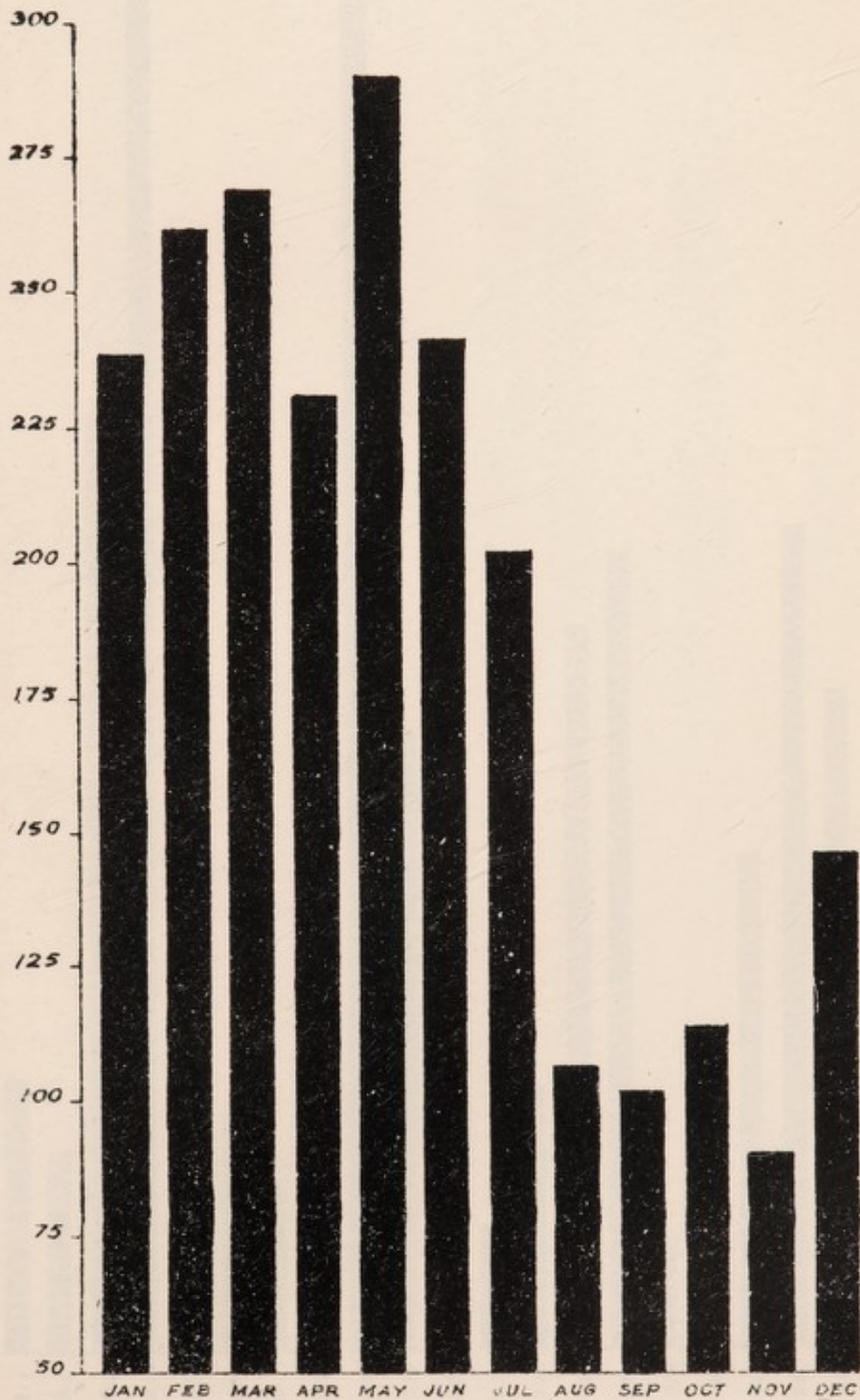
**ATTACKS & DEATHS FROM SMALLPOX IN MYSORE STATE
(1931 DAILY REPORTS)**



ATTACKS & DEATHS FROM SMALLPOX IN MEXICO 1911-1920
(See Daily Reports)



MONTHLY INCIDENCE OF SMALLPOX
(1951)

