

# **Annual report of the Director of Public Health of the United Provinces of Agra and Oudh.**

## **Contributors**

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Sixtieth Annual Report

OF THE

DIRECTOR OF PUBLIC HEALTH

OF THE

UNITED PROVINCES OF AGRA AND OUDH

*FOR THE YEAR ENDING DECEMBER 31, 1927*

AND THE

THIRTY-THIRD REPORT

OF THE

SUPDG. ENGINEER, PUBLIC HEALTH DEPARTMENT,

*FOR THE YEAR ENDING MARCH 31, 1928*



ALLAHABAD:

THE SUPERINTENDENT, GOVERNMENT PRESS, UNITED PROVINCES

1928

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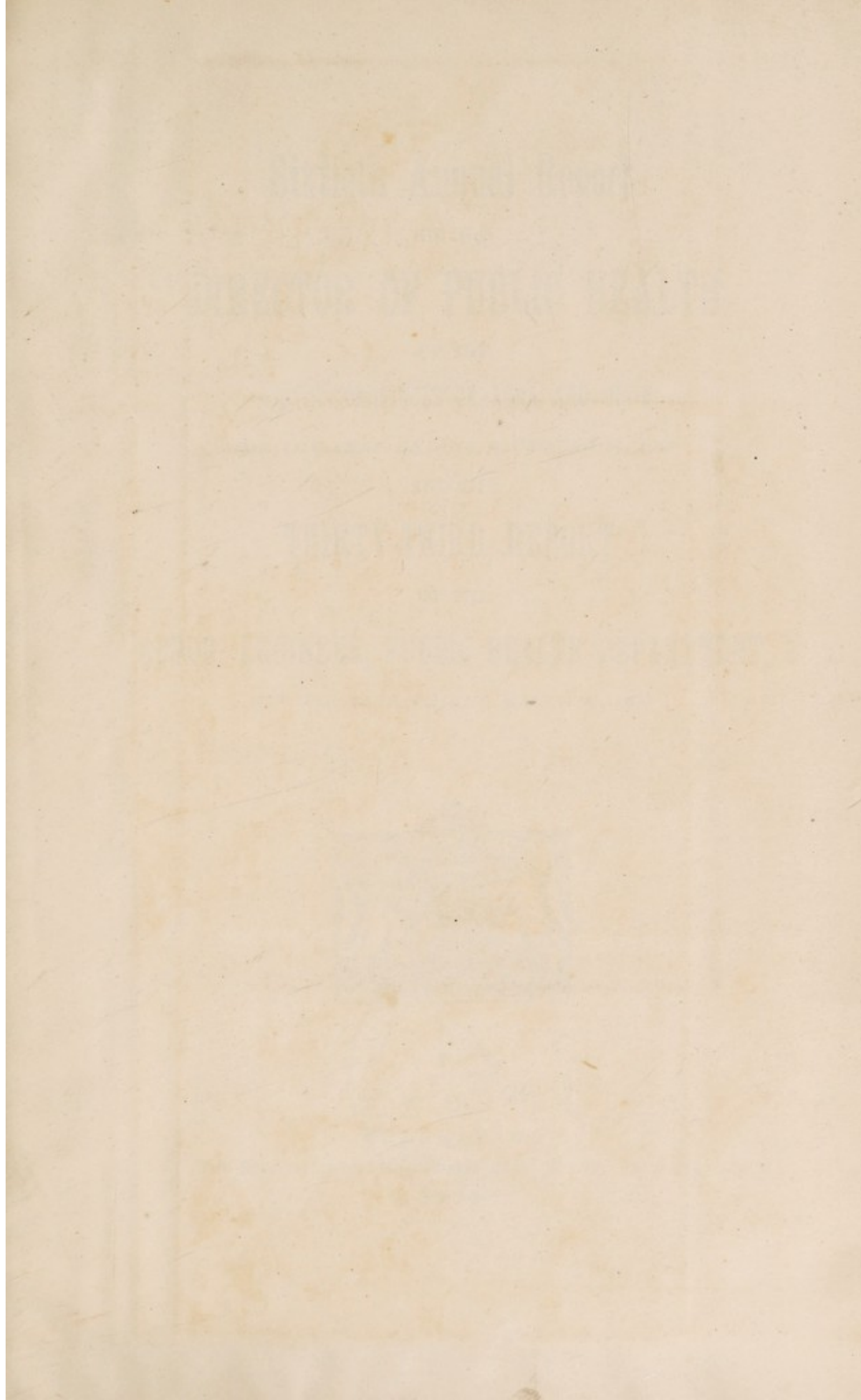
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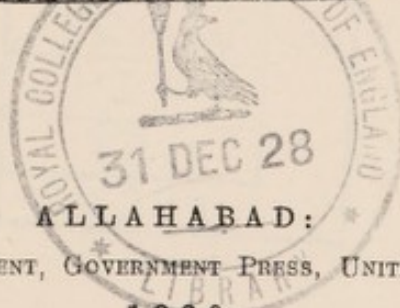




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1928

Sixtieth Annual Report

DIRECTOR OF PUBLIC HEALTH

UNITED KINGDOM OF GREAT BRITAIN

HEALTH REPORT

SUPPLEMENTARY PUBLIC HEALTH DEPARTMENT

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# GOVERNMENT OF THE UNITED PROVINCES

## DEPARTMENT OF PUBLIC HEALTH

PROVINCIAL ORGANISATION

BOARD OF PUBLIC HEALTH

DIRECTOR OF PUBLIC HEALTH

SUPERINTENDING ENGINEER,  
PUBLIC HEALTH DEPARTMENT

ADMINISTRATIVE RANGES 1-122  
Asst. Dir. Public Health 1-122 Ranges

- 1. Inspection of activities of Municipalities, Panchayats, and Town areas in their ranges.
- 2. Measures for prevention of epidemics.
- 3. Inspection of vaccination.
- 4. Advice to local bodies on Public Health matters.

MALARIA  
A. D. P. H. (Malaria) (1)

- 1. Training of M. O. H. in practical Malaria Prevention.
- 2. Analytical surveys of Malaria in the field.
- 3. Administration of Malaria and Districts of Malaria in the field.
- 4. Medical Service and attendance in Malaria.
- 5. Malaria Research.

PROVINCIAL HYGIENE INSTITUTE  
A. D. P. H. (Public Health) (2)

- 1. Training and instruction of Public Health personnel in:
  - a. The Hygiene and Law in Public Health.
  - b. Survey and Chief Officers Inspectors.
  - c. The organisation of T. D. Officers.
  - d. Letters to Public Health officers for medical, sub-graduate and post-graduate.
- 2. Studies and special analytical work:
  1. Clinical.
  2. Bacteriological.
- 3. Research:
  - a. All current research is being carried on with the financial aid of the Research Fund Association.
  - b. Papers.
  - c. Conferences.
- 4. Publication and Exhibition of Public Health notes, Pictures.

REGISTRATION OF VITAL STATISTICS  
Superintendent Registrar, etc. U.P.  
Dir. of Public Health

- 1. Collection of vital statistics from District sanitary inspectors, Civil Surgeons, M. O. H. S.
- 2. Distribution and completion of vital statistics.
- 3. Preparation of V. R. returns.

VACCINATION  
Government Director  
Public Health, Public Health Officer

- 1. Inspection and Distribution of Vaccines.
- 2. Vaccination of Vaccinable Classes.

EPIDEMIOLOGY  
A. D. P. H. (Epidemiology) (3)

- 1. Collection of reports of Epidemics and Mortality (M. O. H. S.).
- 2. Control of epidemics of the following: Typhoid, Cholera, and Special Health (M. O. H. S.).
- 3. Reports of Vaccines, Medicines and Quinine for Epidemics.

HYGIENE PUBLICITY BUREAU  
A. D. P. H. (H. P. B.) (4)

- 1. Graphic lectures and demonstrations in Hygiene and Sanitation for:
  - a. Officers of the Local Bodies.
  - b. M. O. H. S.
  - c. Municipal M. O. H. S.
  - d. College of the Provincial Medical and Suburban Medical Services.
  - e. Training Officers and Special Health Officers.
- 2. Special lectures and demonstrations on:
  1. Pure Water.
  2. Public Works.
  3. Food Hygiene.
  4. District Sanitation.
- 3. Preparation of Public Health lectures and in Sanitation, Hygiene, and District Sanitation.
- 4. Distribution of Maps, Lectures (with text) and slides (with text) to M. O. H. S.

PURE K. ANALYST

- 1. Analysis of samples of food and other material of public health.

WATER WORKS  
M. O. H. S. (Water Works)

- 1. Inspection of Plant and Machinery, collection and checking of Plans and maps, Periodic inspection of Municipal Health Works, Advice on improvement of supply of water, Supervision of construction of water supply.

PUBLIC HEALTH WORKS  
Ex. Officer at Cantons, M. O. H. S. (Public Health Works)

- 1. Preparation of projects (financial and technical) for water works, Drainage, Sewerage, Public Health Works, Construction and supervision of the above, Advice to the Local Bodies on Public Health Matters, Maintenance of works, Water supply to water.

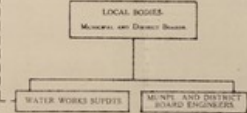
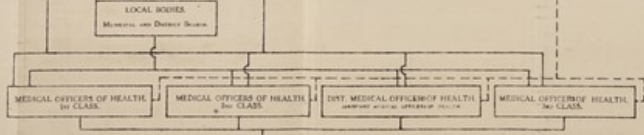
TECHNICAL ADVICE TO S. P. H.

- 1. Supervision of Public Health projects prepared by Local authorities, Preparation of technical specifications, Preparation of reports, Advice on improvement of supply of water.

P. H. WORKS FOR LOCAL BODIES

- 1. Supervision and advice to the above, Supervision of Construction, Collection and Storage of sewage, disposal of the same.

LOCAL ORGANISATION



Chief Sanitary Inspectors.  
Sanitary Inspectors.  
Assistant Superintendents of Vaccination.  
Vaccinators.  
Sub-Registrars of births and deaths.

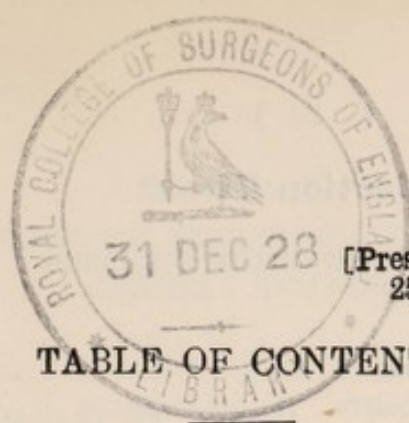
Advisory function - - - - -  
Administrative control - - - - -

GOVERNMENT

PROVINCIAL ORGANISATION

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3 of the list of contents, 2 of the report.	Western	Weather	In line 19 from the bottom.
15	30·28	30·25	In the statement under column "Birth rate" against "Assam".
16	As	as	In line 7 of paragraph 52.
16	2·94	2·94	In line 10 of paragraph 54.
16	2·66	2·66	In line 11 of paragraph 54.
21	S rvice	Service	In line 10 from the bottom.
28	D.P.H.	DR. P. H.	In line 9 from the top.
33	<i>Kumbh</i> Mela fair	<i>Kumbh</i> Mela	In the last but one line.
39	Camo	Camp	In the last line.
41	4 ,528	45,523	In paragraph 78 against 1914-15.
43	cthe	the	In line 4 of the heading "incculations".
47	Faemel	Faecal	In the 3rd line from the bottom.
48	morality	mortality	In line 9 from the top.
48	Rs. 6,000	Rs. 6,600	In line 4 from the bottom.
78	District Medical of Health	District Medical Officer of Health	In line 7 from the bottom.
89	village	villages	In line 5 of paragraph (a).
105	medical inspectors were	medical officers	In line 21 from the bottom.
106		was	In line 14 from the top.
5A	Rs. 1,61g	Rs. 1,616	Against "Naini Tal municipality".
22A	February	February	In the 2nd line from the top.
22A	circle	circle	In line 13 from the bottom.
53A	wilb	with	In the heading of Appendix IX.
55A	Dauties	Drauties	Under Appendix XI in line 7 from the top.
55A	cannisters	canisters	In line 15 from the top.
55A	entra	extra	In line 14 from the bottom.
56A	Kerosene	Kerosine	In lines 1 and 5 from the top.
2B	11,445	11,455	In column 4 "Female," against "Almora".
4B	include	included	In the note at the bottom.
6B	900	1,900	In column "May" against "Farrukhabad."
23B	1·37	11·37	In column 15 "Fever" against "Kiratpur".
24B	5	45	On the left hand corner at the top of the page after the word "paragraphs".
24B	population	average population	In the footnote (b).
26B	23·31	25·31	Against total for the Province—column 15 "Mean ratio of previous five years".



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91	Original Articles	100	Original Articles

# Sixtieth Annual Report of the Director of Public Health, United Provinces of Agra and Oudh, for the year ending December 31, 1927.

(Sections I, II, III and IV are omitted in accordance with the orders of the Government of India, Home department, no. 9/357, dated September 4, 1928.)

## SECTION V.

### General population—Vital Statistics.

The provincial birth and death-rates shown in this report have been calculated on a population of 45,375,787 which is according to the census of 1921 and excludes the population of the Indian States of Rampur, Tehri-Garhwal and Benares.

**Population of the United Provinces on which birth and death-rates have been calculated**

2. As stated in previous years' reports, prompt reporting and the accurate registration of vital statistics are the basis of all public health work but on account of the illiteracy of the chaukidars, who are the recording agency in rural areas and their other duties, the figures furnished by them provide but a very rough idea of the state of the public health of the province. In order to improve the existing conditions, various measures are adopted in the districts staffed with rural public health establishments. Lectures are now given by the District Medical Officers of Health to chaukidars on the symptoms of the common diseases so as to teach them to classify their entries with more accuracy. Short notes explaining the symptoms of the various common diseases are also printed in the chaukidars' books. By a system of more rigorous verification of these entries by the expanded health staff, large numbers of omissions in the recording of these events and errors in classification are brought to light. Government will have to seriously consider the improvement of the reporting agency in the near future, as the present state of affairs in this respect is deplorable.

**Registration of vital statistics.**

3. The provincial birth-rate for the year 1927 showed an increase of 2.52 over that of the preceding year and of 2.74 over the quinquennial average—the rates for the two years and for the quinquennial period being 36.72, 34.20 and 33.98 per mille of the population, respectively. The provincial death-rate for the year was 22.59 *the lowest on record* as against 25.10 in 1926 and 25.31, the quinquennial average. The low death-rate is chiefly due to low mortality under the head "fevers". The fall in the general mortality may to some extent be due to under-reporting but the low death-rate combined with the increased birth-rate clearly points to the healthiness of the year.

**The birth and death-rates of 1927 compared with those of 1926 and the quinquennial period.**  
(Statements I and II.)

4. A statement comparing the birth, death and infantile mortality rates of the United Provinces with those of other provinces is appended below :—

The birth and death-rates and infantile mortality of the United Provinces compared with those of other provinces.

Province.	Birth-rate.	Death-rate.	Infantile mortality.
United Provinces .. .. .	36·72	22·59	151·75
Bombay .. .. .	36·85	25·72	161·48
Madras .. .. .	36·47	24·33	175·41
Bengal .. .. .	Information not received.		
Bihar and Orissa .. .. .	37·64	25·08	133·39
Assam .. .. .	30·23	23·47	171·35
Central Provinces .. .. .	45·58	31·31	221·60
Punjab .. .. .	42·27	27·46	167·50
Burma .. .. .	25·08	19·55	197·67
North-West Frontier Province .. .. .	29·28	22·05	150·77
Delhi .. .. .	40·53	30·32	191·74

It will be noted that the death-rate in the United Provinces is the lowest in India except in the North-West Frontier Province and Burma. In the former reporting is notoriously defective in both births and deaths while in the latter the birth-rate was also the lowest.

#### BIRTHS.

5. The total number of births recorded during the year under report was 1,666,479 giving a birth-rate of 36·72 as against 1,552,054 and 34·20, respectively, in the preceding year. The quinquennial average was 33·98. The highest birth-rate (3·93) was recorded in October and the lowest (2·16) in each of the months of May and June.

6. The number of males born to every 100 females born was 112·27 or practically the same as in the preceding four years.

7. The highest birth-rates were noticed in the districts of Moradabad, Bijnor, Jhansi, Bareilly and Hamirpur and the lowest in those of Rae Bareli, Dehra Dun, Jaunpur, Gonda and Mainpuri. The first four of the former returned highest birth-rates in the preceding three years also. Low birth-rates were recorded in Rae Bareli and Dehra Dun during the past several years. (For further details, statement I attached to the report may be referred to.)

8. During the year under review births exceeded deaths by 641,404 or 14·13 per 1,000 of the population. This excess showed an increase of 5·03 over the excess in the preceding year when it was 9·10 and was contributed to by all the districts.