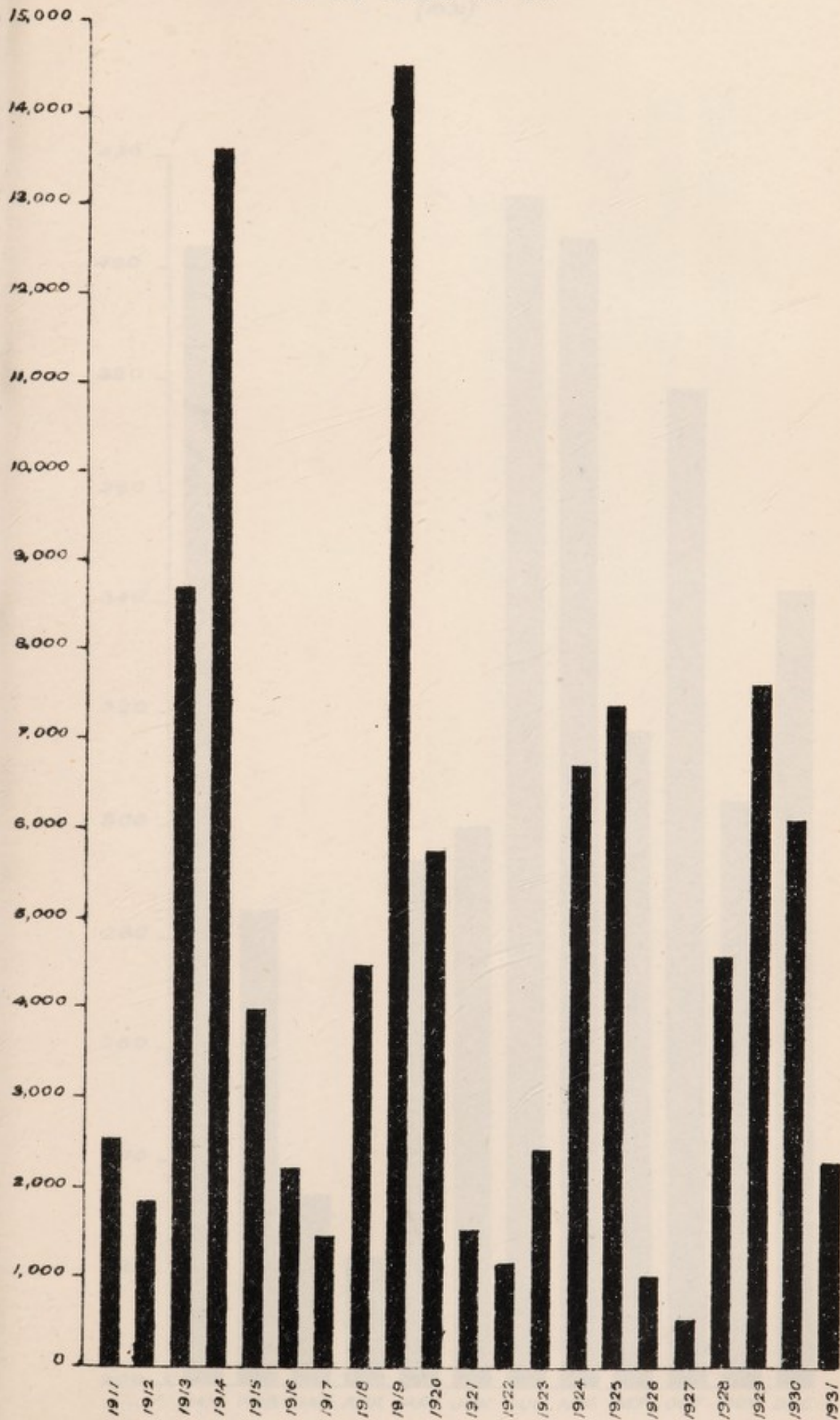


MONTHLY INFLUENCE OF SWELLING

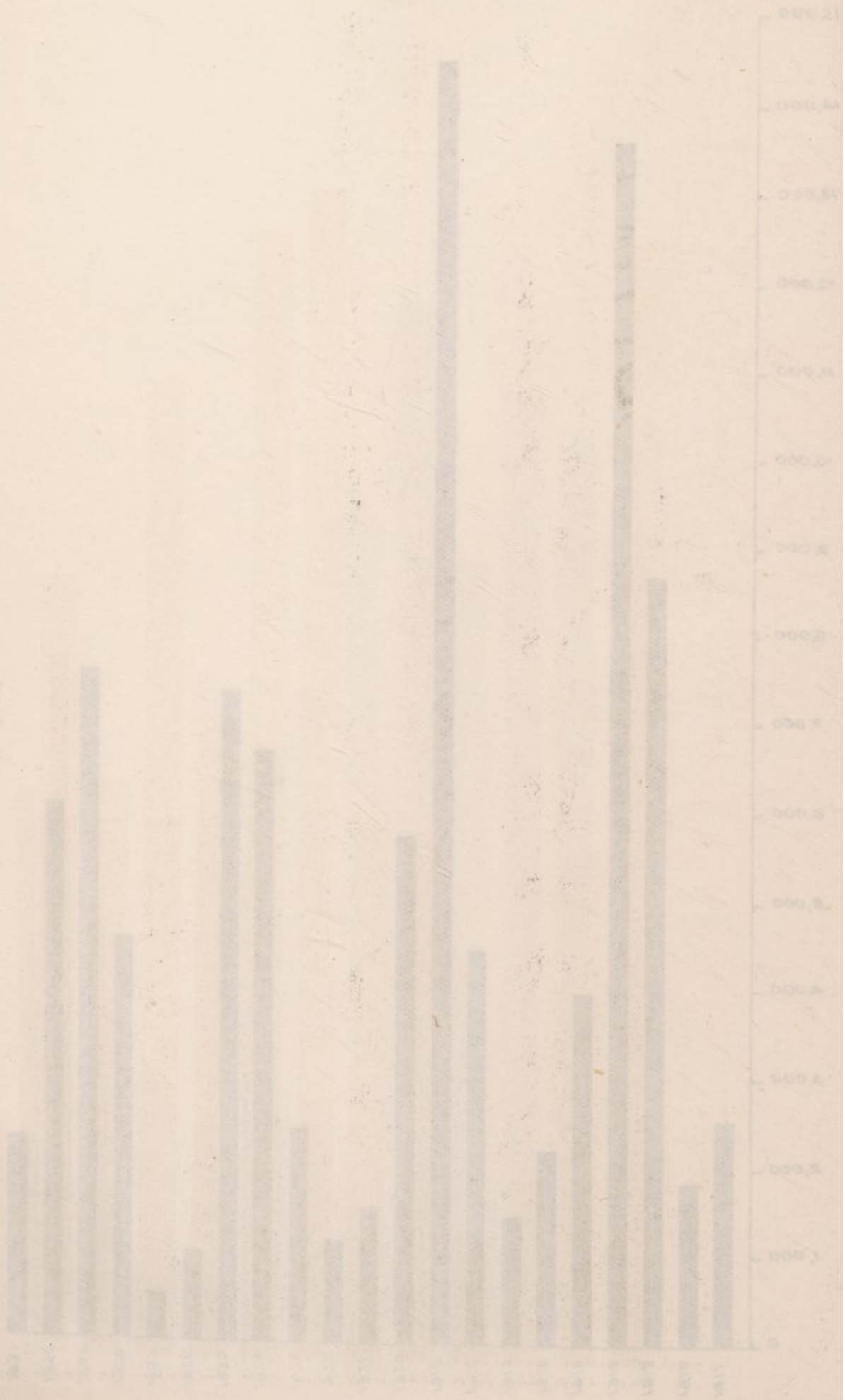
(1925)



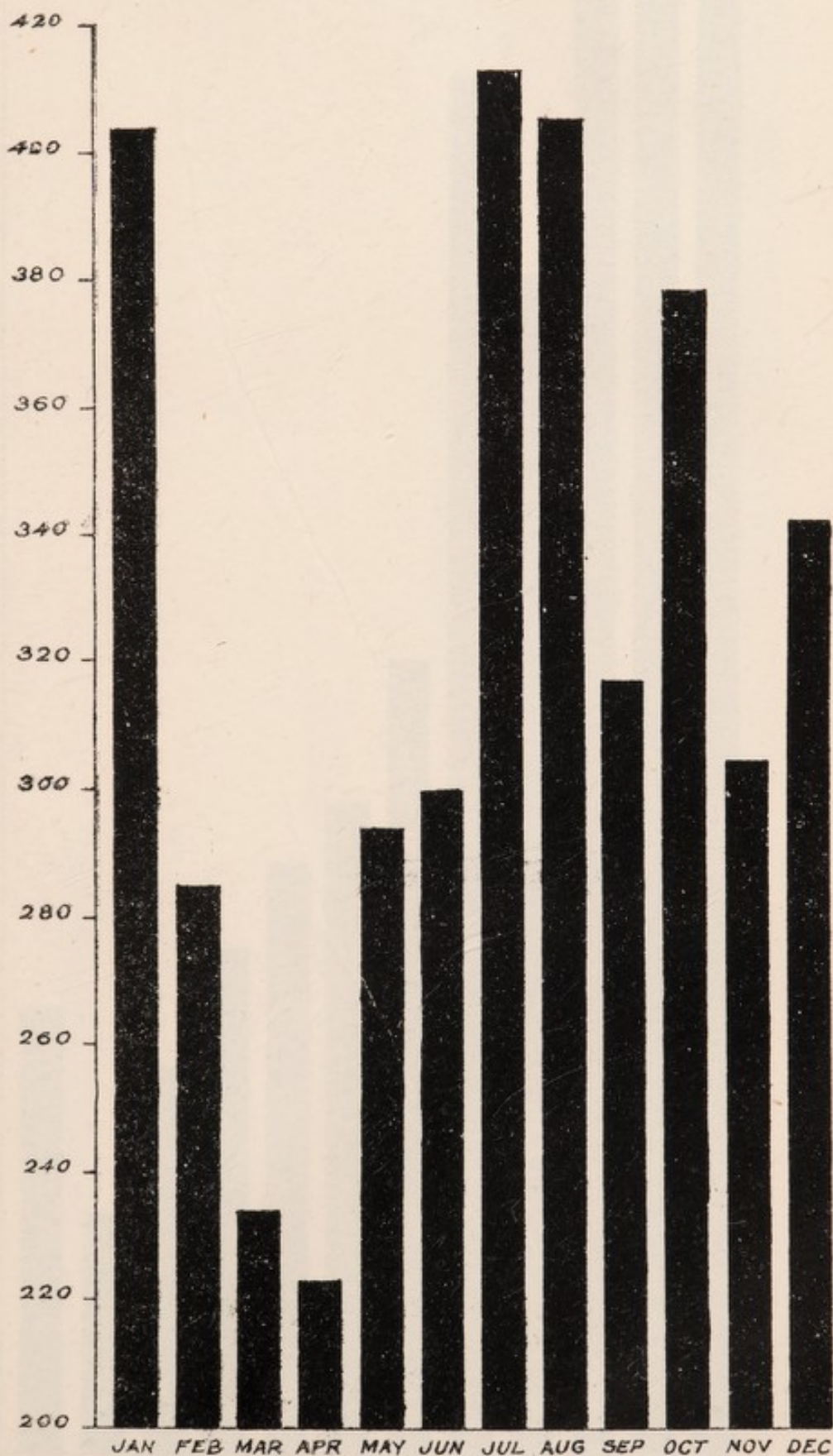
RELATIVE VARIATION OF DEATHS FROM SMALLPOX IN MYSORE STATE
IN THE PERIOD 1911-1931