9. The total number of births registered in municipalities during 1927 was 139,523 yielding a ratio of 48·02 per 1,000 of the population, against 131,442 and 45·24, respectively, in the preceding year. 42 out of 85 municipalities recorded a birth-rate above, and 43 below, the provincial

mean (48.02). As in the last three years, Jalesar with a birth-rate of (69.71) stood first. Like last year the lowest birth-rate (12.90) was recorded in Mussoorie where the conditions are peculiar.

10. Taking the municipalities as a whole the birth-rate exceeded the death-rate by 11.89, all except five (viz. Hardwar, Roorkee, Brindaban, Ujhani and Cawnpore) contributing to the excess.

**Excess of births over deaths in municipalities.**

11. During 1927, the number of births recorded in notified areas was 14,730 against 13,685 in 1926, the birth-rates for the two years being practically the same, viz. 39.47 and 39.22, respectively. 27 notified areas exhibited a birth-rate above, and 25 below the provincial mean. Among the notified areas returning high birth-rates, Aonla (Bareilly) with a rate of 64.19 was most conspicuous. The lowest birth-rate (8.14) was noticed in Rikhikesh (Dehra Dun) where the circumstances are peculiar.

**Births and birth-rates in notified areas.**

12. Taking the notified areas as a whole the birth-rate exceeded the death-rate by 11.60 while taking individually 43 out of 52 showed an excess of births over deaths. The excess was most marked in Bhim Tal—Sat Tal where it amounted to 32.63.

**Excess of births over deaths in notified areas.**

#### DEATHS.

13. The total number of deaths recorded during the year under report amounted to 1,025,075 of which 550,457 were males and 474,618 females, the resulting rates being 22.59, 23.14 and 21.98, respectively. The corresponding figures and rates for the preceding year were 1,138,884 ; 610,233 ; 528,651 ; 25.10 ; 25.65 and 24.49 ; respectively. The mean ratio of deaths per mille of population during the previous five years was 25.31. As stated elsewhere the year's death-rate was *the lowest on record*.

**Deaths and death-rates.**  
(Statement II.)

14. The provincial death-rate of 22.59 was exceeded in 24 districts of which Bareilly with a death-rate of 34.04 stood first. Gonda with a death-rate of 14.84 was the last. (For further details see statement II.)

**Incidence of mortality in districts including towns.**  
(Statement II.)

15. In 1927 the provincial death-rate for municipal towns was 36.13 per mille of the population as compared with 41.58 of the preceding year, the actual numbers of deaths registered during the two years being 104,976 and 120,808, respectively. In 39 municipalities out of 85 the death-rate was higher, and in 46 lower, than the provincial average for municipal towns. Brindaban with a death-rate of 67.39 stood first. Then in order of high mortality came Jalesar (district Etah) with 52.81 and Etawah with 52.58. The high mortality in Brindaban and Jalesar was due chiefly to fever while in Etawah to fever, respiratory diseases and all other causes. The lowest mortality was recorded in Mussoorie (8.19), Mainpuri (11.43) and Nawabganj, district Bara Banki (14.31).

**Mortality in municipalities.**

16. Compared with the preceding year, notified areas showed a decrease of 1,151 deaths during the year under report, the figures for the two years being 11,551 and 10,400 and the resulting death-rates 33.10 and 27.87, respectively. 23 notified areas out of 52 returned a death-rate above, and 29

**Mortality in notified areas.**

below, the provincial average, 27·87. Aonla (Bareilly) returned the highest death-rate (65·72) and was followed by Bilsi (Budaun) with 61·50 and Kosi with 48·42. The high death-rates in Aonla and Bilsi were due to plague, fevers and all other causes, while in Kosi it was due to fevers. The lowest death-rate was noticeable in Auraiya in the Etawah district (6·80), Badshahpur in the Jaunpur district (9·43) and Gaura Barhaj in the Gorakhpur district (12·80). These are apparently due to defective registration.

17. According to months, the highest death-rate from all causes (2·32) was recorded in June and the lowest (1·64) in March. (For further details see statement III.)

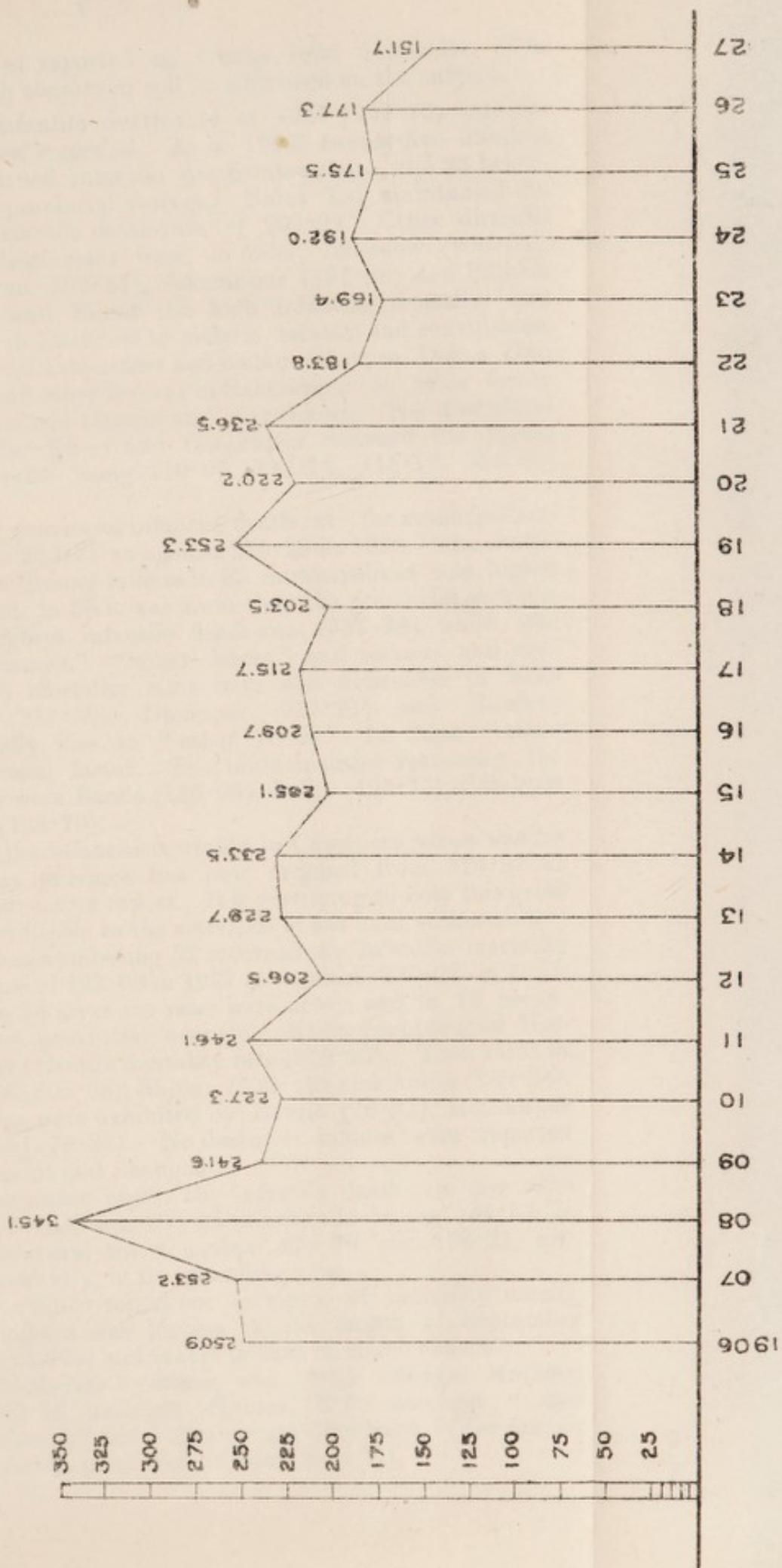
18. Of the 1,025,075 recorded deaths, 550,457 occurred among males and 474,618 among females, the death-rates for the two sexes being 23·14 and 21·98, respectively. The corresponding figures and ratios for the preceding year were 610,233; 528,651; 25·65 and 24·49, respectively. The number of deaths under one year of age was 252,885 (138,328 males and 114,557 females.) (Further details will be found in statement IV.)

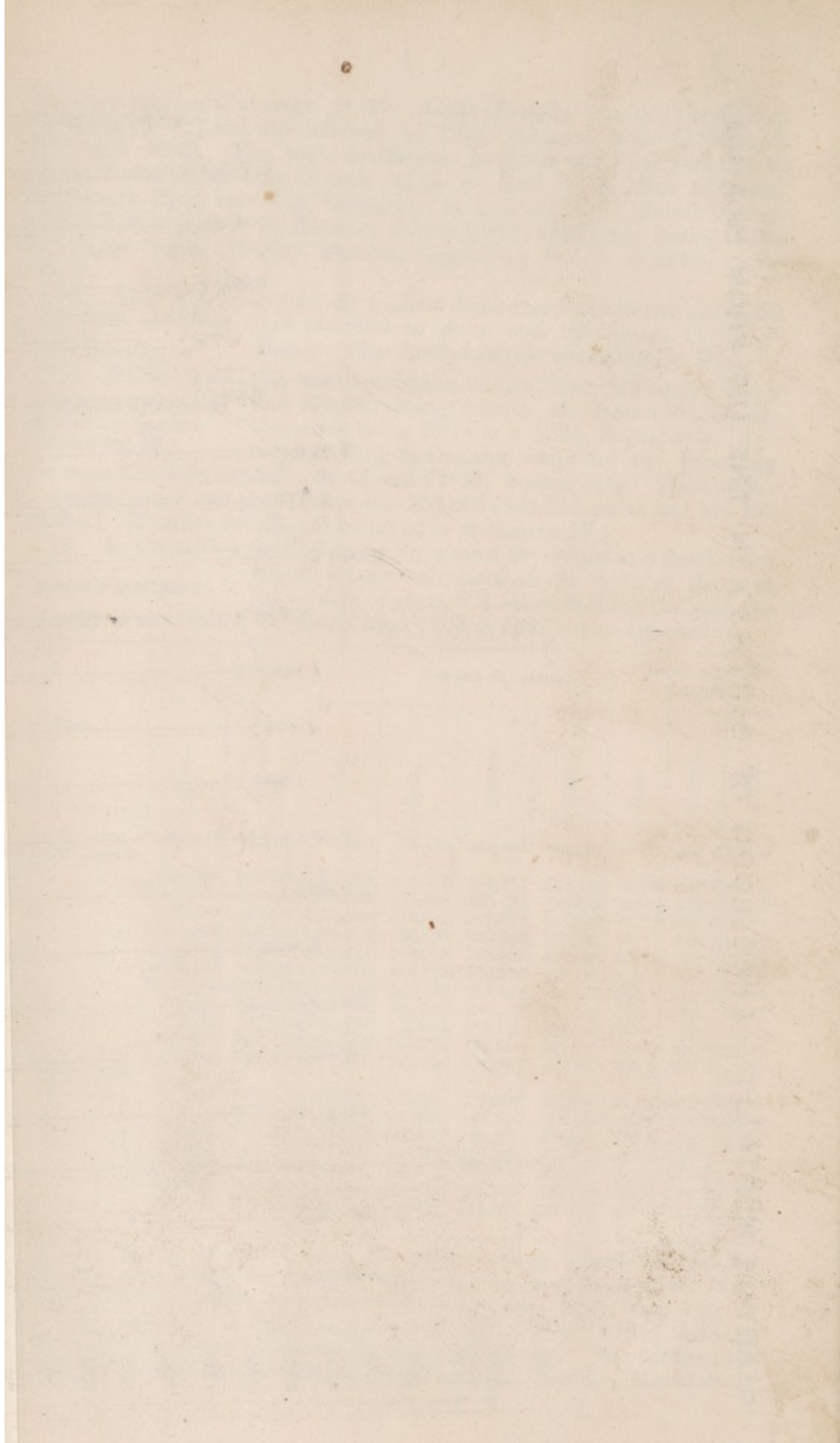
19. In the table appended below are shown the deaths and death-rates among infants, calculated on the births of the year for a series of years. A chart showing the infantile mortality in the United Provinces from 1906 to 1927 is also attached:—

Year.	Births.			Deaths of infants.			Death-rates of infants.		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
Decennial average (1901—1910).	1,027,110	949,374	1,976,484	268,635	240,436	504,071	256·7	253·8	255·0
1911 ..	1,068,248	985,076	2,053,324	271,575	233,771	505,346	254·2	237·3	246·1
1912 ..	1,105,707	1,019,878	2,125,585	236,328	202,694	439,022	213·7	198·7	206·5
1913 ..	1,160,280	1,072,719	2,233,999	275,228	237,675	512,903	237·2	221·6	229·7
1914 ..	1,094,842	1,009,712	2,104,554	260,739	230,608	491,347	238·1	228·4	233·5
1915 ..	1,060,779	975,342	2,036,121	222,608	195,095	417,698	209·8	200·0	205·1
1916 ..	1,050,532	967,224	2,017,756	224,735	198,395	423,130	213·9	205·1	209·7
1917 ..	1,122,101	1,035,541	2,157,642	247,104	218,363	465,467	220·2	210·9	215·7
1918 ..	977,044	890,800	1,867,844	301,256	365,597	566,833	308·3	298·1	293·5
1919 ..	795,870	720,627	1,516,497	201,368	182,720	384,088	253·0	253·6	253·3
1920 ..	872,094	792,098	1,664,192	194,722	171,815	366,537	223·3	216·9	220·2
Decennial average (1911—1920).	1,030,750	946,901	1,977,651	243,564	213,673	457,237	237·2	227·1	232·3
1921 ..	819,854	740,748	1,560,602	197,223	171,908	369,131	240·6	232·1	236·5
1922 ..	769,516	690,272	1,459,788	145,928	122,334	268,312	189·6	177·3	183·8
1923 ..	864,154	771,296	1,635,450	150,567	126,427	276,994	174·2	163·9	169·4
1924 ..	833,889	741,421	1,575,310	165,194	137,248	302,442	198·1	185·1	192·0
1925 ..	785,661	699,614	1,485,271	140,991	119,688	260,679	179·4	171·1	175·5
1926 ..	820,921	731,133	1,552,054	150,514	124,746	275,260	183·3	170·6	177·3
1927 ..	881,412	785,067	1,666,479	138,328	114,557	252,885	156·9	145·9	151·7

During the year under review the mortality among infants as among adults was the lowest on record. The information so far received from Medical Officers of Health employed in municipalities shows that out of 949 deaths reported as due to tetanus, 748 deaths were verified by them and only 497 were found to be actually due to this cause. The municipalities of Naini Tal, Mussoorie, Dehra Dun, Hardwar, Bareilly, Moradabad,

INFANTILE MORTALITY (PER 1,000 OF BIRTHS) IN THE U. P. FROM 1906-1927.





Agra, Hathras and Jhansi reported no deaths from this cause. The Medical Officers of Health concerned will be addressed on the subject.

20. The provincial infantile death-rate of 1927 (151·75) *was the lowest recorded*. As in 1926, twenty-five districts returned infantile death-rates above, and 23 below, the provincial average. Naini Tal maintained its first position with an infantile death-rate of 209·92. Other districts returning high infantile death-rates were, in order, Lucknow (200·06), Bijnor (195·16), Dehra Dun 192·51), Saharanpur (191·86) and Pilibhit (189·12). In Naini Tal and Bijnor the high infantile mortality was chiefly due to malaria; in Lucknow to malaria, tetanus and convulsions, pneumonia, other fevers and exhaustion and malnutrition; in Dehra Dun to malaria, other causes and other fevers; in Saharanpur to other fevers and in Pilibhit to malaria and tetanus and convulsions. The districts of Muttra, Rae Bareli, Gonda, Kheri and Gorakhpur returned the lowest infantile mortality, the rates being 110·07, 112·14, 115·77, 116·88, 117·24, respectively.

21. During 1927 the provincial infantile death-rate for municipalities was 233·77 as against 278·29 in 1926. The death-rate among infants in 35 municipalities was higher while in 50 it was lower than the provincial average. Etawah returned the highest infantile death-rate (357·38) which was chiefly due to "other causes," "other fevers" and tetanus and convulsions. High infantile mortality rates were also noticeable in Etah (353·59), Saharanpur (317·39), Dhampur (311·21) and Roorkee (304·07) and were chiefly due to "other fevers." In Etah "other causes" were an additional factor. The municipalities returning the lowest infantile mortality were Banda (126·05), Ballia (136·73), Fatehpur (138·60) and Ghazipur (138·70).

It will be noted that the infantile mortality in Cawnpore which was for years the highest in the province has now dropped from 524·97 in 1918 to 322·65 in the year under report. It is gratifying to note this great advance which is very creditable to the activities of the local authorities.

22. The notified areas numbering 52 returned an infantile mortality rate of 197·08 in 1927 as against 239·02 in 1926. In 24 areas the rates were above, and in 28 below, the provincial average. Madhoganj (district Har-doi) returned the highest infantile mortality rate (378·20). Then came in order Kosi (313·36), Bilsa (305·08), Rajpur (290·12) and Aonla (285·88). The lowest mortality rates were exhibited by Deoria (76·92), Gorakhpur (79·04) and Gaura Barhaj (79·36). No deaths of infants were reported from the Chunar Settlement and Shahganj.