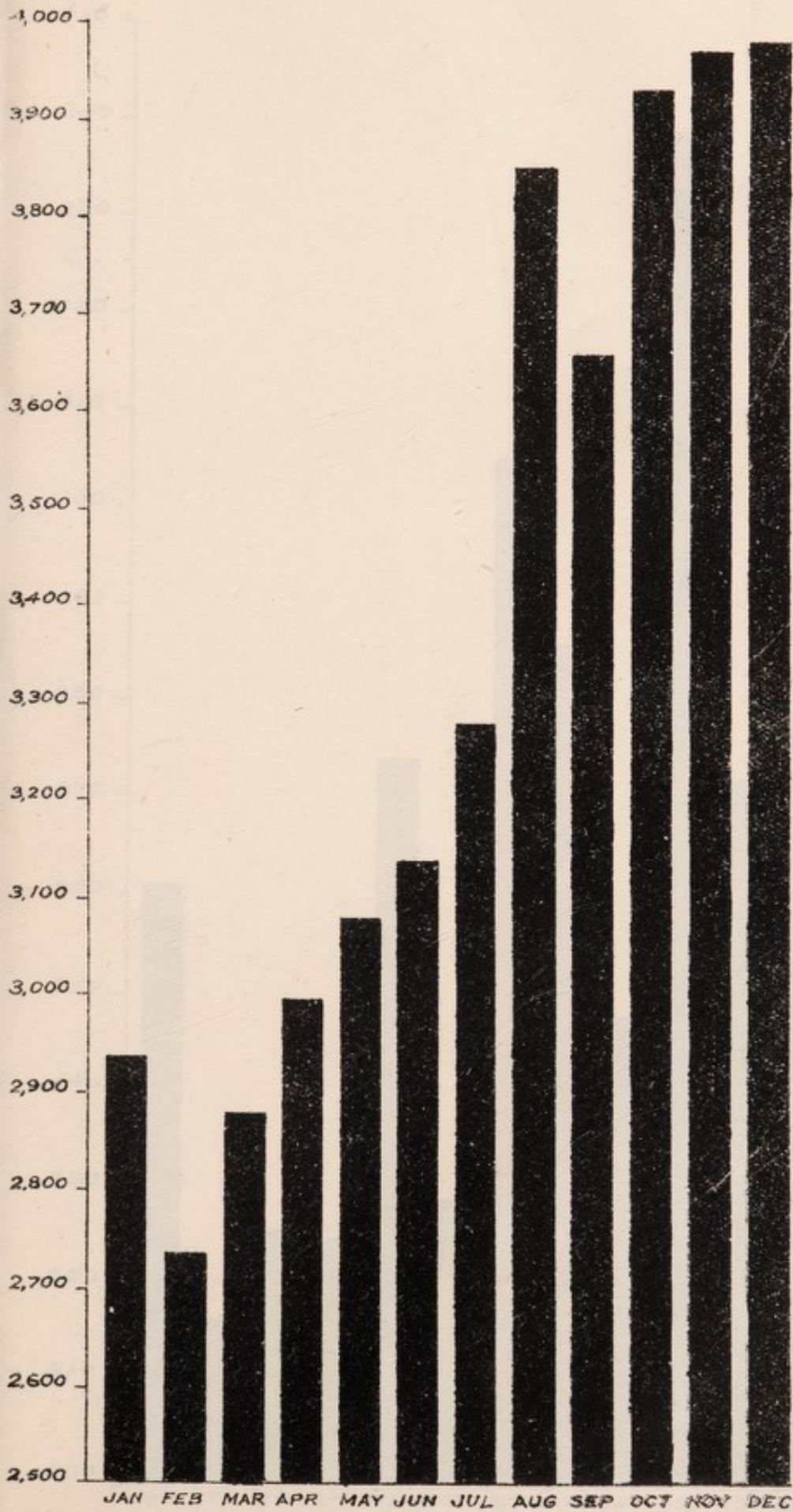
RELATIVE VARIATION OF DEATHS FROM SMALLPOX IN MISSISSIPPI
IN THE PERIOD 1817-1837



MONTHLY INCIDENCE OF DYSENTERY & DIARRHOEA
(1931)



MONTHLY INCIDENCE OF FEVERS
(1931)