23. During the year under report the infantile death-rate per mille of births was 230·25 in urban areas and 144·39 in the rural tracts against 273·70 and 168·21, respectively, in the preceding year.

24. During the year under report the incidence of mortality among infants was highest in the month of September (25,625) and lowest in that of March (15,330).

25. In 1927, the death-rate by classes was 24·05 amongst Muslims, 22·56 amongst Hindus, 6·96 amongst "other classes" and 4·20 amongst Christians. (For further details please refer to statement V.)



26. During the year under report the general mortality in the Urban and rural urban areas was 35·37 and that in the rural areas mortality. 21·68. The corresponding rates for the preceding (Statement VI.) year were 40·19 and 23·98 and the averages for the previous five years 36·65 and 24·50, respectively.

#### STILL-BIRTHS.

27. The total number of still-births registered during the year under review was 14,612 against 13,948 in the preceding Still-births in year, indicating an increase of 664. Among the districts. districts returning the largest number of still-births Gorakhpur, as usual, easily stood first with 3,524.

The district medical officer of health ascribes it to the defective reporting by chaukidars who in a very large number of cases report deaths after child-birth as still-births. Azamgarh and Sitapur retained the second and third positions with 1,082 and 902 still-births. The districts of Mainpuri and Sultanpur returned respectively five and seven still-births.

28. A statement showing the number of still-births and the percentages of these births to the total number of live Still-births in municipalities having Medical Officers of Health. births during 1927 in the municipal towns having a medical officer of health together with the causes assigned by them is appended below :—

Name of municipality.	Total number of still-births.	Percentage to total number of live births.	Causes.
Allahabad .. ..	162	2·38	..
Benares .. ..	503	4·90	Early marriage, ill-health on account of purdah system, improper care during pregnancy on account of poverty and ignorance.
Cawnpore . . . .	347	4·50	Veneral diseases, early marriages, overwork and poverty.
Lucknow .. ..	379	3·60	Prolonged labour, bad management during labour, premature births, veneral diseases, abnormal births, multiple births and previous illness of mothers.
Agra .. ..	250	2·32	Prolonged labour and syphilis.
Naini Tal .. ..	23	6·05	Attendance by untrained and ignorant "dais" before delivery. Ignorance of the maternity laws on the part of expectant mothers and guardians. Poverty and occupation by expectant mothers of ill-ventilated houses in the crowded area during the pregnancy period.
Mussoorie .. ..	12	7·18	Syphilis, malpresentation defects in mothers such as contracted pelvis, endometritis, etc.

Name of municipality.	Total number of still-births.	Percentage to total number of live births.	Causes.
Dehra Dun .. ..	42	3.39	Osteomalacia, syphilis, placenta prævia, twin pregnancy.
Saharanpur .. ..	124	3.70	Widespread ignorance of women particularly primipara in the management of pregnancy. Want of expert assistance at the time of labour as no doubt most of the cases of still-births are really those of asphyxia neonatorum and other conditions resulting from protracted labour or accidents attributable to ignorance. Malaria is mostly responsible for premature births which are but "still."
Meerut .. ..	6	0.23	Premature delivery and ignorance of the local midwives.
Hardwar .. ..	8	.67	..
Bareilly .. ..	12	.25	Syphilis, deformity in pelvis and prolonged labour.
Aligarh .. ..	26	.74	Fever, syphilis and accident.
Muttra .. ..	43	1.71	..
Moradabad .. ..	65	1.32	Veneral diseases, untrained dais, osteomalacia, prolonged labour with early rupture of membrane. Malformation of pelvis and wrong position of foetus. Diseases of malnutrition, i.e., rickets, etc.
Shahjahanpur .. ..	27	.37	Bad management of labour and protracted labour chiefly due to want of proper help and venereal diseases.
Jhansi .. ..	6	.20	Poverty and consequent ill-feeding and expectant mothers' carelessness and hard labour during pregnancy. Ignorance and consequent non-consultation with doctors, for minor ailments.
Fyzabad .. ..	60	4.02	Neglect and want of proper and timely medical help.
Farrukhabad .. ..	14	.58	Difficult labour, abortions and fever both during and after labour.
Budaun .. ..	42	1.90	Wasting and specific diseases.
Chandausi .. ..	44	2.98	Parental cause:— Mothers' protracted labour. Syphilis. Malaria. Premature births.
Etawah .. ..	11	.47	Ignorance on the part of parents. Premature birth.
Hathras .. ..	99	4.73	Syphilis. Delivery by untrained native dais, etc.
Hapur .. ..	48	4.24	Majority of still-births were from Muhammadan mothers which may be attributed to ill-effects of purdah system.
Mirzapur .. ..	38	1.21	Early marriage, want of proper care during pregnancy also constitutional diseases.

29. During the year under report, as many as 3,147 deaths (which  
**Verification of causes of deaths.** occurred within the limits of the practice of Govern-  
 ment Medical Officers as well as in the medical institutions) were verified by civil surgeons and their subordinates.

By far the largest number of these deaths (2,007) was, as usual, re-  
 turned as due to "all other causes". Next in order came pneumonia  
 (376), tuberculosis of the lungs (219) and dysentery (181). Other tuber-  
 cular diseases claimed 67 deaths, malaria 61, cholera 50, all other infective  
 diseases 38 and tetanus 35. Enteric fever was responsible for 21, syphilis  
 for 18 and pyrexia of uncertain origin for 17. Deaths from plague, kala  
 azar, beri-beri, rheumatic fever and rheumatism, gonorrhoea, small-pox,  
 influenza and leprosy numbered between 3 and 15. No deaths were re-  
 corded under heads relapsing fever and scurvy. Of the 3,147 deaths 400  
 were among children, 1,996 among adults from 16 to 45 years of age and  
 751 among adults of 46 years of age and upwards.

30. The Assistant Directors of Public Health on general duty tested  
**Registration as test-** altogether 2,084 entries of births and deaths in  
**ed by Assistant Direc-** 1927 as against 15,108 in the preceding year. The  
**tors of Public Health.** decrease was due to the fact that one of the Assistant  
 Directors during the touring season was mainly occupied in the arrange-  
 ments for the *Kumbh* fair, Hardwar, and another was on leave for 8  
 months.

31. The birth and death entries checked by the District Health staff  
**Registration as test-** numbered 211,341 as compared with 66,729 entries  
**ed by the District** and 1,424 registers, respectively, in 1926. The per-  
**Health staff.** centage of omissions discovered was 6.4.

32. During 1927, altogether 145,254 entries (88,606 births and  
**Registration as test-** 56,648 deaths) were tested by the local authorities  
**ed by local authori-** as against 202,478 in 1926. Verification showed  
**ties.** that 3.81 per cent. of births and 3.01 per cent. of  
 deaths escaped registration as compared with 3.60 per cent. births and  
 2.67 per cent. deaths in the preceding year. The districts returning the  
 largest number of entries tested were Hamirpur (18,608), Jhansi (9,916),  
 Bahraich (9,834) and Moradabad (7,569) while the districts returning the  
 smallest number of entries tested were Cawnpore (45), Garhwal (304),  
 Bulandshahr (320) and Bareilly (420). No testing was done in the dis-  
 tricts of Muttra, Bijnor, Ghazipur, Gorakhpur, Azamgarh, Kheri and  
 Gonda. Returns were not received from the districts of Etah, Farrukh-  
 abad, Allahabad and Bara Banki up to the time the report was sent to  
 press in spite of repeated reminders.

33. In 1927, the vaccination staff tested 703,277 entries of births  
**Registration as test-** and 512,057 entries of deaths or a total of 1,215,334  
**ed by vaccination** entries as compared with 1,120,831 in 1926, show-  
**staff.** ing a very satisfactory increase of 94,503. The  
 percentages of omissions discovered in respect of births and deaths were  
 .95 and .55, respectively. The largest number of entries was tested in  
 Gorakhpur (117,187), Hardoi (51,644), Meerut (43,117), Etah (35,121)  
 and Garhwal (32,958), while the lowest in Dehra Dun (4,988), Jaunpur  
 (13,599), Jalaun (13,961), Naini Tal (14,066) and Ghazipur (14,541). The  
 attention of all the District Superintendents of Vaccination where the

number of entries tested was below the provincial average (25,319) will be drawn to the matter.

34. During the year under report 2,251 persons were fined for neglect in complying with registration rules. The total amount realized on this account was Rs. 1,394. The corresponding figures for the preceding year were Rs. 2,266 and Rs. 1,152, respectively. As neglect in this particular is very prevalent, Government might consider the advisability of taking action to obtain severe and deterrent punishments.

35. The districts of Benares, Sultanpur, Bara Banki, Farrukhabad, Basti, Hamirpur, Kheri, Etawah, Bijnor, Shah-jahanpur, Meerut, Muttra, Gorakhpur, Sitapur and Agra submitted the statistical returns very late. The attention of the District Mortuary Registrars concerned will be called to the matter.

## SECTION VI.

## History of the chief diseases.

36. A table showing the death-rates per mille of the population from the most important diseases for 1927 and 1926 and the average death-rates for the preceding ten years is appended below :—

Chief causes of mortality.	Death-rate per mille for 1926.	Death-rate per mille for 1927.	Average death-rate for preceding ten years (1917—1926).	Increase or decrease as compared with 1926.	Increase or decrease as compared with decennial average.
Cholera .. ..	·13	·62	1·01	+·49	—·39
Small-pox .. ..	·26	·17	·10	—·09	+·07
Plague .. ..	1·26	·34	1·36	—·92	—1·02
Fever .. ..	19·13	17·33	28·68	—1·80	—11·35
Dysentery and diarrhoea	·27	·27	·32	..	—·05
Respiratory diseases ..	·67	·64	·62	—·03	+·02
Injuries .. ..	·48	·45	·50	—·03	—·05
All other causes ..	2·90	2·76	3·92	—·14	—1·16
All causes .. ..	25·10	22·59	36·53	—2·51	—13·94

It will be seen that in 1927, as compared with 1926, decreases occurred under all heads except under cholera but compared with the decennial average the death-rate from cholera was also less.

## CHOLERA.

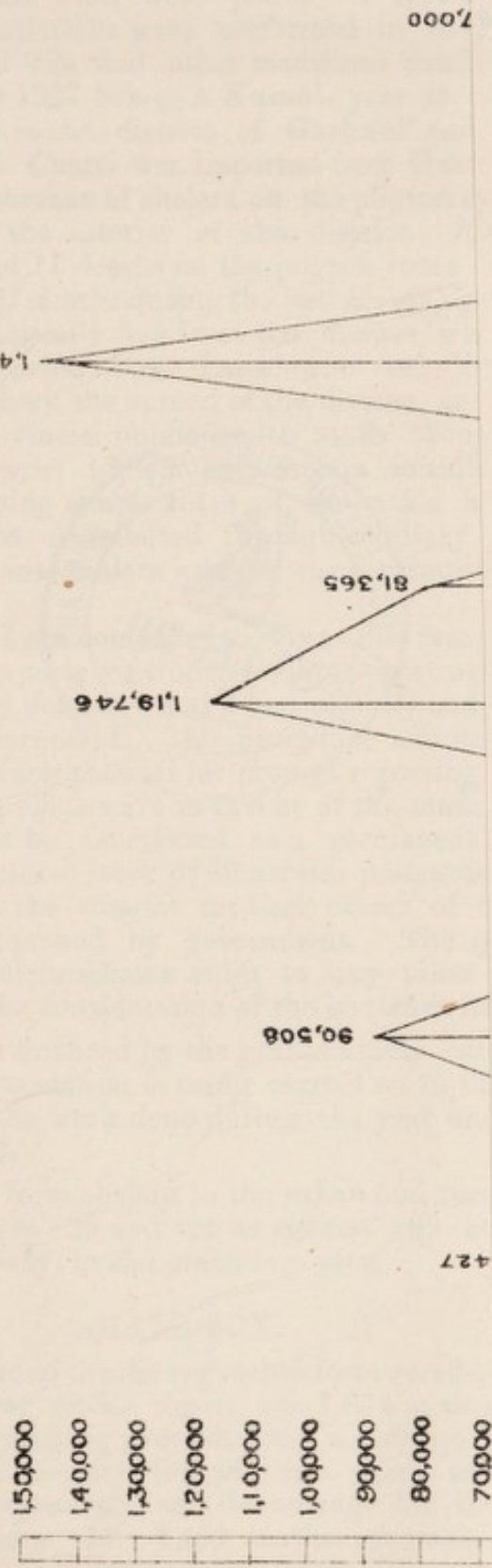
37. During the year under report, cholera was responsible for 28,285 deaths, giving a ratio of ·62 per mille of the population against 6,166 and ·13, respectively, in 1926. The mean ratio for the previous five years was

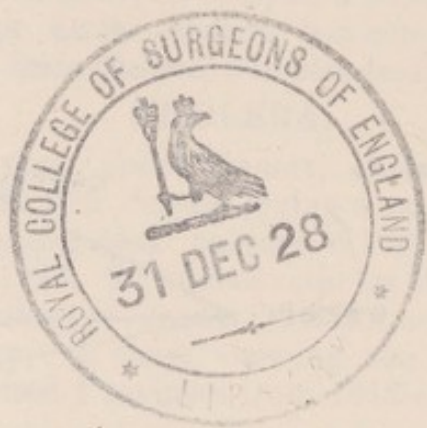
·38. The largest number of deaths (9,328) occurred in June and the smallest (10) in January. A chart showing the total number of deaths from cholera in the United Provinces from 1912—1927 is attached.

38. In eleven districts the mortality from cholera was above the average for the province (·62). Fyzabad occupied the first place with a death-rate of 3·70 and was followed by Garhwal (3·38), Mirzapur (3·36), Almora (3·09) and Basti (2·39). Hamirpur enjoyed complete immunity from the disease while in Fatehpur the number of deaths was too small to yield a ratio. Of the 90 towns, 26 were free from the disease while in 41 the number of deaths did not exceed 10. Brindaban recorded the highest cholera death-rate (3·21) and Cawnpore the lowest (·01). Altogether 32,499 anti-cholera inoculations were performed during 1927 with the vaccine supplied free by this department.

The 20 plains districts under the cholera scheme (comprising the revenue divisions of Benares, Lucknow, Fyzabad and Gorakhpur) returned 20,509 deaths against 7,776 recorded in the remaining 28 districts. All the 20 districts were adequately equipped with a stock of permanganate of potash. Monetary grants were also made for meeting certain other charges connected with cholera. With the extension of the public health services to all the districts of the Lucknow division, during the year under report, all the 20 districts under the cholera scheme now have whole-time public health personnel and the measures adopted by them for the control of the disease in their respective districts are given in the summary of their reports in section X.

TOTAL NUMBER OF DEATHS DUE TO CHOLERA IN THE U. P. FROM 1912-1927.





Of the districts of the Kumaun division, where the cholera scheme is in force in a modified form, Naini Tal returned 191 deaths. A travelling dispensary and vaccinators were deputed to the cholera infected places and all precautions were taken. In Almora the first outbreak of cholera occurred in the Almora tahsil in May, 1927. From there cholera spread to Champawat, Pithoragarh and to a few patties of the Ranikhet tahsil. Five medical officers with travelling dispensaries, a special health officer and the whole vaccination staff were placed on special duty. Twelve thousand anti-cholera inoculations were performed in the district and a large supply of essential oils and other medicines was issued with satisfactory results. The year 1927 being a *Kumbh* year it was anticipated that cholera would prevail in the district of Garhwal and the first case which occurred at Bijni Chatti was imported from Hardwar. This was followed by successive outbreaks of cholera on the pilgrim route from where infection was carried into the interior of the district. Altogether 1,102 deaths in the district and 11 deaths on the pilgrim route were reported to have occurred against 5,527 deaths during the last *Kumbh* year. Barahsyun sub-division remained practically free from the disease while only a few sporadic cases were reported from Lansdowne sub-division. Prompt measures were taken to check the spread of the disease and the energetic efforts of the local and provincial public health staffs brought the disease under control. As many as 12,873 anti-cholera inoculations were performed. Leaflets containing simple rules of sanitation and precautions against cholera were also distributed through sanitary inspectors and vaccinators. The special anti-cholera scheme was continued in the Garhwal district.

While on this subject I am compelled to repeat the remarks I made in my two previous annual reports regarding prompt reporting of outbreaks of cholera. This is still very defective and I had recently had to bring several cases to the notice of government. The procedure adopted of supplying two service postcards to each patwari for prompt reporting of cholera cases proved useful and district officers are in favour of the same. I recommend that the scheme may now be sanctioned as a permanent measure. My recommendation that a reserve stock of 50 service postcards should be kept at each tahsil and with the district medical officer of health to meet emergencies has been approved by government. The question of the application of the anti-cholera scheme rules to any other district, where necessary, is still under the consideration of the government.