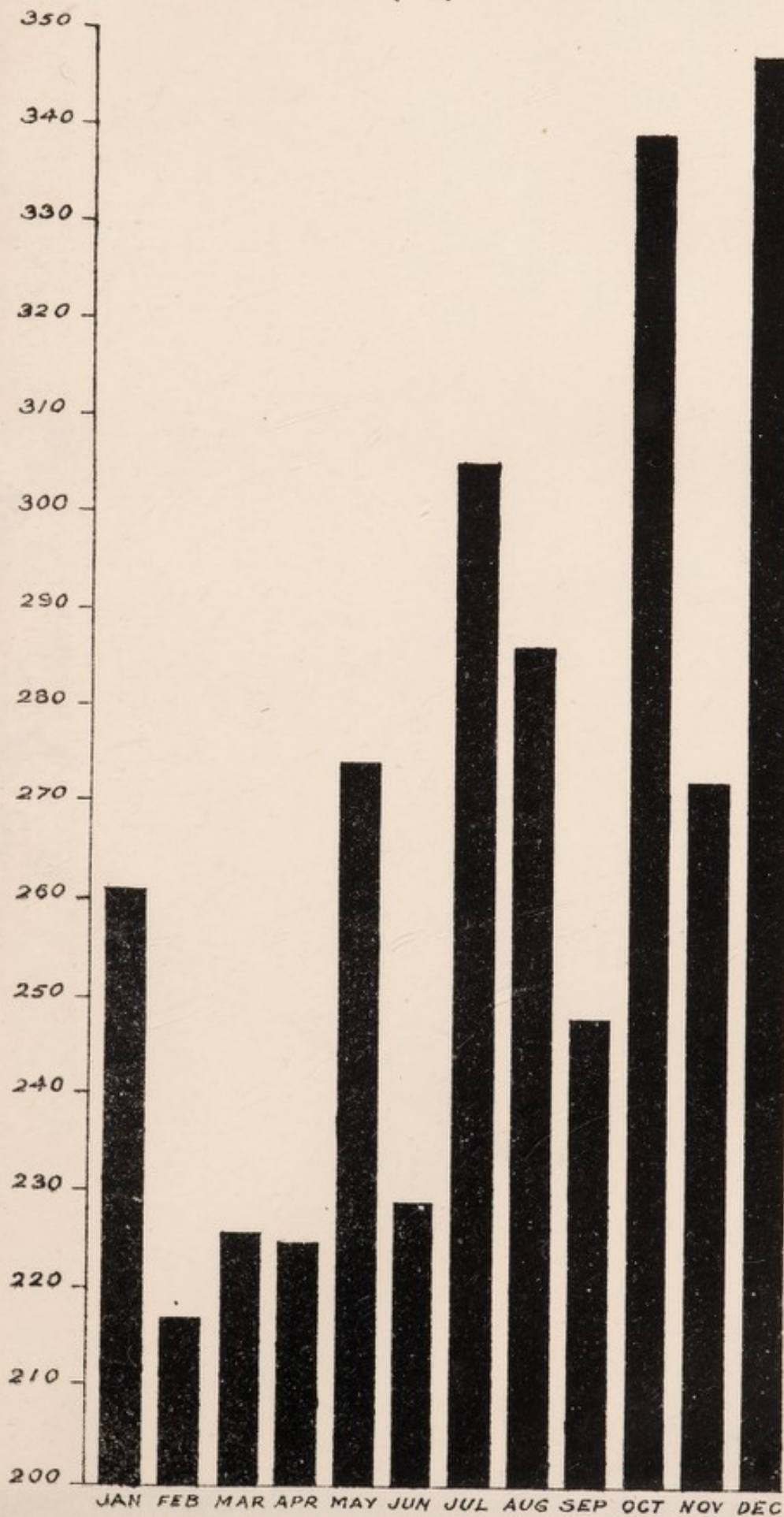


MONTHLY INCIDENCE OF FEVERS
(1931)

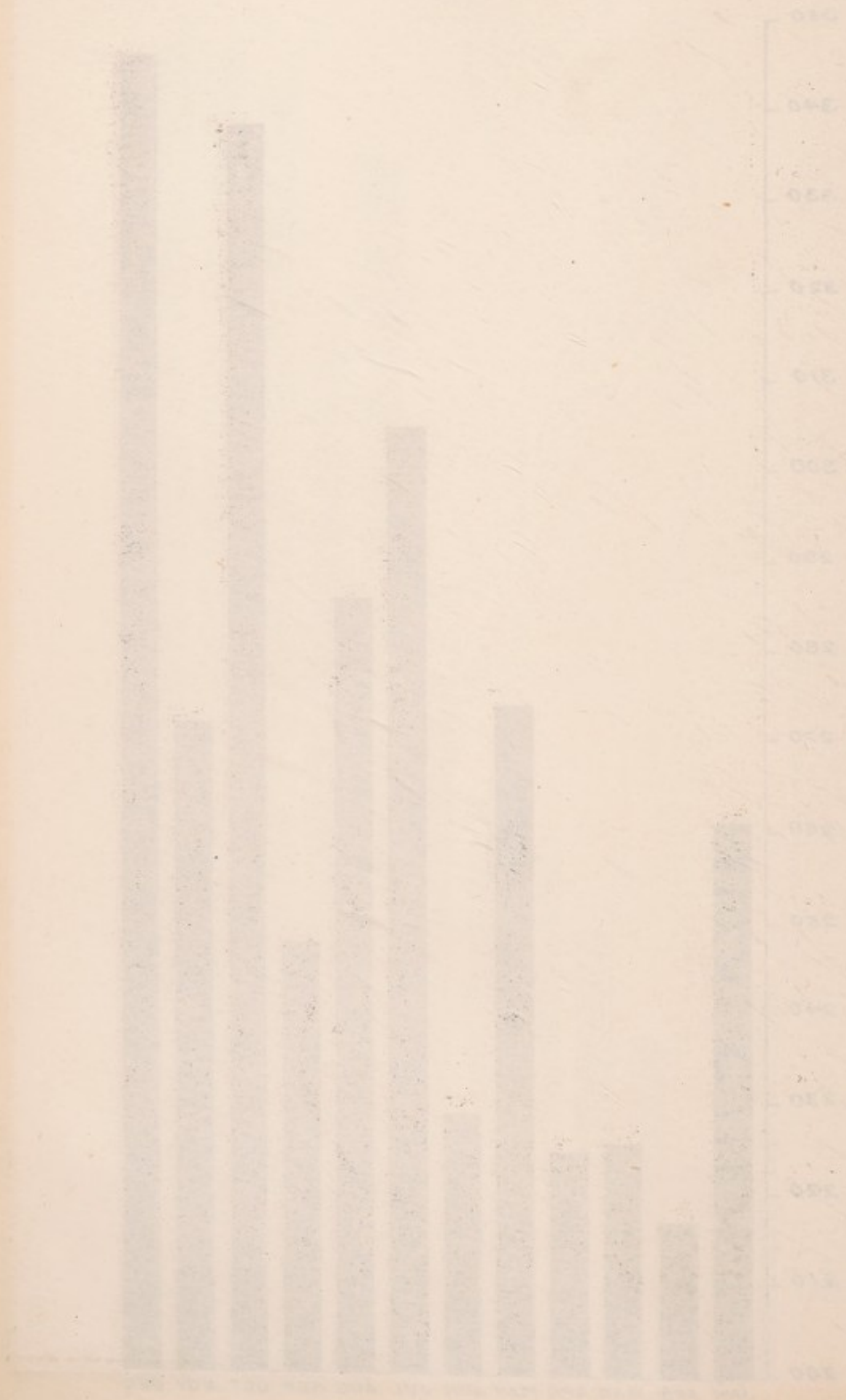


THE FIGURES ARE BASED ON THE REPORTS OF THE MEDICAL OFFICERS

MONTHLY INCIDENCE OF RESPIRATORY DISEASES
(1931)

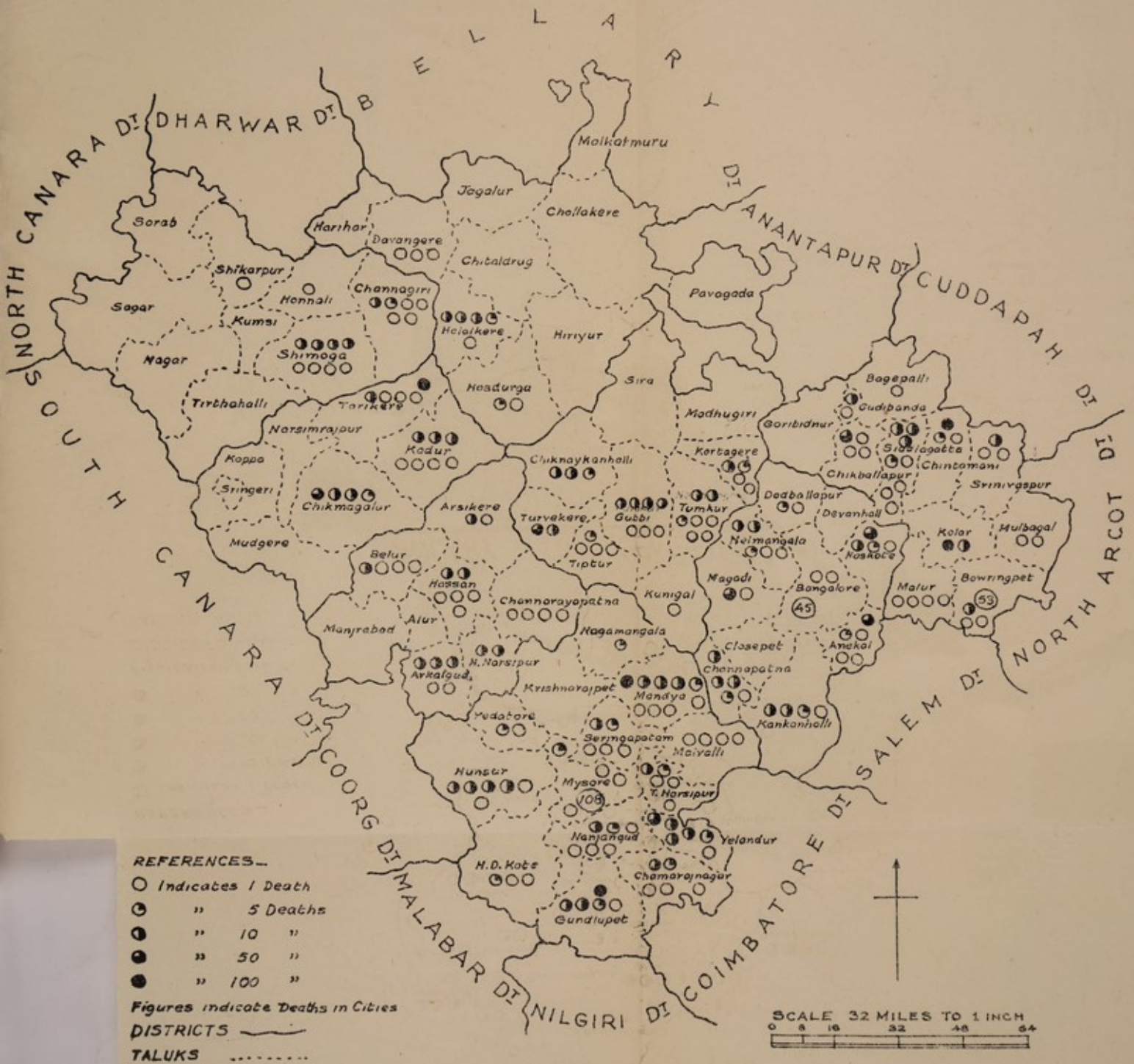


MONTHLY INDEX OF RESPIRATORY DISEASES
(1950)



MYSORE STATE

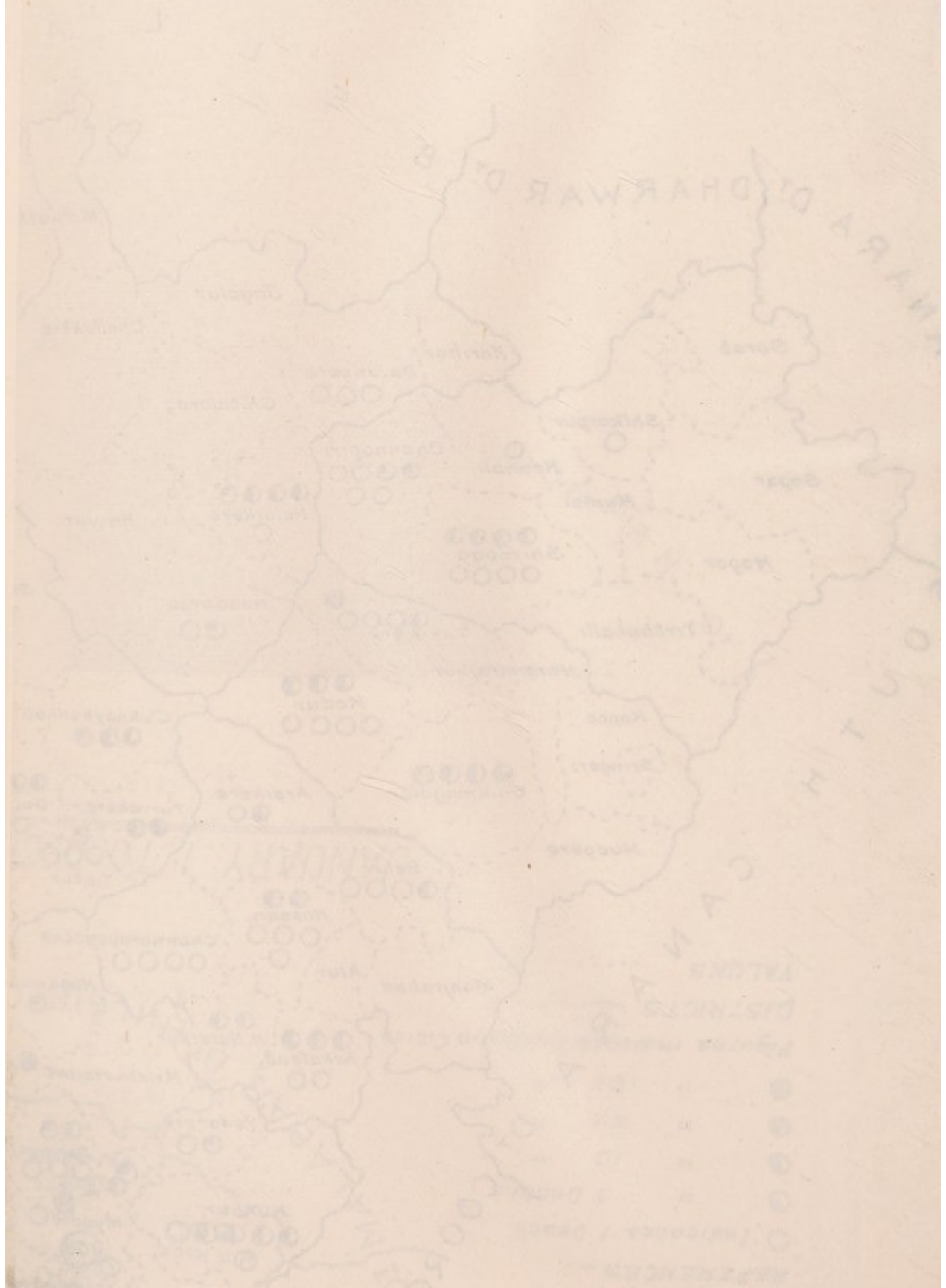
PLAGUE



JANUARY 1, TO DECEMBER 31, 1931.