A research on cholera financed by the grants kindly sanctioned by the Indian Research Fund Association is being carried on in the United Provinces and an account of the work done during the year under report will be found in paragraph 76.

39. The death-rates from cholera in the urban and rural areas in 1927  
 Urban and rural were .29 and .65 as against .09 and .14, respectively, in the preceding year.  
 (Statement VI.)

#### SMALL-POX.

40. The total number of deaths registered from small-pox during the year under report was 7,894 against 12,020 in the preceding year, showing a decrease of 4,126. The death-rates for the two years were .17 and .26, respectively, and the average for the previous five years .11. 1,497 deaths occurred among children.

Deaths and death-rates from small-pox in districts and towns.  
 (Statements VIII and VI-B.)



under one year and 3,308 between one and ten years. The highest number of deaths (1,243) was recorded in May and the lowest (82) in November. The district of Ghazipur returned the highest mortality from small-pox with a death-rate of  $\cdot 68$  followed by Mirzapur and Azamgarh each with  $\cdot 67$ . The lowest mortality was noticeable in the districts of Meerut, Mainpuri, Etawah and Jalaun with a death-rate of  $\cdot 01$  each. Only two deaths (which yielded no ratio) were recorded in Hamirpur.

Of the 90 towns, 24 were altogether free from the disease while in 43 the number of deaths did not exceed ten.

Short descriptive notes as to the action taken by the district medical officers of health in the 26 districts under the District Health Service are given in paragraph 80 where a *résumé* of their work is given but fuller information will be given in the annual vaccination report for 1927-28.

41. The mortality from small-pox in urban areas in 1927 was  $\cdot 34$  per mille of the population and in the rural tracts  $\cdot 16$  as against  $\cdot 86$  and  $\cdot 22$ , respectively, during the year 1926.

Urban and rural mortality from small-pox.

(Statement VI.)

42. As stated in previous years' reports, no regular small-pox hospitals exist in these provinces. Particulars of the cases treated in the infectious diseases hospitals where such exist or in hospitals with infectious diseases wards are given in the table appended below:—

Serial number.	Name of place where the small-pox hospital is situated.	Number of patients treated in the hospital.	Vaccinal condition of the patients treated in the hospital.					Remarks.
			Vaccinated as evidenced by presence of one or more vaccination cicatrices.	Stated to have been successfully vaccinated but no vaccination cicatrix present.	Stated to be unvaccinated or vaccinated unsuccessfully and no vaccination cicatrix present.	Previously unvaccinated but vaccinated during incubation of small-pox.	Stated to have been successfully re-vaccinated.	
1	2	3	4	5	6	7	8	9
1	Dehra Dun city ..	24	..	..	No record	kept.	Two were unvaccinated and cured.	
2	Bulandshahr ..	1	..	..	Unvaccinated.	..	..	Cured.
3	Muttra city ..	20	*17	Nil	Unvaccinated.	Nil	Nil	*Out of each 2 died.
4	Agra ..	9	5	..	Unvaccinated.	..	..	†Three died. All the 5 vaccinated were cured.
5	Shahjahanpur city ..	1	..	..	Unvaccinated.	..	..	
6	Bisalpur (Pilibhit)..	5	5	..	..	..	..	All cured.
7	Cawnpore city ..	10	8	..	..	2	..	

Serial number.	Name of place where the small-pox hospital is situated.	Number of patients treated in the hospital.	Vaccinal condition of the patients treated in the hospital.					Remarks.
			Vaccinated as evidenced by presence of one or more vaccination cicatrices.	Stated to have been successfully vaccinated but no vaccination cicatrix present.	Stated to be unvaccinated or vaccinated unsuccessfully and no vaccination cicatrix present.	Previously unvaccinated but vaccinated during incubation of small-pox.	Stated to have been successfully re-vaccinated.	
1	2	3	4	5	6	7	8	9
8	Jhansi city ..	9	2	..	3	..	..	Vaccinal conditions of 4 cases not known. Both cured.
9	Banda ..	3	3	..	..	..	..	
10	Karwi (district Banda)	1	1	..	..	..	..	Both cured.
11	Fyzabad-Ajodhya city	2	1	1	..	..	..	
12	Allahabad city ..	9	..	..	No record kept.	..	..	All cured.
13	Mussorie ..	12	7	2	1	Nil	2	
14	Naini Tal (Manora)	11	8	Nil	3	Nil	Nil	
15	Lucknow city ..	6	1	1	4	Nil	Nil	
16	Kheri district ..	4	3	..	1	..	..	
17	Hardwar ..	50	..	..	No record kept.	..	..	
18	Benares city ..	34	*29	..	†5	..	..	
19	Allahabad city ..	9	..	Ne re	cord.	..	..	

\* 28 cured and one died.

† 3 cured and two died.

## PLAGUE.

43. 15,570 deaths occurred from plague in 1927 against 57,297 in 1926 the death-rates during the two years being .34 and 1.26, respectively. The quinquennial mean was 1.14.

44. As in last year, the highest mortality was recorded in Ghazipur and the next highest in Azamgarh, the death-rates being 2.41 and 2.00, respectively. Then followed Bareilly with 1.00 and Muzaffarnagar with .99. The districts of Dehra Dun, Mainpuri, Etah, Farrukhabad, Etawah, Jhansi, Jalaun, Banda, Garhwal and Bahraich were quite free from plague, while Partabgarh, Aligarh, Hamirpur and Almora returned deaths ranging between 1 to 7.

45. Out of 90 towns, 32 suffered from the disease, the highest mortality being noticeable in Aonla (18.12), Shahabad (11.93), Ujhani (7.24) and Lakhimpur (4.76).

Intensive anti-rat campaigns were carried out in the following towns:—

Saharanpur,  
Aligarh,  
Moradabad,  
Hathras,

Bulandshahr,  
Agra,  
Hapur,  
Ghaziabad,

Meerut,  
Muttra,  
Bareilly,

throughout the year and over five lakhs of rats were trapped and killed. In Agra there was a severe epidemic of plague from February to May 1926 and the anti-rat campaign was started for the first time in July, 1926. Both the officials and non-officials were doubtful of its success in view of the objections raised by the sentimental people. The system adopted in Agra has, however, not only proved effective but highly successful inasmuch as the endemic foci were eradicated and the most orthodox and sentimental people who would not kill a fly, started catching rats in their own houses. With the exception of Bareilly where a few cases of plague occurred in February and March and where the anti-rat campaign was stopped by the municipal board for some months, none of the above-mentioned places were visited by plague although in the previous year or two plague raged there in an epidemic form.

In view of the fact that the endemic foci of plague were eradicated in all these places it was decided to reduce the staff to one-third of its full strength and so arrange the work, that on reappearance of the disease the whole organization may again be put in full swing without any loss of time. The municipal boards concerned, however, protested against this decision and desired that this measure be continued for a further period of 6 or 12 months. Besides serving as a publicity propaganda, it has certainly protected the cities concerned against the ravages of plague. It is hoped that under the medical officers of health the anti-rat campaign will not only prevent the outbreaks of plague but will successfully check its spread in cities if the disease is imported from infected neighbouring towns or districts.

46. The death-rate from plague in urban areas was 43 against 214 Urban and rural mortality from plague. in the last year. In the rural areas it was 33 against 120. (Statement VI.)

#### FEVERS.

47. Fevers claimed 786,552 deaths in 1927 against 867,939 in 1926. The death-rates for the two years were 17.33 and 19.13, respectively, and the quinquennial average 19.31. The largest number of deaths was recorded in June and the smallest in March. Deaths and death-rates from fevers in districts and towns. (Statements IX and VI-B.)

According to the sub-classification, 680,618 deaths were accounted for by malaria, 4,874 by enteric fever, 14,208 by measles, 83 by relapsing fever, 188 by kala azar and 37,817 by other fevers. These figures are, however, not reliable for the reasons given in previous years' reports.

Among the districts returning the highest mortality from fevers, Bareilly stood first, with a death-rate of 28.27 followed by Moradabad with 27.71, Saharanpur with 27.65 and Pilibhit with 27.20. The districts returning the lowest mortality were Fatehpur (10.13), Ballia (11.29) and Jaunpur (11.48). The highest death-rates were noticeable in the towns of Brindaban (42.58), Sahaswan (31.18), Roorkee (31.11) and Saharanpur (30.27), and the lowest in Naini Tal, Mussoorie, Ballia and Mau, the figures being 1.19, 2.16, 4.83 and 5.28, respectively.

48. During the year under review the mortality from fevers in urban areas was 16.19 and in the rural tracts 17.41 as against 18.47 and 19.15, respectively, in the preceding year. Urban and rural mortality from fevers. (Statement VI.)

49. During 1927, the recorded number of deaths from relapsing fever, enteric fever and kala azar was 108; 6,797 and 203, respectively, as against 716; 10,266 and 151, respectively, in 1926. A comparative statement showing the incidence of these diseases according to the reports of the verified and unverified agencies is appended to paragraph 60 of this report.

Special reports received from the civil surgeons and district and municipal medical officers of health show that there was no epidemic of relapsing fever during the year under report in any district.

A further sum of Rs. 3,000 was paid by the local government as their share of expenses required in connexion with the Commission appointed by the Government of India in 1924 to enquire into the origin and progress of kala azar and the measures necessary to combat the disease.

50. During the year under report, only sporadic cases occurred in some districts.

#### Influenza-

51. The Joint Secretaries of the Anti-Tuberculosis League, Lucknow, report that during the year under review, the subscriptions paid and promised for the establishment of a special tuberculosis hospital in Lucknow amounted to Rs. 83,649 and the amount actually in hand was Rs. 67,377. Strenuous efforts are being made to raise more funds.

The site originally selected for the tuberculosis hospital was purchased by the Lucknow Anti-Tuberculosis League, but as there has been some opposition to this site from the public owing to a mistaken belief that the hospital might be a source of infection, another site has now been selected and fresh plans and estimates are being drawn up.

#### DYSENTERY AND DIARRHOEA.

52. During the year under report the number of deaths caused by dysentery and diarrhoea was 12,186 against 12,120 in 1926, the corresponding death-rates for the two years being the same, viz. .27. The quinquennial mean was .25. May recorded the maximum number of deaths (1,456) while February returned the minimum (506). As in the last six years. The highest mortality (4.16) was, as usual, recorded in Garhwal, Dehra Dun followed with a death-rate of 1.26 and Almora with 1.20. Among the districts returning the low mortality the most conspicuous were Mainpuri and Gonda with .01 each and Banda and Partabgarh with .02 each.

Five towns out of 90 are reported to have enjoyed immunity from these causes while in 14 the number of deaths did not exceed ten. This is probably due to defective reporting. Among the remaining towns Atrauli again stood first with a death-rate of 14.82. Nagina followed with 5.87 and Sambhal with 4.26. The lowest mortality was noticed in Mahoba, Bahraich and Jahangirabad, the death-rates being .08, .25 and .29, respectively.

53. The urban and rural death-rates from these causes in 1927 were 2.14 and .13 as against 2.41 and .11, respectively, in 1926.

(Statement VI)

## RESPIRATORY DISEASES.

54. During the year under report these causes were responsible for 29,028 deaths yielding a death-rate of 64. The corresponding figures for the preceding year were 30,260 and 67, respectively. The average for the previous five years was 60. The highest mortality was recorded in January and the lowest in July.

Deaths and death-rates from respiratory diseases in districts and towns.  
(Statements XI and VI-B.)

As in previous years the highest mortality (5.45) was recorded in Hamirpur and the next highest (3.68) in Lucknow. The high mortality was also recorded in Dehra Dun and Agra, the death-rates being 2.94 and 2.66, respectively. The districts returning the lowest mortality were Basti (.05) and Jaunpur, Rae Bareilly, Bahraich and Mainpuri (.06 each).

Among the towns returning the highest mortality, the most conspicuous were Agra with a death-rate of 14.36, Pilibhit with 14.31 and Farrukhabad-cum-Fatehgarh with 13.24 while among those returning the low mortality Kairana stood first with a death-rate of .06, followed by Hardoi and Gaura Barhaj with respective death-rates of .07 and .08. Only one town (viz. Gonda) returned no death from these causes. This is incredible and must be due to bad reporting. Enquiries will be made

55. The urban mortality from respiratory diseases in 1927 was 6.95 and the rural mortality .19 as compared with 7.22 and .21, respectively, in 1926.

Urban and rural mortality from respiratory diseases.  
(Statement VI.)

## INJURIES.

56. During 1927, deaths ascribed to injuries numbered 20,419, as compared to 21,670 deaths in the preceding year. Of these 1,789 were suicides. 13,207 were due to wounds or accidents. Snakes and wild beasts were responsible for 5,031 and rabies for 392.

Deaths from several minor causes.  
(Statement VI.)

(Further details are given in statement VI.)

## ALL OTHER CAUSES.

57. During the year 1927, 125,141 deaths were registered under this head as compared with 131,412 in 1926. The death-rates for the two years being 2.76 and 2.90, respectively.

Deaths and death-rates under the heading 'all other causes'  
(Statement VI.)

58. During 1927, deaths from child-birth numbered 1,518 as against 1,817 in 1926.

Deaths from child-birth.  
(Statement VI-A.)

59. A scheme drawn up in consultation with the Principal, King George's Medical College, Lucknow, for the establishment of a centre for free treatment of venereal diseases in Lucknow was submitted to government and is under their consideration. Literature on venereal diseases is in the course of preparation by the United Provinces Hygiene Publicity Bureau.

Venereal diseases.

60. The appended table shows the ratio of deaths per cent. of the total number of deaths in the returns submitted by the medical staff and the ordinary registration agency as well as the calculated number of deaths on the data supplied by the qualified agency and the actual number of deaths reported by ordinary agency. It would be seen that the death returns submitted by the unqualified agency in the case of dysentery, kala azar and pneumonia are much below what they should be, while in the case of cholera, small-pox, plague and malaria the number of deaths returned by the unqualified agency are much over-reported. This result corresponds with that obtained in previous years:—

Name of disease.	Percentage of total deaths by—		Calculated number of deaths on the data supplied by professional agency.	Actual number of deaths reported by ordinary agency.
	Verified agency.	Unverified agency.		
Cholera .. .. .	1·59	2·76	16,286	23,285
Small-pox .. .. .	·25	·77	2 606	7,894
Plague .. .. .	·09	1·52	977	15,570
Dysentery .. .. .	5·75	·56	58,957	5,755
Enteric fever .. .. .	·67	·66	6,840	6,797
Relapsing fever .. .. .	..	·01	..	108
Malaria .. .. .	1·94	68·12	19,869	698,290
Kala azar .. .. .	·18	·02	1,303	203
Pneumonia .. .. .	11·95	·60	122,475	6 151

## SECTIONS VII and VIII (omitted).

## SECTION IX.

**Municipal water supplies.**

61. Statements indicating the results of the chemical and bacteriological analyses of municipal water supplies for the year 1926-27 were submitted to the Board of Public Health, United Provinces. The results in Dehra Dun, Mussoorie and Muttra were bad. To improve the water supply at Dehra Dun arrangements are in train for installing a chlorinating plant at the source of supply and better results are thereby expected. The Superintending Engineer, Public Health department, has been asked to make enquiries into the bad results in Muttra and Mussoorie.

62. At Benares 32.1 gallons of water were consumed daily per head of the population against 33.2 gallons in the preceding year. 150 house connections were made during the year, bringing the total number at the close of the year to 12,724.

The Medical Officer of Health, Benares, analysed 112 samples chemically and 617 bacteriologically with satisfactory results.

63. At Lucknow the daily consumption of water per head of the population during 1927 was 20.5 gallons against 19.3 gallons in the preceding year. The total number of house connections is now 8,612. Of these 698 were made in the year under report. Three samples from the clear-water reservoir were analysed chemically and showed good results, but the four samples taken from the river raw water were found to be below the standard. Of the 208 samples examined bacteriologically at the United Provinces Provincial Hygiene Institute, 55 showed unsatisfactory results.

64. At Cawnpore the average quantity of water consumed daily per head of the population in 1927 was 31.1 gallons or practically the same as in the preceding year (31.2 gallons). The total number of house connections up to the end of December, 1927 was 8,031; 310 connections having been made during the year under review.

Six samples were examined chemically and found satisfactory. 1,352 samples, including those from the Puech Chabal system, were analysed bacteriologically. Of these, 212 were found unsatisfactory. Of the samples taken from the clear-water reservoir and stand-posts 47 showed the presence of lactose fermenters in 50 c. c. and only one in 10 c. c., so that only 48 samples should be regarded as unsatisfactory. All the samples were analysed by the Medical Officer of Health, Cawnpore.

65. At Agra the quantity of water consumed daily per head of the population in 1927 was 25.9 gallons as compared with 24.8 gallons in 1926. House connections now actually number 4,530, as compared with 4,689 in the preceding year. The decrease is due to a number of connections having been closed or cut off. Like last year, eight samples of water were analysed chemically (6 by the Medical Officer of Health and 2 by the Chemical

Examiner to Government), all with good results. The number of samples analysed bacteriologically was 402—248 by the Medical Officer of Health and 154 by the Chemical Examiner to Government. Of these, only 17 were reported to be unsatisfactory.

66. At Allahabad the daily consumption of water per head of the population during 1927 was 22·5 gallons or practically the same as in 1925, but against 20·3 in 1926. The total number of house connexions is now 6,657 against 8,886 in the preceding year. The decrease is reported to be due to the dismantling of houses in certain mohallas by the Improvement Trust for starting new roads and the consequent cutting off of connections. Eight samples of water were analysed chemically, all with good results. The number of those analysed bacteriologically was 600, excluding 111 drains. Of these only two are reported to be unsatisfactory. All the samples were analysed by the Municipal Medical Officer of Health.

67. At Mirzapur the amount of water consumed daily per head of the population in the area having a piped water supply was 18 gallons as compared with 17·2 gallons in the preceding year. The number of house connections is now 2,304, of which 100 were made in 1927. Eight samples of water were analysed chemically, all with good results. Of the 13 samples analysed bacteriologically, three were unsatisfactory. The analytical work in this municipality is not being carried on according to the standard prescribed by Government. The municipal board have been considering the revised rules for over a year. All the samples were examined by the Chemical Examiner to Government. This work is now carried on by the Municipal Medical Officer of Health since January 16, 1928.

68. At Muttra 15·3 gallons of water were consumed daily per head of the population during the year under report against 16·2 in the preceding year. The total number of house connections at the close of the year was 1,401 as compared with 1,372 in 1926. Four samples of water were analysed chemically and 209 bacteriologically. All the former showed good results, while of the latter 15 contained over 100 colonies per c. c. All the analyses were done by the Municipal Medical Officer of Health.

69. At Meerut 14 gallons of water were consumed daily per head of the population against 13·5 gallons in the preceding year. 84 new house connections were made during the year bringing the total number up to the end of the year under report to 1,718. 377 samples of water were analysed (8 chemically and 369 bacteriologically), all with satisfactory results. All the samples were analysed by the Municipal Medical Officer of Health.

70. At Dehra Dun the quantity of water consumed daily per head of the population during 1927 was the same as in 1926, viz. 9 gallons. The number of house connections rose from 28 to 41. In all 38 samples were analysed at the Provincial Hygiene Institute (5 chemically and 33 bacteriologically). Of these one chemical and 29 bacteriological were reported unsatisfactory.

71. At Mussoorie the daily consumption of water per head of the population was the same as in the preceding year, viz. 24 gallons. The total number of house connections is now 611, 17 connections having been made during the year under report.



Of the 8 samples of water examined chemically one was pronounced to be hard and 3 very hard. Of the 146 samples analysed bacteriologically 42 were found unsatisfactory. Almost all of these were taken during the rains. All the samples were analysed by the Municipal Medical Officer of Health, except two done at the Provincial Hygiene Institute.

72. At Naini Tal the quantity of water consumed daily per head of the population during 1927 was 7·6 gallons against 7·2 gallons in the preceding year. Ten new house connections were made during 1927, bringing the total number of house connections at the close of the year to 330. Four samples of water were analysed chemically, all with good results. Of the 200 samples analysed bacteriologically 93 gave unsatisfactory results. All the analyses were carried out by the Medical Officer in charge E. T. C. Dépôt Laboratory, Naini Tal.

73. As mentioned in the last year's report, in nearly all the towns with piped water supplies, viz., Benares, Cawnpore, Agra, Allahabad, Muttra, Meerut and Mussoorie, the analysis of municipal water supplies is now being done by the Medical Officers of Health in municipal laboratories. In Mirzapur a Medical Officer of Health was appointed on December 3, 1927, and the analytical work is now being carried on by him since January 16, 1928.

## SECTION X.

## Personal proceedings, public health services and general remarks.

## A.—PERSONAL PROCEEDINGS.

74. I held charge of the Public Health department throughout the year. I also held supervising charge of the Government Bovine Lymph Dépôt, Patwa Dangar.

During the year, Cawnpore, Agra, Roorkee, Allahabad, Fyzabad, Ranikhet, Almora, Bhowali, Bhim Tal, Dehra Dun, Mussoorie, Meerut and Bareilly were visited to inspect sanitation and to discuss public health matters with the authorities concerned. The sanitary arrangements of the Magh Mela at Allahabad were also inspected. I visited Hardwar three times to supervise the sanitary arrangements made for the *Kumbh* fair and stayed there for several days on the occasion of the important bathing days.

The sanitary arrangements of the *Kumbh* fair at Brindaban were also inspected by me.

I visited the Government Bovine Lymph Dépôt, Patwa Dangar, twice for inspection, stock-taking, etc. During the year, I attended the meetings of the Leper committee, the United Provinces Committee of the British Empire Leper Relief Association, the Board of Public Health, the Red Cross Society, Allahabad, the All-India Lady Chelmsford League, the Medical Council, the United Provinces State Medical Faculty and the Building Board. I also attended the meeting held at Cawnpore in connection with Factories byelaws.

I selected candidates for apprentice sanitary inspectors' class during my monsoon tour.

In December I visited Delhi to discuss certain arrangements for research work with the Public Health Commissioner with the Government of India.

The examinations for the D.P.H., L.P.H., and sanitary inspectors' classes were conducted as usual.

I organized a United Provinces Public Health Exhibition at Lucknow in March for the general public and again in December on the occasion of the visit of the delegates of the Far Eastern Association of Tropical Medicine.

I acted as Secretary to the United Provinces Local Committee 7th Congress of the Far Eastern Association of Tropical Medicine which was formed at the instance of the Director-General, Indian Medical Service, and with the approval of Government, to enlist members for the congress held at Calcutta, in December, 1927, to broadcast its advent among the medical, dental and veterinary professions and to make the necessary arrangements in connection with the visit of the delegates to these provinces.

I also attended the 7th Congress of the Far Eastern Association of Tropical Medicine at Calcutta in December, 1927, and conducted the delegates in Lucknow and showed them various public health activities.

I gave evidence before the Royal Agricultural Commission and presided at the Annual Conference of the United Provinces Vaccination Association.

**B.—ASSISTANT DIRECTORS OF PUBLIC HEALTH OF RANGES.**

75. In view of the increased importance of the Hygiene Publicity Bureau and the largely increased work which devolved on this branch a recommendation was made to Government that the 3rd and 4th ranges be combined into one range with headquarters at Allahabad and that the Assistant Director of Public Health who thus became available be appointed to hold the whole-time charge of the Bureau. Government were pleased to sanction the proposal from October 1, 1927. Dr. A. Sousa was accordingly placed in charge of the Hygiene Publicity Bureau and Dr. K. P. Mathur in charge of the new III Range from that date.

*First Range.*—Rai Bahadur Dr. K. L. Chaudhri held charge of the range throughout the year and was on tour for 195 days.

He inspected the sanitation of Nagina, Bijnor, Dhampur, Najibabad, Garhmuktesar, Baraut, Pilkhua, Meerut, Roorkee and Shahjahanpur and vaccination in the Sabaranpur and Muzaffarnagar districts and the Roorkee and Hardwar municipalities.

He visited Brindaban and Hardwar several times and attended several meetings held at Hardwar, Saharanpur and Brindaban in connection with the *Kumbh* mela arrangements at Brindaban and Hardwar. He remained at the latter place from January 29 to June 1 supervising the medical and sanitary arrangements of the fair and the pilgrim route to Badrinath.

He made arrangements for isolating infectious cases in connection with the inspection of passengers at the Ghaziabad, Muttra and Saharanpur railway stations.

He paid frequent visits to Rikhikesh, Satnarain and Lachman Jhula to organize and supervise the sanitary and medical arrangements there.

The sanitary and medical arrangements of the Garhmuktesar, Batesar, Shahkumber Devi, Tigri and Piran Kaliar fairs were also organized by him. The necessary arrangements for sinking tube wells at Piran Kaliar where a big Muslim fair (*Urs*) is held annually were also made.

Budaun was visited in connection with Maternity and Child Welfare and Qasimpur village in that district in connection with the model village and annual cattle fair held there. He visited Agra in company with the Director of Public Health.

He visited Bareilly, Saharanpur, Agra, Moradabad and Muttra in connection with the anti-rat campaigns and eradication of endemic foci of plague.

He checked 250 birth and death entries during the year, inspected 7 schools, 2 factories and 4 public health travelling dispensaries and examined 777 scholars for health and for vaccination.

He visited Muzaffarnagar, Muttra, Bulandshahr and Moradabad in connection with the working of the District Health Service and also discussed the scheme with the chairmen of the respective boards.

*II Range.*—The charge of the range was held by Lieutenant-Colonel W. A. Mearns, I.M.S., from January 1 to March 9, and again from

November 7, when he returned from leave in England, to December 31, 1927. Captain D. Clyde, I.M.S., held collateral charge of the range from March 10 to November 6, 1927.

The Assistant Director of Public Health, II Range, was on tour for 55 days. Much of Captain Clyde's time was spent in the compilation of the Public Health Manual and malaria investigations in different places owing to which he could do very little touring in the II Range.

Lieutenant-Colonel Mearns inspected the sanitation of Nawabganj (Bara Banki), Ajodhya, Sultanpur and Partabgarh municipalities, and of the Government High School, Bara Banki, and the hostels attached thereto. He inspected vaccination work in the Lucknow, Fyzabad, Gonda, Bahraich, Sultanpur, Sitapur, Kheri, Hardoi, Bara Banki, Partabgarh and Rae Bareli districts and municipalities as well as of the notified areas in the Sitapur and Hardoi districts. He also supervised plague preventive measures in the districts of Lucknow, Fyzabad, Gonda, Bahraich, Sultanpur, Sitapur and Kheri and inspected the district health offices in Gonda, Bahraich, Fyzabad, Lucknow, Bara Banki, Sultanpur, Partabgarh and Rae Bareli.

Travelling dispensaries nos. P. H. 9 and 14 were also inspected by him.

Captain Clyde inspected the sanitation of Bhowali Notified Area and Nawabganj municipality. During April he remained at Hardwar for about two weeks in connection with the *Kumbh* fair. He also supervised the medical and sanitary arrangements made in connection with the Ram Naumi fair at Ajodhya and conducted the viva voce examination of the L. P. H. class. He visited Fyzabad in connection with the sanitary and medical arrangements for the Sawan Jhula fair and Almora in connection with measures to prevent the spread of cholera in that district.

*III Range.*—Dr. A. Sousa held charge of the III Range from January 1 to September 30, when the IV Range was amalgamated with the III Range, and Dr. K. P. Mathur was put in charge of the newly-constituted range, which charge he held till the close of the year. During the period Dr. Sousa held charge of the abolished III Range he was on tour for 100 days. He supervised the medical and sanitary arrangements of the Magh Mela, Allahabad, and was on special duty at the *Kumbh* fair at Brindaban and Hardwar. He inspected vaccination work in the Allahabad and Cawnpore districts and the sanitation of the Farrukhabad, Kanauj, Orai and Etawah municipalities, Kaimganj (Farrukhabad), Auraiya (Etawah) and Bindki (Fatehpur) notified areas and the town areas of Khaga (district Fatehpur), Motb, Chirgaon (district Jhansi) and Baretha village (district Jhansi). He inspected the medical inspection post at Manikpur railway station twice and visited the Fatehgarh Central Jail in connection with an epidemic of jaundice. He inspected the work of the District Health Service in the Allahabad and Fatehpur districts and the Leper Asylum at Naini. He conducted the viva voce and practical examinations of the students of the Medical School, Agra.

At Allahabad he selected candidates for the sanitary inspectors' training class.

During the period from October 1 to December 31 Dr. K. P. Mathur, D.P.H., was on tour for 44 days. He supervised the sanitary and medical arrangements of the Dadri fair, Ballia, and inspected the sanitary arrangements of the Etawah Exhibition. He inspected vaccination work in the districts of Jalaun, Ghazipur and Farrukhabad and of the municipalities of Etawah, Orai and Farrukhabad. He inspected the Public

Health Travelling Dispensary no. 20, the Government High School, Etawah, and site for a leper settlement for the Salvation Army at Benares.

He conducted the examination of the D.P.H. class at Lucknow in Part I and visited Benares in company with the delegates of the Far Eastern Association of Tropical Medicine.

*IV Range.*—Dr. K. P. Mathur, D.P.H., remained in charge of the range from January 1 to September 30, 1927, the date on which it was amalgamated with the III Range. During this period he was on tour for 96 days. He supervised the Public Health Exhibition held at Jaunpur and attended the Provincial Public Health Exhibition at Lucknow. The Hardwar *Kumbh* fair was visited in April and the sanitary arrangements made there studied.

He visited the districts of Jaunpur, Benares, Gorakhpur, Mirzapur, Azamgarh, Basti and Ballia in connection with the prevalence of cholera.

He inspected vaccination in the municipalities of Gorakhpur, Ballia, Jaunpur and Ghazipur and in the districts of Benares, Ghazipur, Azamgarh, Gorakhpur, Basti, Ballia and Jaunpur. He inspected the sanitation of the Mirzapur, Ballia and Jaunpur municipalities, the Mubarakpur, Barhaj, Gorakhpur and Mau notified areas and the Basti town area. He also inspected the Government High School, Jaunpur, and the site for the housing of Doms in the Benares municipality. In addition a number of travelling dispensaries were inspected.

Dr. Mathur also selected candidates for the sanitary inspectors' class at Benares and Gorakhpur and tested 1,834 birth and death entries.

#### C.—PUBLIC HEALTH SERVICES.

76. Rai Bahadur Dr. D. D. Pandya, D.P.H., was the Assistant Director of Public Health in charge of the Provincial Hygiene Institute throughout the year, while Dr. H. G. D. Mathur, M.B., B.S., D.P.H., worked as his assistant.

As it was found necessary to train a large number of sanitary inspectors to meet the demands of the municipal and district boards, the Apprentice Sanitary Inspectors' class was divided into two sections, and as the work of training them was thus doubled, an extra officer, Dr. B. S. Yajnik, M.B., B.S., D.P.H., had to be deputed to the institute. During the year under report the work of the institute continued in its present restricted quarters kindly lent by the Lucknow University, while the Plague and Cholera Research branches and the Cinema Film Production branch are still housed in the hired premises known as the "Kankar Kothi." The new building, however, is now nearing completion, and it is hoped that by the 1st of August next all teaching work and the other routine work of the institute will be done in the new building. The Plague and Cholera Research branches will have to remain in their present temporary quarters until funds are available to build an extension to the institute to provide accommodation for special researches, etc.

*II.—Teaching work.*—The following table gives the details of the teaching work of the institute. The number of candidates admitted in October, 1927 for the Apprentice Sanitary Inspectors' class was increased to 70 owing to the increased demands for officers of this class in the district and municipal boards.

Table showing the number of students trained and examined at the Provincial Hygiene Institute during the year 1927.

	Session 1926-27.							Session 1927-28.
	Number of students in the class.	Month.	Examination.		Month.	Supplementary examination.		Number of students in the class.
			Number of candidates appeared.	Number of successful candidates.		Number of candidates appeared.	Number of successful candidates.	
Under-graduates under training for the M.B., B.S. degree (Hygiene only).	38	April, 1927.	38	30	October, 1927.	12	9	44
Post-graduates — members of the Provincial Medical Service, United Provinces.	7	No examinations.	..	..	..	..	..	9
D. P. H., Part I ..	8	April, 1927.	8	7	October, 1927.	1	..	8
D. P. H., Part II ..	7	Do. ..	7	6	Do. ..	1	..	8
L. P. H., Part I ..	9	Do. ..	9	8	Do. ..	1	..	9
L. P. H., Part II ..	9	Do. ..	9	8	Do. ..	1	..	9
Apprentice Sanitary Inspectors.	38	February, 1927.	38	21	August, 1927.	6	..	70
Sanitary Inspectors ..	36	Do. ..	36	34	..	..	..	40
Examination for Chief Sanitary Inspectorship.	..	March, 1927.	6	1				
Examination of Medical Officers of Health in Provincial Sanitary Law..	..	November, 1927.	1	1				
Laboratory Assistants trained during 1927.	..	..	..	4				

III—Routine and Investigative Laboratory work—(a) Water.—Work in this connexion consisted mainly of the chemical and bacteriological analyses of water samples sent to the Institute from the water-works at Lucknow (weekly) and Dehra Dun (fortnightly). Mussoorie municipality has now installed a laboratory of its own and has started doing its own analyses.

Quarterly examinations of water from municipalities having their own laboratories, which used to be done at the Institute, are no longer being carried out here.

The time that elapsed between the taking of the sample and its examination at the Institute, particularly when it was not sent packed in ice, varied considerably and the test lost its value as a control over the local laboratories. The procedure now adopted is that the Assistant Directors of Public Health concerned examine samples of water locally and thus control the results of these laboratories.