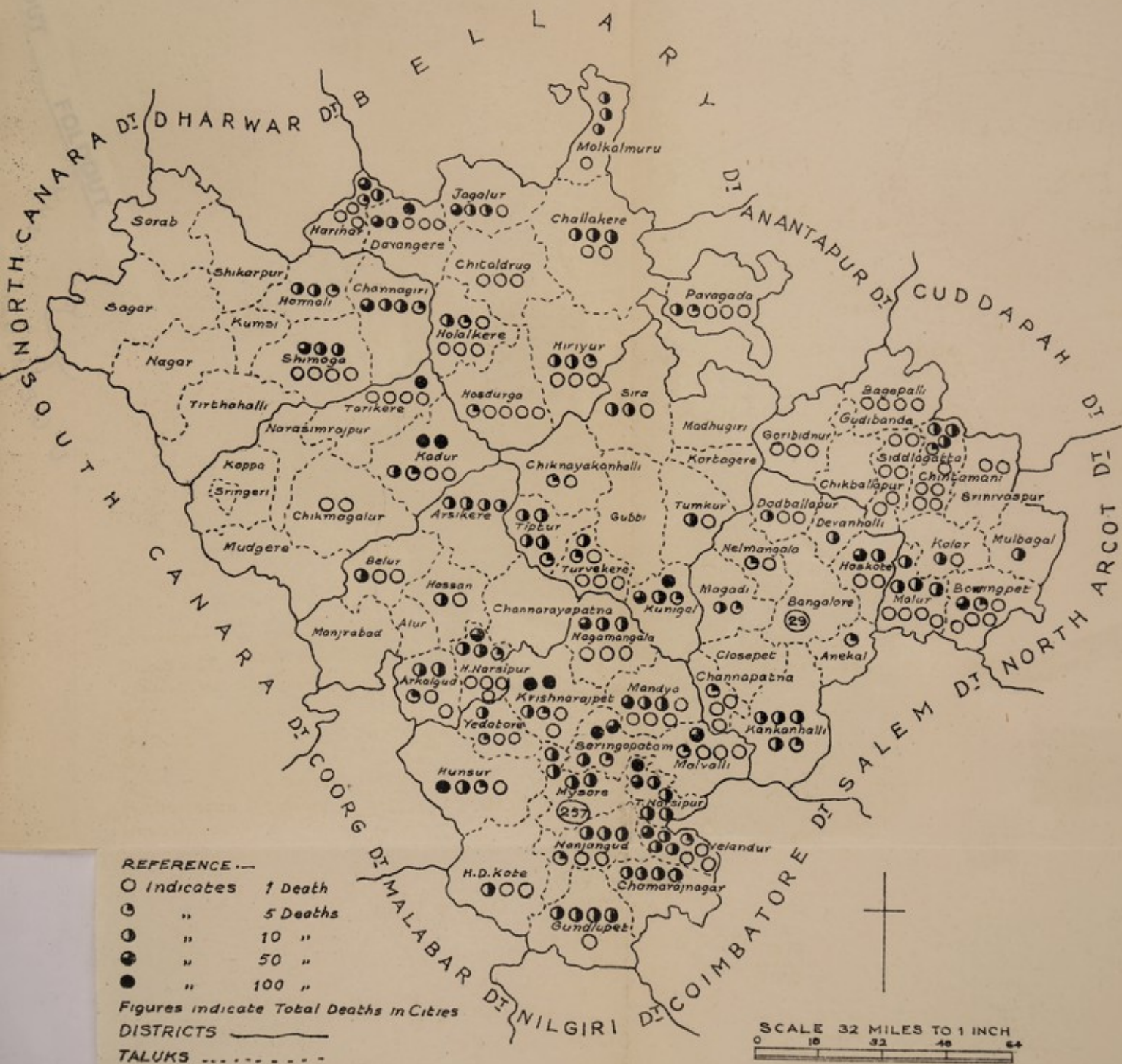
MYSORE

PLAGUE



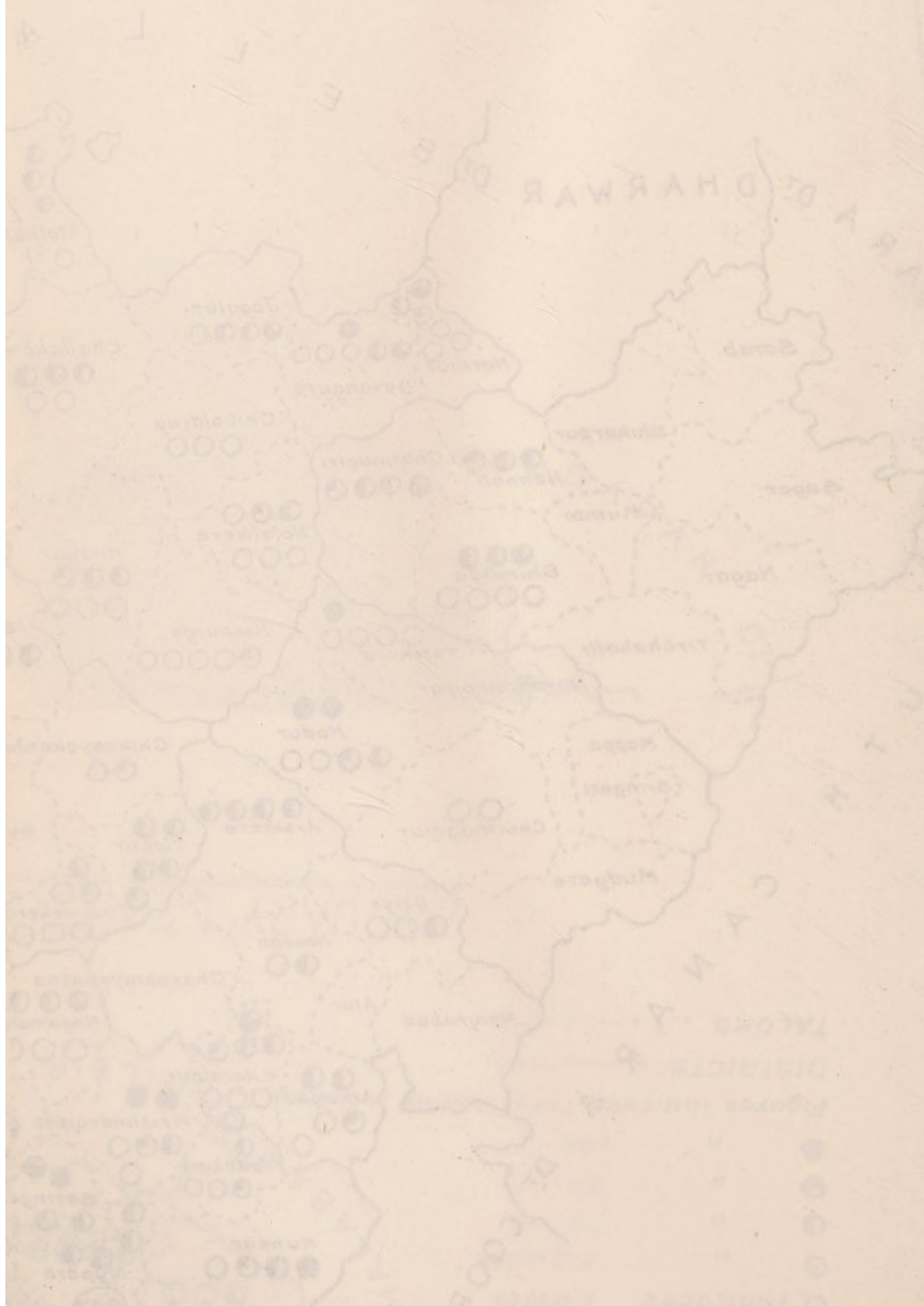
MYSORE STATE

CHOLERA



JANUARY 1, TO DECEMBER 31, 1931.