In addition, samples of water from the Forest Research Institute, Dehra Dun, Hardwar Railway Station, Fatehgarh, Madhogarh (Jalaun), Bareilly and Lucknow were examined both chemically and bacteriologically to determine their potability, while 32 samples were analysed chemically in connexion with the Cholera Research work at Hardwar. Two samples of ice from Gorakhpur were examined bacteriologically.

(b) *Food-stuffs*.—Coloured sweetmeats from Gorakhpur as well as the colouring agents employed for them were analysed. Samples of milk from the Assistant Director of Public Health (Hygiene Publicity Bureau) were also examined.

(c) *Disinfectants*.—Sixteen disinfectants of the phenyle type were examined and their Rideal-Walker coefficients determined, 13 for the Store Purchase Officer, United Provinces, and three for the Public Health department, while tests were made to determine the keeping properties of Perchloron, a stabilized chlorine compound, and compared with bleaching powder under similar conditions.

IV.—*Anti-mosquito work*.—Anti-mosquito work in Lucknow was organised by the Provincial Hygiene Institute and the Assistant Director of Public Health (Malariology), in co-operation with the Municipal Board, Lucknow. The students of the D. P. H., L. P. H., and Sanitary Inspector classes were allotted to the various wards and they made a detailed survey of the breeding places of mosquitoes all over the town and later supervised the weekly oiling of depressions where breeding was taking place.

V.—*Research Work*.—The research work in plague and cholera, which started in 1926 with the help of the Indian Research Fund Association, was continued during 1927.

*Plague Research Work*.—The inquiry regarding the comparative transmission of plague by *X cheopis* and *X astia*, to which reference was made in the last year's report, was continued by Dr. A. N. Goyle, M.B., PH.D., financed by the Indian Research Fund Association at a cost of Rs. 36,437. The results of his investigation have been incorporated in a paper published in the April number of the Journal of Indian Medical Research, 1927, under the title "Comparative Experiments on the Transmission of Plague by Fleas of the Genus *Xenopsylla* (*cheopis* and *astia*) with a Discussion on the Flea-Species Distribution in its Relation to the Incidence of Plague." The experiments as detailed in this paper tend to show that *cheopis* is a much more efficient vector of plague than *astia*; for out of fifty-two experiments in which *cheopis* was used, a successful transmission occurred in twenty-five, which under exactly the same conditions only nine out of fifty-two experiments were successful with *astia*. In order to study the influence of the sex of the

fleas on the experimental transmission of plague, experiments were made with the male and female fleas separately. The results showed that in both the species the males were the more efficient transmitters. Out of four experiments with female *cheopis* none was successful, while under exactly the same conditions, three out of four with the male *cheopis* were successful. With *astia* one experiment was made and was successful with males and not with the females. The discrepancy in the results of the experiments of the comparative transmission of plague of some of the workers has been shown to depend partly at least on the difference between the ability of the two sexes of fleas to carry plague. It is not suggested that males carry plague more readily in nature than females because the males have a much shorter duration of life than the females.

Continuous transmission experiments have further confirmed the view that *cheopis* is a better transmitter than *astia*; for continuous transmission was obtained with eight rats in the *cheopis* cage and with only two in the *astia* cage. From a study of the influence of climate, chiefly of saturation deficiency and temperature on the experimental transmission of plague, it is concluded that the transmission of plague by *cheopis* does not occur at 68°F. when accompanied by a saturation deficiency of .6 of-an-inch. At the same temperature a lower degree of saturation deficiency of .3 of-an-inch suffices to check *astia* from carrying plague. A rise of saturation deficiency, therefore, exerts an unequal effect on the plague-transmitting power of the two species of fleas. The geographical distribution of the different species of fleas in their relation to the incidence of plague has been discussed at some length in the above paper, and the view is put forward that flea species is a factor of some importance though not the only factor involved in the spread of plague and that the presence of *astia* to the exclusion of other fleas over a large tract of the country does in part at least account for its immunity from plague.

In order to discover more reliable methods of rat destruction than are available at present experiments were carried out with the "Liverpool Virus" which is manufactured by Messrs. Evans Sons, Lescher and Webb, Limited, Liverpool. 43 Lucknow rats were fed with a varying amount of the "Virus." Eight rats died within 2—7 days and four rats died within 8—10 days. The remaining 31 rats were found to be healthy. The label on the tin states: "It takes about a week for the rodents to die off." The experiments were made under the most favourable conditions in rat-proof godowns and the results do not justify the use of the "Virus" on a large scale.

Anti-rat campaigns with "cyanogas" are in progress and the results will be available next year.

During the summer of this year an investigation was started in the district of Azamgarh with the object of elucidating the problem of recrudescence of plague. Over 3,000 rats were examined, and neither in the lesions found in a number of the rats which resembled those of chronic plague as described by various workers nor in the heart's blood of any of these rats was plague bacillus found. Dr. Goyle is of the opinion that sporadic cases of plague continue to occur in rats during the off-season as in man through the agency of rats which are neither so numerous nor so long-lived as to continue an epizootic but are just sufficient to keep the strain of plague bacillus going in sporadic cases. In this connexion it may be pointed out that plague cases in man occur with greater frequency



throughout the off-season in certain districts of the Provinces, e.g., Azamgarh and Ballia which were found to be more humid than the other districts of the Provinces by the Indian Plague Commission so that the fleas were more numerous on the rats in the months of June, July, and August. There does not seem any reason to believe that the transmission of plague by fleas is held in abeyance during the off-season.

*Cholera research work*—1. *The observation area*.—This year (1927) completes the first year of the existence of the cholera research in the United Provinces carried on by Dr. Saranjam Khan, M.B., B.S., D.P.H. (U.S.A.), D.T.M. and H. (London); and financed by the Indian Research Fund Association at a cost of Rs. 29,409. For the purposes of the inquiry, in order to be able to carry on experimental work in the field, it was desirable to select a suitable area in these Provinces, i.e., an area showing a heavy and persistent infection with this disease. The district of Gonda was selected, this district shows a high death-rate from cholera and has never been free from it for a single year out of the 50 years of available records (1877—1926). By means of local survey suitable villages were selected for observation purposes. Work is in progress in these villages and a short *résumé* of the scope of the enquiry is as follows:—

- (i) Examination of the whole stools of the healthy population by the "open bowl" method for detection of "carriers."
- (ii) Daily examination of the drinking water for the isolation of vibrios with a view to find out the "reservoir" of cholera.
- (iii) Chemical and bacteriological investigation of cases of cholera and choleric diarrhoea to find out if cholera originates locally independent of importation from outside.
- (iv) If it does originate independent of importation from outside, has it any connexion with the vibrios found in the drinking water and the stools of the general population?

The object of this line of investigation is, in the first place, to collect data with a view to confirm, if possible, the observations made in Asansol, secondly, to find out if cholera is endemic in this area, and, thirdly, to provide material for further research especially with regards to the "carriers."

From August 25, 1927, to the end of November, 1927, a total of 2,631 samples of water of the following kinds were examined. Non-agglutinating vibrios were isolated from 40 per cent. of sullage water, 39 per cent. of tank and lake water, and 31 per cent. of well water.

Sixty-five per cent. of the stools of healthy people showed the presence of non-agglutinating vibrios.

- (v) We have also included in our programme of work in this area the investigation of the influence of cholera vaccine, billivaccine and cholera-phage on sterilizing carriers of non-agglutinating vibrios.
- (vi) Whether immunization by the oral administration of vaccine (billivaccine) is better suited to the villagers than by the subcutaneous injection of the ordinary vaccine.

2. *The question as to whether there are any endemic foci of cholera in the United Provinces.*—Sir Leonard Rogers (1) has stated (1926) that the Gorakhpur, Benares, Fyzabad, Lucknow, and Rohilkhand divisions of the United Provinces are endemic foci of cholera on the ground that from a study of the mortality statistics he found that cholera was present “in every one of the thirty years’ continuous records” (1890—1919). We have on the same lines as Sir Leonard Rogers formed tables from the cholera mortality statistics for the 48 districts of the United Provinces for as many years as available (50 years), and we think that from the mere fact of cholera “being never absent from a division over a considerable series of years” we are not justified to call that division an endemic area of cholera, because cholera may be so persistently imported as not to miss a single year. And this we think at this stage of our investigation is what takes place in some of the divisions in the United Provinces. Now all these divisions, mentioned by Sir Leonard Rogers as endemic foci of cholera, are, with the exception of Gorakhpur, exactly those divisions where most of the fairs take place. Gorakhpur is so close to the endemic areas of Bengal, Bihar and Orissa that this fact should be taken into account for the persistent presence of cholera in this division.

These divisions, therefore, are specially liable to be invaded by cholera year after year on account either of the proximity of the admitted endemic foci of Bengal and Bihar or of the location of the important centres of pilgrim or the combination of both these factors. Some of these divisions not only get infected from the east but they are also invaded from an important focus in the north, viz., Nepal. We, therefore, think that the important question of mapping out the endemic areas cannot be decided by a study of the mortality figures alone. A knowledge of the local conditions and investigation on the spot are necessary.

In the United Provinces cholera sinks to a very low level during the months of December, January, February and March and practically disappears during the months of January and February each year. We investigated every fresh outbreak of the disease this year (1927). For the first time this year (1927) deaths from cholera were reported during the first-half of the month of February from the pilgrimage fair of Brindaban in the Muttra district. There were 40 deaths in all of which all the early ones and most of the others were imported from Bengal. The next place to report cholera was Hardwar, where an isolated case occurred in the end of the month of February and was imported from Bengal. All the outbreaks that occurred during the months of March and April were due to importation. During the month of May the foci had multiplied and the disease spread from them throughout the Provinces. The United Provinces were invaded from Bengal not as is usually supposed by the successive invasion of contiguous districts from east to west, but through the invasion of far and widely-separated pilgrim centres. These centres in return played the rôle of relay stages in broad casting the infection in the United Provinces themselves and far into other Provinces such as the Punjab getting infected from Hardwar. This line of investigation will be continued for the next year also.

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(1) Rogers (Leonard) “the conditions influencing the incidence and spread of cholera in India” Proc. Roy. Soc. Med. (Section Epidemiol and State Medical) 1926. July 19, no. 9 pages 89 to 91. Also a paper read on January 28, 1927, before the Indian section of the Royal Society of Arts.

3. *Research work in pilgrim centres.*—Research work was carried on with laboratories on the spot in the Dadri fair in Ballia district, the recent *Kumbh Fair* at Hardwar and the Magh Mela of Allahabad.

Work in Hardwar was started during the middle of the month of February and is still in progress without interruption. The data obtained in Hardwar cannot be dealt with here. They have been analysed and discussed in a paper which was read at the seventh congress of the Far Eastern Association of Tropical Medicine. Those interested in the details are referred to the paper published in the proceedings of the congress. The conclusions of practical importance which were arrived at and the remedial measures suggested are given below :—

- (1) Cholera is not endemic in Hardwar, but is imported by the pilgrims.
- (2) Some pilgrims possessing virulent cholera germs come to Hardwar from the endemic areas of cholera, chiefly Bengal. These persons are not what we may call chronic carriers. They either develop the disease on the way and reach Hardwar suffering from fully developed true cholera, or they are in the incubation period, or are convalescing from a recent attack of cholera, or are what may be called ambulatory cases of cholera.
- (3) The cholera germs thus imported by these pilgrims find their way into the Har-ki-Pairi pool and the Esplanade, part of the Ganges chiefly in the sewage of the town, and also through the bathing that takes place in the river.
- (4) From the amount of pollution thus received as corroborated by chemical examination this water is totally unfit for drinking purposes.
- (5) Some of the pilgrims for various reasons drink this water to the exclusion of any other kind of water or in exceptionally large quantities. It is these people among the pilgrims that are usually attacked by cholera.
- (6) As on or about the chief bathing day the amount of pollution reaches its maximum, and the number of people drinking from the most polluted part is also at its maximum, a very large number of the pilgrims are infected at that time.
- (7) As the gathering is soon dispersed many of these people develop the disease on the way or on reaching home.

Based on these findings we hope the following preventive measures may demolish once for all the notorious rendezvous of cholera in Hardwar :—

- (1) The introduction of an efficient underground water-carriage system of sewage disposal. This should drain not only the town of Hardwar but also Bhimgoda, Bhopatwala, Kankhal and Jwalapur, as all these make up but one pilgrim area. Untreated sewage should on no account be allowed to fall into the river anywhere.
- (2) The extension of the existing municipal water-supply. It should be so extended as to take in every part of the entire pilgrim area, including Rori island, Belwala, etc., Kankhal and Jwalapur. All open wells in the pilgrim area must be closed.

- (3) The chlorination of the Har-ki-Pairi pool. As all the pilgrims come for the sole object of bathing in Ganges water it is impossible to prevent them drinking it. The underground sewage system will remove the main source of pollution, but the pollution added by the bathing will still remain. It is possible that after the main source of pollution is obviated, that added by bathing may be too small for the river to cause cholera, and there are reasons for so believing. But if we are going to take no risks, the Har-ki-Pairi pool must also be chlorinated.
- (4) Anti-cholera inoculation. The value of anti-cholera inoculation as a preventive measure is undoubted, but its practicability in a pilgrim fair of this kind is full of difficulties. This measure may not be necessary as far as Hardwar is concerned if the above three measures are given effect to.

4. *Publications.*—Two pamphlets, one entitled "Research Work on Cholera in the United Provinces (October, 1926 to June, 1927)" and the other "Simple methods for isolating vibrios from stools and water for the use of Medical Officers of Health in the United Provinces" have been published.

*VI.—Cinema films on health subjects.*—The production of motion picture plays on health topics was continued during the year. The following films were completed:—

- (1) "Why die of Cholera?"
- (2) "A pilgrimage to Hardwar Kumbh Fair, 1927."
- (3) "The Tragedy of Small-pox."

The first was ready in March, 1927, and was first shown at the Public Health Exhibition held in Lucknow in March and then sent to Hardwar, where performances were given during the Kumbh Mela for about one month. Film no. 2 was first shown at Calcutta on the occasion of the 7th Congress of the Far-Eastern Association of Tropical Medicine and no. 3 at Lucknow when the delegates to the Congress visited the place on their northern tour.

*VII.—Miscellaneous.*—A number of technical matters were referred to the Institute, the important ones being—

- (a) Preparation of a note on the Hydrogenated vegetable oils and suggestions for legislative and other measures for the prevention of widespread adulteration of ghee by these products.
- (b) Preparation of a scheme for an organisation for the treatment and prevention of venereal disease suitable for a large town in these provinces. In this connection advantage was taken of the visit of Dr. Pandya to Bombay in connection with the University examination for B. Hy. to see the working of the League for Combating Venereal Diseases, Bombay.
- (c) Calculation of the corrected death-rates for the bigger towns of the United Provinces based on the mortality figures for 1926. These showed some results which were very different from what were expected and as a result it has been proposed to undertake a more detailed investigation.
- (d) Technical enquiries, such as on plague inoculation, equipping, of laboratories, from medical officers of health, etc.

- (e) The fitting and equipment of the new building of the Provincial Hygiene Institute.
- (f) Bio-chemical reactions of a number of strains of non-agglutinating vibrios sent by the Cholera Research department were ascertained with various sugars. It is found that some non-agglutinating strains resembling cholera vibrio in morphology do not ferment cane sugar as true Koch's vibrio does.

VIII.—*Public Health Exhibitions.*—(a) A Public Health Exhibition was organized by the institute with the co-operation of the other sections of the Department of Public Health. It was held at the Kaiserbagh Baradari, very kindly lent by the President of the British Indian Association. The exhibits were arranged under the following sections:—

- (i) *Provincial Hygiene Institute.*—The models recently purchased for the institute museum contrasting the sanitary and insanitary conditions commonly met with were displayed and evoked considerable interest. There were also models explaining human anatomy and physiology. Besides, apparatus for chemical and bacteriological analysis of water, foods, etc., were displayed and the methods explained. A chart showing the Public Health organization of the province and a map giving the geographical distribution of the activities of the Public Health department in these provinces were prepared specially for this exhibition and were much appreciated.
- (ii) *Plague Research Section.*—The manner of transmission of this disease as well as the nature of the experimental work which is being done on the subject were shown by means of actual specimens, models, diagrams, posters, etc. Exhibits relating to other diseases not having a section to themselves were also shown in this section.
- (iii) *Cholera Research Section.*—The manner of transmission and prevention of cholera was illustrated by appropriate lantern slides and microscopic preparations.
- (iv) *Hygiene Publicity Section* was arranged by the Hygiene Publicity Bureau, and, in addition to their regular posters, booklets, leaflets and lantern-slides, special posters and charts were made for the exhibition.
- (v) *Maternity and Child Welfare Section* was organized by the Provincial branch of the All-India Lady Chelmsford League. The models made of three-ply wood and mounted in boxes were exhibited; so also many posters from other countries. The Medical Officer of Health, Lucknow, exhibited contrasting conditions under which maternity should, and does, take place.
- (vi) *Epidemiology branch* exhibited a travelling dispensary and all its equipment. This on account of its extreme mobility is the most effective weapon of the department against epidemics, particularly in those districts which have not yet got a district health organization.