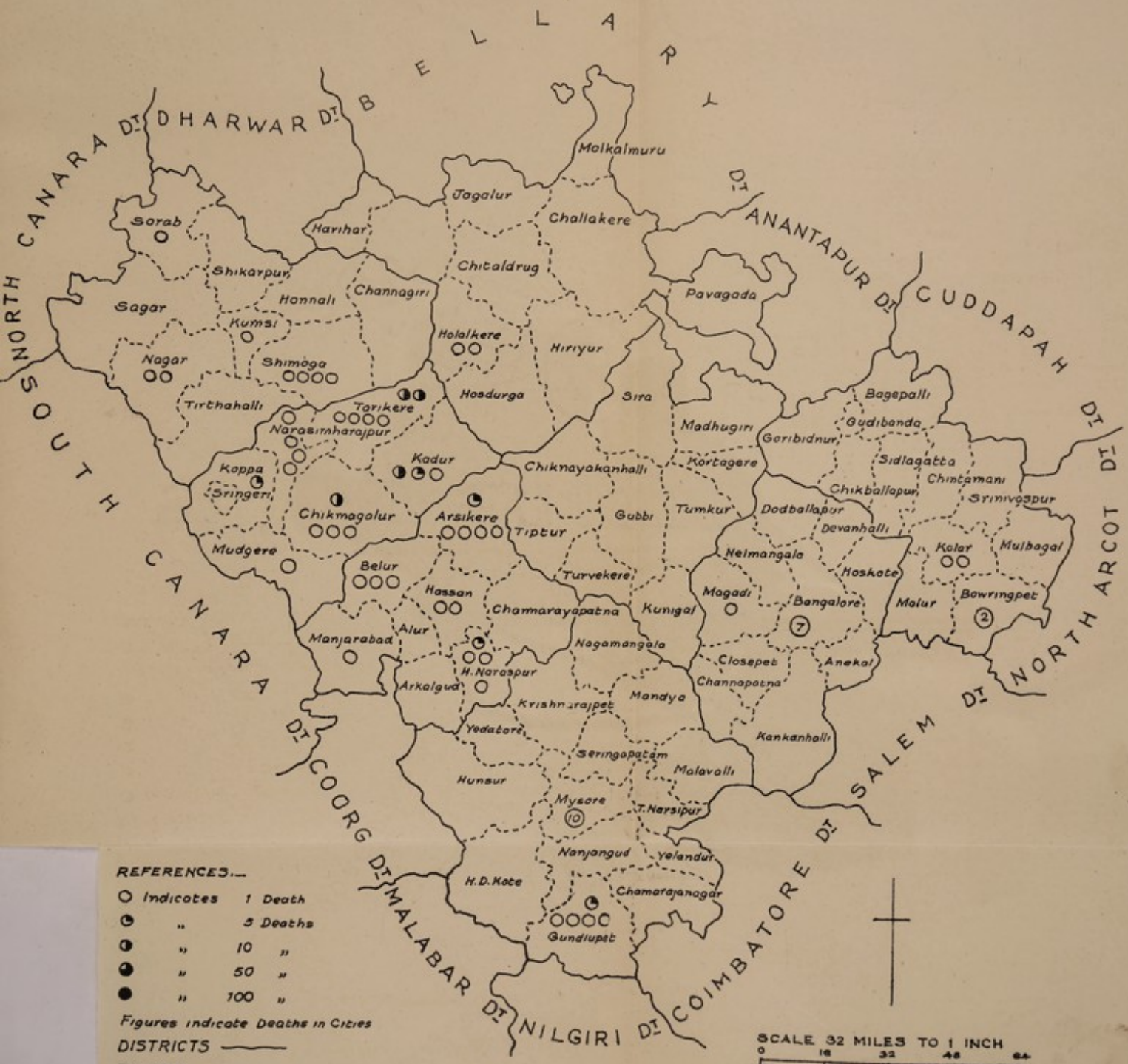
MYSORE
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MYSORE STATE