- (vii) *Malariology branch* exhibited the various anopheline mosquitoes which carry malaria in the United Provinces, their developmental stages and larvae-eating fish, and with the help of posters specimens under microscopes and other preparations exhibited the transmission of malaria and its prevention.
- (viii) *Tuberculosis*.—The Lucknow Anti-Tuberculosis League exhibited its posters and other literature with specimens of diseased lung tissue.
- (ix) *The Public Analyst* organized an exhibit showing the various tests which he is required to undertake in connexion with the enforcement of the United Provinces Prevention of Adulteration Act, 1912.
- (x) *The Government Bovine Lymph Dépôt, Patwa Dangar*, exhibited the various stages in the preparation of calf lymph used for vaccination in this province.
- (xi) *Public Health Engineering Section*.—In this section were exhibited models from municipal board, Benares, of—
- (1) Raw water pumping station, Bhadaini.
  - (2) Filtration plant and main pumping station, Bhelupura.
  - (3) A house suitable for cities.
- Models from Well-boring division, Cawnpore, and from Messrs. A. C. Nichols and Co. were also shown in this section.
- (xii) *Cinematographic branch* of the Provincial Hygiene Institute exhibited the film-camera, film-developing tanks, film-drying machines, the printing machine and negative and positive films. Besides this, they organized a series of cinematographic performances which were attended by large crowds.

The exhibition was opened by His Excellency the Governor on March 10, 1927, and that evening the admission was by cards. For the rest of the week the admission was free and the exhibition remained opened from 11 a.m. to 7 p.m. In the evening there was usually a lecture illustrated with lantern slides followed by cinema performances. Large crowds were attracted to the exhibition and the attendances were so large that three performances had to be given each evening instead of two as contemplated. A day was set apart exclusively for women. On that day students of the Isabella Thoburn College worked under Dr. S. H. Commissariat, F.R.C.S.I., S.M.O., W.M.S., as conductors for taking groups of women round and explaining the exhibits. At a conservative estimate about 6,000 persons, of whom at least 1,000 were women, visited the exhibition and about 10,000 people attended the cinema performances.

(b) Another Public Health Exhibition was arranged on the occasion of the visit of the delegates to the 7th Congress of the Far Eastern Association of Tropical Medicine. Most of the exhibits were those mentioned above, but the scientific aspect was specially emphasised. In addition, the following were arranged specially for this exhibition :—

- (1) Panoramic map of Hardwar, showing the public health arrangements made on the occasion of the *Kumbh Mela* fair, April, 1927.

- (2) Model of the Puech-Chabal system of filtration at Cawnpore.
- (3) Exhibits of the Allahabad and Lucknow Town Improvement Trusts.
- (4) Statistical charts prepared at the Provincial Hygiene Institute and the department of Economics of the Lucknow University.

77. The charge of the Malaria branch was held by Captain D. Clyde, I.M.S., throughout the year. Dr. B. M. Roy acted as senior assistant and Dr. P. N. Chatterji as junior assistant.

*Tours.*—The Assistant Director of Public Health (Malariology), United Provinces, remained on tour for 220 days, the senior assistant for 152 days and the junior assistant for 104 days in the year.

*Work carried out.*—(1) Under my instructions a new orientation was given to the working policy of the branch. The anti-malarial works at Banbassa were given a subordinate importance to the necessity of carrying out research work and work in other parts of the province.

(2) Malarial surveys were made of the following places during the year:—

- (i) Banbassa.
- (ii) Kashipur and Bazpur tahsils, Naini Tal district.
- (iii) Certain villages in the Moradabad district.
- (iv) Daryabad, Bara Banki district.
- (v) Khurja town.
- (iv) Bhimtal.

In addition visits were made to Moghal Sarai, Jaunpur, Hardoi and Shahjahanpur for the purpose of initiating or inspecting anti-malarial measures. During the Kashipur survey 2,393 children in the scattered villages of that tahsil were examined.

(3) *Laboratory work.*—(a) In connexion with various surveys 2,260 blood films were examined, 311 of which or approximately 13.76 per cent. showed malarial parasites.

(b) 26,991 anopheline mosquitoes were received and classified in connexion with a scheme for mapping out the provincial distribution of the various anophelines. This was in addition to those classified in connexion with the routine work at Banbassa and the various surveys numbering 19,951.

(c) Over 300 "carrier" anopheline mosquitoes were dissected for oocysts and sporozoites.

(4) *Malaria training class.*—A class of ten officers of the Public Health department—four D. P. H's. and six L. P. H's.—was given one month's intensive training in malaria and anti-malarial measures.

(5) *Supervision of medical work.*—Two hospitals and six dispensaries working in the Sarda Canal were inspected and supervised during the year.

(6) *Work in anti-malarial problems.*—(i) An investigation into the distribution and seasonal incidence, etc., of anopheline carriers was commenced in April and was continued throughout the year.

(ii) A series of surveys in selected areas on the Sarada Canal were commenced and will be completed before the canal is opened, so that the results can be compared with identical surveys done in future years and an estimate of the effect of canal irrigation on the incidence of malaria in the United Provinces arrived at. Owing to the large drainage schemes which are being carried out at the same time as the canal construction is going on, it is unlikely that endemic malaria will increase except perhaps in portions of the Tarai; the increase in malaria which occurred subsequent to the opening of the Ganges Canal will be generally avoided.

(iii) Certain villages have been selected and work is being commenced in these to determine the effects of clearing the edges of village tanks, etc., on the malarial incidence of these villages.

(iv) Experiments on cinchonization are being carried out in a few selected villages in the districts of Gorakhpur, Fyzabad, Allahabad, Bulandshahr, Gonda and Moradabad with a view to ascertaining the effect on the incidence of malaria in the villages chosen. For this purpose small compact villages have been selected where facilities for treating the residents exist and where there is a high incidence of malaria. The experiments are supervised by the district health staff. Cinchona febrifuge has been supplied to district medical officers of health concerned from the stock of this department. Influential hakims, vaidis or other persons in whom the villagers have confidence form the distributing agency. The scheme consists of informing the villagers by beat of drum that free treatment for fever with quinine is available from such and such a person appointed in the village, and they are instructed to go to him for this quinine. The agent is instructed to give 10 grains of quinine three times a day to each adult suffering from fever for 3 or 4 days and smaller doses to children. The idea is to treat with quinine every case of fever, in order to reduce as far as possible the infectivity of the blood of the patients, thus to reduce the numbers of infected mosquitoes to a minimum. Should fever recur in the same individual the treatment is repeated.

As the scheme has been in operation for a very short time during the year the results will be shown in the report for 1928.

(v) The work of controlling malaria in towns and villages by the routine use of paris-green is being started under the supervision of certain district medical officers of health.

(vi) An investigation into a case of quinine intolerance was carried out and an examination of the relative value of certain drugs in malaria was commenced.

(vii) An investigation into the economic loss from malaria is proceeding.

(viii) During the year further work was carried out in introducing the various species and varieties of fish which are known to be of value as an anti-larval measure into various tanks and depressions in rural areas, and this work has ultimately been confined to stocking the tanks and depressions in and around town areas and notified areas. Even when strict attempts are made to exclude the introduction of the various



predaceous fish which exist in abundance in the province these fish invariably find entrance by natural means.

It is doubtful if any artificial method of stocking tanks is of any great value except in special conditions and in towns.

A well-known feature of various areas in this province is the migration of fish from tanks during the rains and such fish can be seen in inundated fields often in great numbers working their way up against the current.

So far it has been found impracticable to introduce byelaws under the various acts to prohibit the netting of fish. While further work is being continued on the lines of stocking tanks and depressions near abadi with these small larvae-eating fish, it is probable that the most satisfactory way of attaining the object desired would be the simple one of passing a law prohibiting the use of nets with a mesh less than one square inch.

(7) *Anti-malarial works were commenced in the following places and districts:—*

- |                            |  |                 |
|----------------------------|--|-----------------|
| (1) Bareilly municipality. |  | (5) Partabgarh. |
| (2) Basti town.            |  | (6) Ballia.     |
| (3) Bahraich.              |  | (7) Jalaun.     |
| (4) Moradabad.             |  | (8) Gorakhpur.  |

The scheme at Phulpur had to be dropped on account of the expensive nature of the necessary work.

Grants aggregating Rs. 36,637 were sanctioned by the Board of Public Health, United Provinces, for Nos. 2—8, while a grant of Rs. 38,047 was made for No. 1 by Government out of the balance of the grants sanctioned by the Government of India and the Indian Research Fund Association in 1913.

It may be mentioned that the Municipal Board of Cawnpore are budgeting Rs. 30,000 for anti-malarial works (filling tanks and hollows) for 1928-29.

(8) The survey of the Kashipur and Bazpur tahsils of the Naini Tal district was carried out in March, April and May, 1927, with a view to determining the cause of the decrease in population from 71,412 in 1872 to approximately 35,000 in 1927. This was found to be due to high endemic malaria and its sequelae. Recommendations made are under the consideration of the Government.

(9) *Anti-malarial work at Banbassa, the Sarda Canal Headworks.*—During the months of January and February the staff of the branch remained at Banbassa carrying out the anti-malaria and laboratory work in connection with the camps and hospitals there. Subsequent visits were made in the first and last weeks of April. The anti-malarial work was started in October, 1927 and visits were made in November and December to inspect and survey the area. The work at Banbassa consisted of the use of paris-green, the fumigation of dwellings, the administration of 'prophylactic' quinine and an attempt to sterilise the human reservoir of gametocytes.

Paris-green has been used since October, 1926, in Banbassa. The method of use and benefits of this bye-product were commented upon in

my report for 1926 and its general adoption by the district medical officers of health for notified areas and villages throughout the Province recommended. It has proved as useful for the breeding places of *A. maculatus*, *A. willmori*, *A. minimus* and *A. listoni* in the Tarai as for *A. culicifacies* in the plains, and has the advantages of requiring no semi-skilled labour and of being remarkably effective in dealing with marshes and seepage areas even if sown in a very haphazard way. The statement that it has no effect on *Culex* would appear to require further investigation, as certain species of these larvae apparently also die off. With the exception of the fact that no weeding or jungle cutting is required when using paris-green—in fact the presence of algae would appear to enhance its value as a larvicide—the cost of using aceto-arsenite of copper at the price obtaining in India is not much less than the cost involved in oiling. Against this the method of spreading by throwing a 1 per cent. mixture of Paris-green and dry road dust into the air has been used and this is admittedly much more costly than spreading it by blowers. The supplies obtained in India are not guaranteed to contain 50 per cent. of arsenic and it would appear necessary to import stocks in bulk from Europe under a guarantee of strength and fineness.

The intervals at which paris-green required spreading to control breeding effectively in the Tarai was once every seven days from the end of September to the end of November and from March to June and once every fortnight from December to February. The seven days intervals in the warmer months could be extended to nine days were it not for the fact that breeding occurs in the small streams which originate in seepage outcrops. The dust used must be absolutely dry or irregular results are obtained.

The laying down of the permanent anti-malaria drains recommended by Lieutenant-Colonel J. A. S. Phillips, I.M.S., to deal with the marshes between the afflux bund, the canal and the cliff at Banbassa was commenced this autumn and the low area will subsequently be levelled to abolish breeding places. The cost is approximately Rs. 40,000 and a system of sub-soil drainage by agricultural pipes draining into an open masonry drain of the concrete semi-circular invert type used in Panama is being adopted. These open drains will cease a little below the syphon constructed under the canal in 1924 and the method to be adopted to clear this drain and marsh beyond the syphon is still under consideration.

The other permanent measure of anti-malarial importance was the laying down of a pucca drain down the centre of the canal from the headworks to the syphon. This was completed in the beginning of the year the drain being laid more deeply than the kachcha drain which it replaced as was recommended. This and the subsequent levelling of the canal bed has abolished breeding places in this area.

The carrying out of these two permanent measures has entirely altered the malarial problem in Banbassa and greatly simplified it.

*Fumigation of dwellings.*—Fumigation of buildings by burning sulphur and kachcha tobacco at regular intervals has been advised this year. This very effective method of clearing dwellings of anophelines is of the greatest importance especially in the early part of the working season after the rains, but is distinctly unpopular with certain classes

because of the necessity of taking down curtains, etc., and the prevailing odour which persists for some days after fumigation. In a construction camp these objections are of little importance as the value of sulphur and tobacco fumigation over cresol and pyrethrum is definite. Contrary to expectations, fumigation with sulphur and tobacco is of value when carried out in labourers, huts and shops which are made of chappar and are not air-tight.

The fact that anophelines are scarcely ever found in camps in the dwellings where a fire is kept burning is worth remembering in connection with the suggestions made to the Royal Commission on Agriculture that cow dung should be used more as a manure and not used as fuel.

*Prophylactic Quinine.*—The conditions prevailing in contractors' camp preclude efficient prophylaxis of labourers in the United Provinces, a fact which has been noted for several years in Banbassa. It was recommended that prophylaxis be terminated at the end of each malarial season by a week's daily treatment with 10 grains of quinine (or cinchona in spring), so as to avoid the rise in malarial incidence which commonly occurs on the cessation of prophylaxis. The autumn treatment course could not be given but cessation of prophylaxis was not followed by the expected rise in the malarial figures beyond what could be accounted for by the influx of labourers. The autumn quinine "prophylaxis" was therefore of relatively little value as prophylaxis.

It will be noted that the percentage prophylaxed in the spring was 38.55 per cent. and in the autumn 35.62 per cent. as against an average of approximately 40 per cent. last year. This year the responsibility for supervising the administration of prophylactic quinine was delegated to the local Executive Engineer as it was felt that the results obtained previously by the medical staff could be improved upon but this has not proved to be the case.

Throughout the year special attempts were made to ensure efficient treatment for all adults with enlarged spleens and all children. The spleen rates for children and adults coming into camp in October and November, 1926 were, respectively, 41 per cent. and 23.7 per cent. The examinations made in November and December, 1927 were as follows:—

	Number examined.	Percentage with enlarged spleens.
Children, ages 2—5 .. ..	.. 22	61 per cent.
Children employed on works ..	.. 190	37 "
Labourers from the plains ..	.. 425	28 "
Labourers from the hills ..	.. 220	16 "

The parasite rate in acute infections was 85 per cent. (crescent infection 28 per cent.) and in chronic spleen cases was 9 per cent. (crescent infection 6 per cent.). A very large number of labourers of all ages admitted having suffered from fever before coming to Banbassa but accurate statistics on this point are unobtainable and the division of spleens into acute and chronic enlargement is not accurate. It is obvious that with these conditions epidemic malaria among the labourers would flare up were anti-malaria measures not carried out.

*Population.*—The following statement shows the monthly and weekly population at Banbassa for the years 1926 and 1927 :—

Months.	1926.	1927.	Remarks.
January .. .. .	3,894	5,825	
February .. .. .	3,633	5,708	
March .. .. .	2,787	4,216	
April .. .. .	2,117	3,622	
May .. .. .	2,706	2,990	
June .. .. .	842	904	
July .. .. .	Closed—no returns.	113	
August .. .. .	No returns	162	
September .. .. .	Closed—no returns.	162	
October .. .. .	Labour coming into camp, no official return. 1,089	473	
November .. .. .	1,089	2,051	
December .. .. .	3,631	6,136	
Average population for working seasons by weeks.	2,672	4,090	
Average population for the whole year by weeks.	1,696	2,781	

NOTE.—The total population in the Headworks division on December 31, 1927, was 14,412. This was served by two hospitals, one temporary camp hospital and three travelling dispensaries.

*Working season.*—The working season officially closed in the second week of June, 1927, although labourers did not all leave Banbassa till the latter end of June and owing to the damage due to floods some had to remain during the rains and suffered severely from malaria. The working season 1927-28 could as far as malaria was concerned have commenced within 10 days of instituting paris-green and fumigation measures. Actual anti-malarial work was recommended in the beginning of October, as the factor which decides the date of commencement of the working season at Banbassa is the Diwali, before which date it is apparently impossible to get labourers to come into camp.

The working season from the malarial stand point extends from October 1, till one week after the beginning of the rains. No labour should be kept in the Tarai after the first of the rains till the permanent anti-malaria works are laid down. The fact that this was done this year resulted in a great amount of malaria in July and August among those who remained in camp till late.