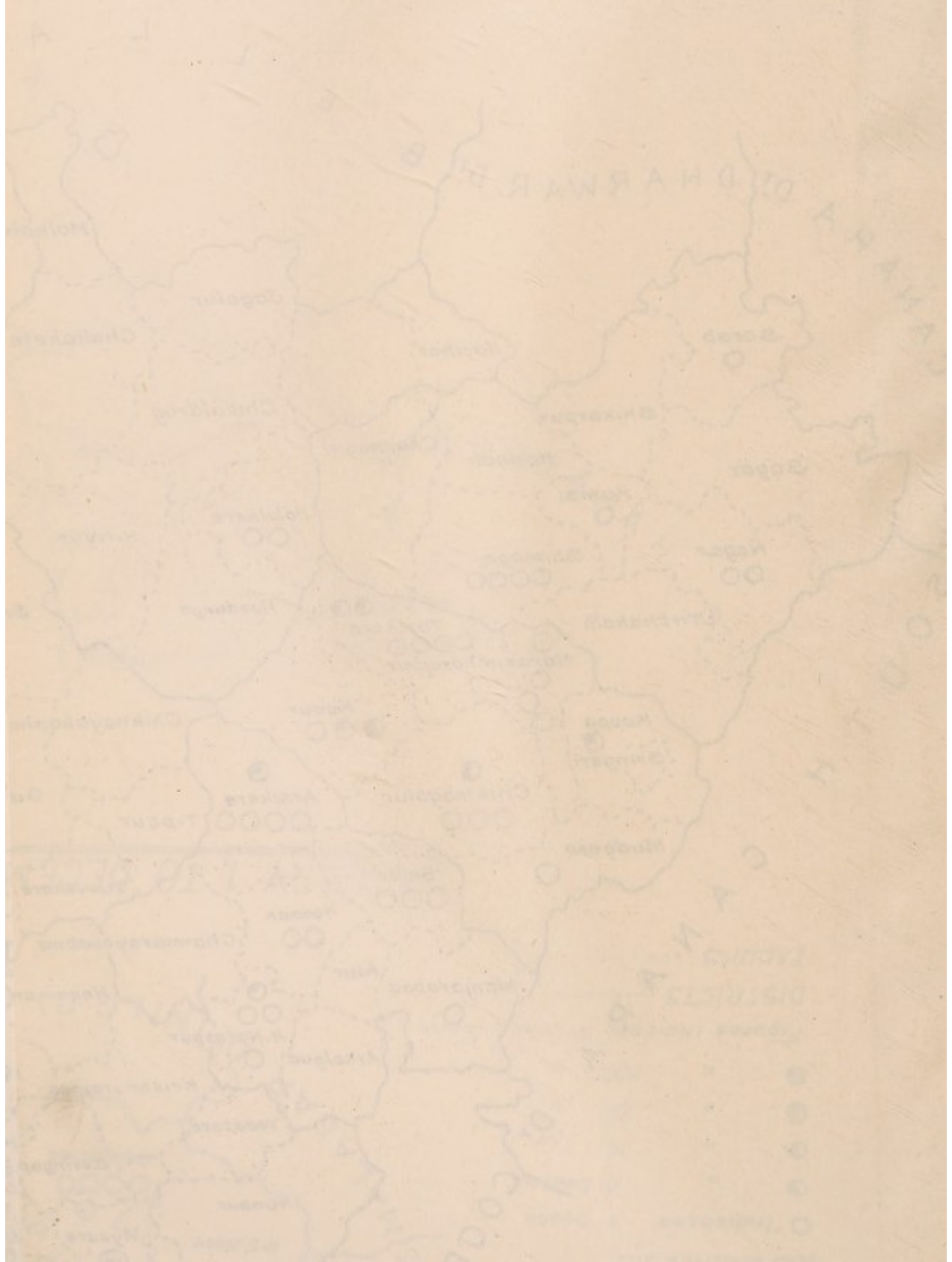
SMALLPOX

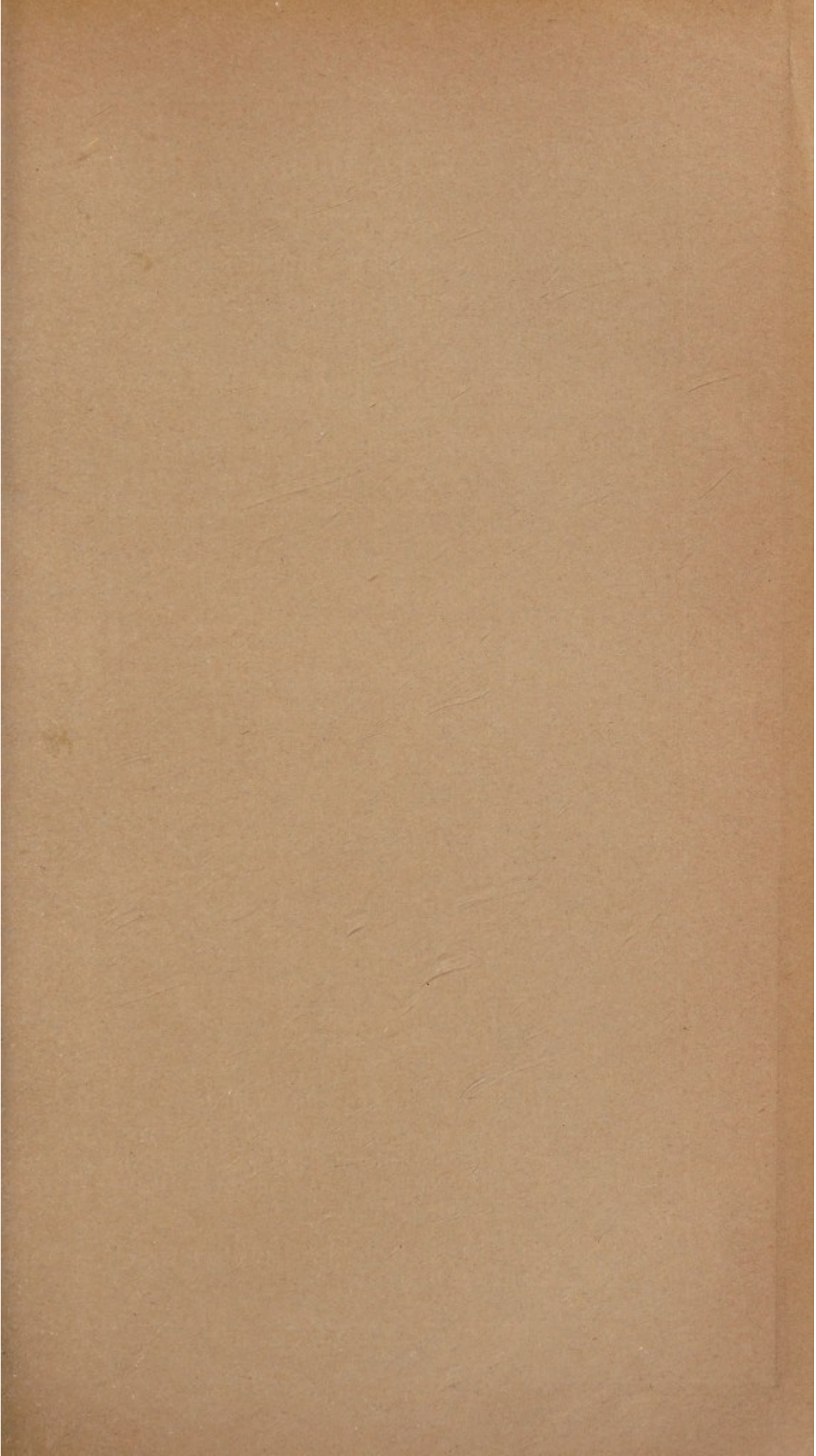


JANUARY 1, TO DECEMBER 31, 1931.

MYSORE 21

SMALL BOX





MYSORE DEPARTMENT OF HEALTH.

The following Bulletins are published by Government.

No. 1. **Report on a Health Survey of Mysore--**

By DR. W. C. SWEET, B.Sc., M.D., Dr. P. H., Field Director, International Health Division, Rockefeller Foundation, Consultant in Health in Mysore, Bangalore, 1928.

No. 2. **Report on Tuberculosis in Mysore State—**

By DR. P. S. CHANDRASEKHAR, M.D., sometime Officer-in-charge of Tuberculosis Survey in Mysore, 1928.

No. 3. **Report on a Sanitary Survey of the City of Bangalore for the year 1927—**

By DR. B. MAHOMED USMON, L.M.S. (Retired), Senior Surgeon and Sanitary Commissioner with the Government of Mysore, Bangalore, 1928.

No. 4. **Guinea-worm Disease in the State—**

By DR. J. V. KARVE, M.B., CH.B., D.P.H., Director of Health in Mysore, Bangalore, 1929.

No. 5. **Report of the Delegation of the British Social Hygiene Council, (Inc.) to the Government of Mysore, 1929.**

No. 6. **Report on the Present Status of Birth, Death and Epidemic Disease Reports in Mysore District, Bangalore City and Kolar Gold Fields with suggestions for Improvement—**

By MR. E. R. SUNDARARAJAN, M.A. (Hons.), Technical Officer, Bureau of Vital Statistics, Mysore Department of Health, Bangalore, 1929.

No. 7. **A Survey of Mysore State for Enlarged Spleens and for Hookworm and other Helminthic Infections—**

By DR. W. C. SWEET, B.Sc., M.D., Dr. P.H., Field Director, International Health Division, Rockefeller Foundation, Consultant in Health in Mysore, Bangalore, 1929.

No. 8. **Physicians' Pocket Reference to the International list of Causes of Death 1932.**