*Hospital statistics.*—A comparative statement of out-door attendances, indoor patients and death rate from malaria, pneumonia etc., is appended but it is open to fallacies for the reasons explained in the last year's report:—

Working season year.	Average population of labourers.	Hospital total attendance out-door.	Total attendance for malaria.	Percentage for malaria.	Total death.	Death rate per mille.	Death rate from malaria.	Death rate from pneumonia.	Death rate from dysentery.
1922 .. ..	2,134	7,706	3,274	42·5	..	..	No record	..	..
1923 .. ..	2,016	14,800	5,332	39·4	..	..	No record	..	..
1924 .. ..	1,817	16,511	6,550	39·7	..	..	No record	..	..
1925 .. ..	2,614	15,542	4,724	30·4	81	30·9	6·71	18·4	1·14
1926 .. ..	2,672	19,637	7,623	38·8	110	41·5	1·88	22·2	3·75
1927 .. ..	3,971	15,090	5,195	34·42	91	22·8	1·25	8·2	1·00
(Complete year) ..	2,725	17,116	5,817	39·98	92	33·6	1·83	12·08	1·46

*Treatment of malaria.*—The usual difficulties arose in attempting to give efficient quinine and cinchona treatment as labourers are content to take one or two doses of quinine and will never attend hospital once the fever has subsided. For this reason the medical officer in charge of the camp makes daily rounds to huts and goes among the labourers when working in the river bed so that quinine shall be easily accessible to all. In addition the routine giving of intravenous quinine to cases when first seen was continued throughout the year and the method is now very popular among the labour, though the subsequent treatment by mouth necessary to ensure no relapse occurring is avoided by all.

*Sale and distribution of quinine.*—In 1927, quinine worth Rs. 8,640 was issued by the Aligarh Jail Factory for sale through the agency of post-offices, vaccinators, court of wards, patwaris, tahvildars, stamp vendors and zilladars and signallers of the Canal department and police chowkidars. Of this, quinine worth Rs. 7,234 was issued to post offices alone.

200 lbs. were issued to the Epidemiology branch for use of travelling dispensaries and 20 lbs. to the Forest and Irrigation departments etc. Eight pounds were supplied to the Civil Surgeon, Dehra Dun, to replenish the reserve stock for free distribution in cases of emergency. About 10 pounds of quinine and 21 pounds of cinchona febrifuge were distributed by the Jail department to prisoners and the staff.

275 lbs. pounds of cinchona febrifuge were issued to the district medical officers of health of Gorakhpur, Fyzabad, Allahabad, Bulandshahr, Gonda and Moradabad in connexion with the cinchonisation scheme.

78. The Assistant Director of Public Health of the II Range holds immediate charge of the Epidemiology branch. There were 15,640 deaths from plague during the year under report. Of these, 15,570 were reported from the British districts and 70 from the Indian States.

The annual deaths from plague in each epidemic and calendar year since 1903 have been as follows:—

<i>Epidemic years.</i>						
<i>(From July 1 to June 30.)</i>						
Year.						Deaths.
1903-04	..	..	..	..	..	189,524
1904-05	..	..	..	..	..	424,217
1905-06	..	..	..	..	..	60,767
1906-07	..	..	..	..	..	341,725
1907-08	..	..	..	..	..	26,646
1908-09	..	..	..	..	..	14,252
1909-10	..	..	..	..	..	166,360
1910-11	..	..	..	..	..	344,776
1911-12	..	..	..	..	..	120,271
1912-13	..	..	..	..	..	98,628
1913-14	..	..	..	..	..	116,561
1914-15	..	..	..	..	..	58,329
1915-16	..	..	..	..	..	4,528
1916-17	..	..	..	..	..	105,080
1917-18	..	..	..	..	..	206,190
1918-19	..	..	..	..	..	17,633
1919-20	..	..	..	..	..	24,002
1920-21	..	..	..	..	..	25,901
1921-22	..	..	..	..	..	18,268
<i>Calendar years.</i>						
1923	..	..	..	..	..	74,187
1924	..	..	..	..	..	56,210
1925	..	..	..	..	..	49,091
1926	..	..	..	..	..	57,297
1927	..	..	..	..	..	15,570

From the above it will be seen that the mortality from plague during the year under report is lower than that in any year since 1903 except the year 1908-09. The year under review was a normal one and no reason is apparent for diminished prevalence of the disease.

The comparative monthly mortality for the years 1926 and 1927 was as follows:—

Months.					1926.	1927.
January	..	..	..	..	5,152	1,871
February	..	..	..	..	9,258	2,676
March	..	..	..	..	15,004	4,062
April	..	..	..	..	14,795	2,863
May	..	..	..	..	8,858	854
June	..	..	..	..	1,667	90
July	..	..	..	..	312	35
August	..	..	..	..	128	30
September	..	..	..	..	71	95
October	..	..	..	..	209	127
November	..	..	..	..	576	603
December	..	..	..	..	1,272	2,268

It will be observed from the above table that the mortality followed the usual course throughout the year.

As usual the months of January, February, March and April showed the highest mortality—the highest figures being reached in March, when there were 4,062 deaths. After March the decrease in mortality was rapid

and continuous, and the lowest mortality during the year (30) was recorded in August. In September and October there was a tendency towards increase in mortality—95 and 127 deaths respectively being recorded. In the succeeding months, viz., November and December, the disease kept on steadily increasing with 603 and 2,263 deaths respectively.

The fact that mortality continued during the hot weather months to a quite appreciable extent was an ominous feature of the epidemic, which has been followed by an increased incidence during the cold weather of 1927-28. If human cases of plague continue to occur to any extent in the "carry over" season, it can be taken as a certain sign of a recrudescence of the disease in an aggravated form in the succeeding cold weather.

Azamgarh was the worst affected district in the Province and it had 3,059 deaths. Next came Ghazipur with 1,881 deaths. Other districts which suffered nearly as severely were Gorakhpur and Bareilly.

A chart showing plague mortality figures for a series of years is appended to this report.

*Plague by divisions—Meerut division.*—This division was responsible for 1,557 deaths against 12,819 last year. Muzaffarnagar reported the highest number, viz., 787.

The mortality in other districts of the division was as follows :—

Saharanpur 338, Meerut 322 and Bulandshahr 110. Dehra Dun remained free.

*Agra division.*—This division suffered very slightly, 125 deaths being reported against 5,221 last year. Agra, Muttra and Aligarh reported 77, 44 and 4 deaths against 2,092, 1,721 and 1,284 last year respectively. Mainpuri and Etah remained entirely free.

*Rohilkhand division.*—None of the districts in this division was severely infected—Bareilly reported 1,011, Budaun 550, Moradabad 534, Bijnor 217, Shahjahanpur 169 and Pilibhit 12 cases, the total deaths from plague in the division being 2,493 against 5,596 last year.

Rampur State reported 44 deaths.

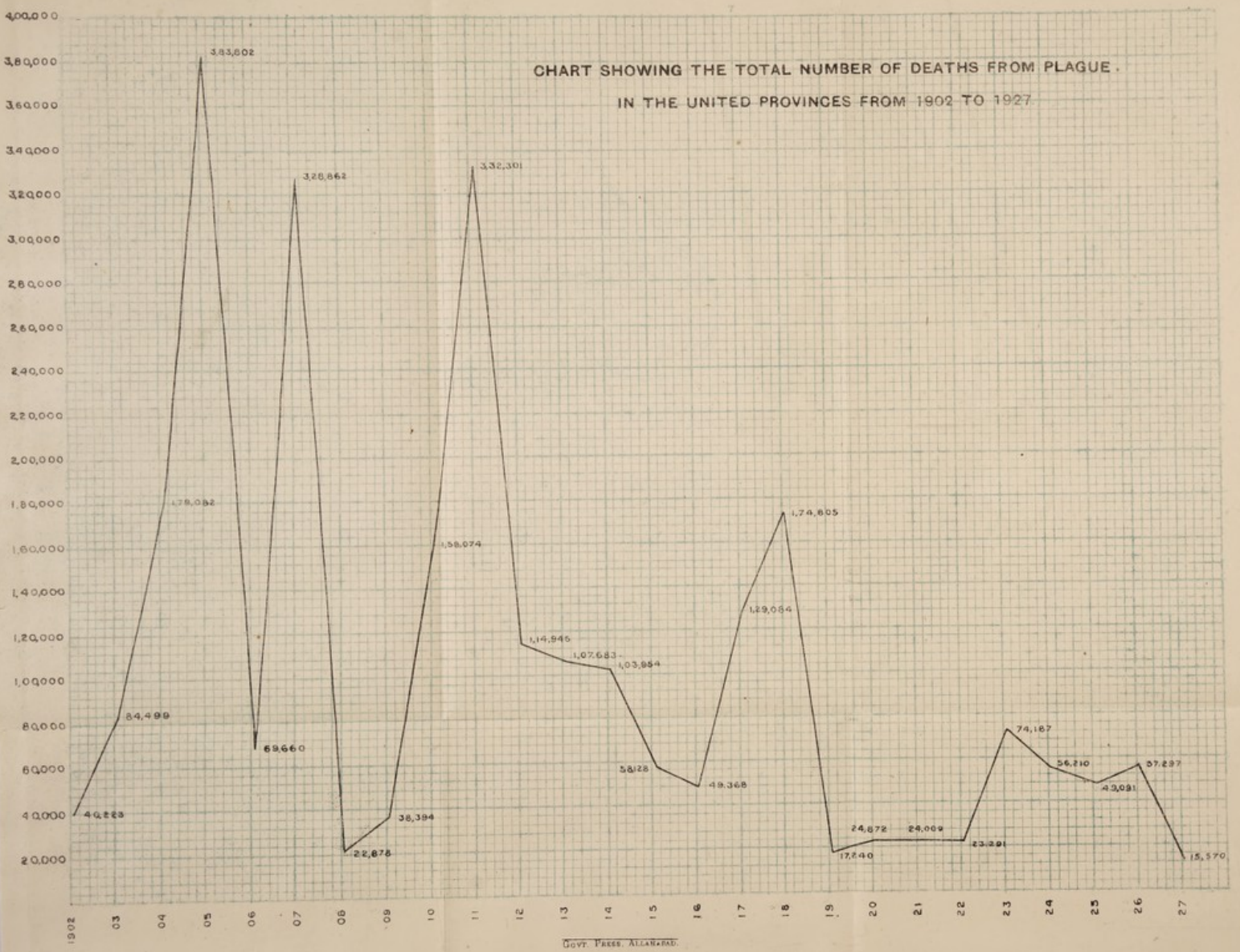
*Jhansi division.*—This division only returned five deaths from plague against 79 last year. These deaths were reported in the Hamirpur district, and the other districts of the division remained entirely free. The comparative immunity of this division yearly from plague is worthy of further investigation.

*Allahabad division.*—The incidence of the disease in this division was also very mild. The Allahabad district returned 326 deaths against 819 last year. Cawnpore and Fatehpur reported 214 and 61 deaths respectively, and the districts of Etawah and Farrukhabad remained entirely free.

*Benares division.*—There were 2,755 deaths against 14,059 last year. Ghazipur was the most infected district in the division recording 1,881 deaths against 9,051 last year. Ballia, Jaunpur, Mirzapur and Benares reported 642, 171, 37 and 24 deaths respectively against 2,899, 1,152, 39 and 575 last year.

Twenty-six deaths were reported from the Benares State.

CHART SHOWING THE TOTAL NUMBER OF DEATHS FROM PLAGUE.  
IN THE UNITED PROVINCES FROM 1902 TO 1927







*Gorakhpur division.*—The divisional mortality this year was 5,128 against 11,513 last year. Comparative figures for the districts of this division are :—Azamgarh 3,059, Gorakhpur 1,207 and Basti 862 deaths against 8,414, 1,038 and 2,061.

*Kumaun division.*—This division recorded 156 deaths this year against 11 last year. Naini Tal recorded 149 deaths and Almora 7. Garhwal and Tehri State remained entirely free.

*Lucknow division.*—All districts in this division were more or less infected with plague. The comparative mortality of individual districts was as follows :—Hardoi 423, Sitapur 324, Kheri 316, Rae Bareli 259, Unao 231 and Lucknow 115 deaths against 359, 902, 363, 418, 1,484 and 73 respectively last year.

*Fyzabad division.*—The total number of deaths reported from this division was 1,082 against 2,829 last year. Fyzabad was the worst infected district of this division with a death roll of 560. Bahraich and Partabgarh remained practically free. Other districts suffered lightly except Bara Banki which recorded 459 deaths.

*Inoculations.*—The total number of inoculations performed during the year under report was 107,825 against 137,570 last year. The decrease was due to the fact that the disease was comparatively mild during the year under report. Out of 107,825, 31,301 inoculations were performed by travelling dispensaries, 5,968 by the staff of special health officers, 49,141 by district health staffs, and the remaining 21,415 by different agencies.

The attitude of the people towards inoculation was on the whole satisfactory, but it is accepted only in the actual presence of the disease.

A statement showing the prophylactic effects of anti-plague inoculation is attached to this report as Appendix C.

*Evacuation.*—Evacuation continued to be the favourite anti-plague measure of the people, though it was not resorted to any great extent owing to the mild nature of the epidemic. Rs 13,136 were placed at the disposal of the district magistrates, chairmen of district and municipal boards to assist the people in evacuating their houses and towards other anti-plague measures.

*Rat campaign.*—Anti-rat campaigns were carried out by the following municipal boards in the I Range :—

- |               |                 |
|---------------|-----------------|
| 1. Agra.      | 6. Hathras.     |
| 2. Muttra.    | 7. Bulandshahr. |
| 3. Moradabad. | 8. Hapur.       |
| 4. Aligarh.   | 9. Ghaziabad.   |
| 5. Chandausi. | 10. Meerut.     |

Rs. 5,700 were placed at the disposal of the chairmen, municipal boards, to meet the cost of campaigns in their municipalities. With the exception of Moradabad none of these municipalities has been plague infected during the succeeding cold weather 1927-28.

*Travelling dispensaries.*—The number of public health travelling dispensaries remained the same as last year, viz., 36. In addition to these, there were five district board travelling dispensaries, viz., Bulandshahr, Gonda, Bahraich, Gorakhpur and Pilibhit, one forest travelling dispensary attached to the North Kheri division and one Sahaspur Belari Court of Wards Estate travelling dispensary. The control of the Pilibhit district.

board travelling dispensary was taken over by the Public Health department during the year under report (G. O. no. 312/XVI—165, dated August 1, 1927). The Sahaspur Belari Court of Wards abolished their travelling dispensary from October 8, 1927. The district boards concerned contribute the usual amount of Rs. 1,000 annually towards the upkeep of their travelling dispensaries, and the rest of the cost is borne by Government; the Forest department pays wholly for the forest travelling dispensary at Kheri. The Sahaspur Belari Estate travelling dispensary was maintained by the Sahaspur Belari Court of Wards, but it has now been abolished.

Out of the thirty-six Public Health travelling dispensaries, thirty were employed on general duty and six worked on the Sarda Canal for the greater part of the year. The district board, forest and estate travelling dispensaries worked permanently in the districts to which they were attached.

In districts where the Public Health Service has been instituted the travelling dispensaries are under the control of the district medical officers of health, but where there is no such service they work under the Civil Surgeons.

The Public Health travelling dispensaries are divided amongst the ranges as follows:—

<i>I Range.</i>			<i>II Range.</i>		
Saharanpur ..	..	1	Sitapur ..	..	1
Meerut ..	..	1	Rae Bareli ..	..	1
<i>III Range.</i>			Kheri ..	..	1
Benares ..	..	1	Fyzabad ..	..	2
Mirzapur ..	..	1	Gonda ..	..	2
Jaunpur ..	..	2	Babraich ..	..	1
Ghazipur ..	..	2	Sultanpur ..	..	1
Ballia ..	..	2	Partabgarh ..	..	1
Gorakhpur ..	..	3	Bara Banki ..	..	1
Basti ..	..	2	Almora ..	..	1
Azamgarh ..	..	2	Naini Tal ..	..	1

While the abovementioned dispensaries normally work in the ranges given above, their distribution is entirely at the discretion of the Director of Public Health and he transfers them to any place where their services are specially required in connexion with outbreaks of epidemic diseases.

During the past cold weather a considerable number of these travelling dispensaries were concentrated at Hardwar for the Kumbh Mela duty, and during the past hot weather several were concentrated in the hills (Almora and Naini Tal) and in the Fyzabad and Sultanpur districts in connexion with the outbreaks of cholera.

Owing to large fairs and to prevent the importation of epidemic diseases Government sanction was obtained to institute medical inspection of railway passengers at the following railway stations:—

- |                  |                   |
|------------------|-------------------|
| 1. Moghal Sarai. | 5. Jhansi.        |
| 2. Captainganj.  | 6. Manikpur.      |
| 3. Bhatni.       | 7. Muttra.        |
| 4. Ballia.       | 8. Ghaziabad, and |
|                  | 9. Saharanpur.    |

Nine Public Health travelling dispensaries under the charge of medical officers holding the Licence in Public Health were detailed to these stations to carry out inspection of passengers, which they did from January 15 to April 15, 1927.

These peripatetic dispensaries are enjoying ever-increasing popularity among the village people and they have proved of invaluable service in bringing medical relief to the very doors of the rural population. In times of severe epidemics the demand for travelling dispensaries is so great that with a limited number of 36 travelling dispensaries it has been found impracticable to meet requirements. All the forty-three travelling dispensaries treated 279,242 patients (old and new) and performed 3,033 operations during the year under report.

*Travelling dispensaries mobilized temporarily.*—The number of permanent travelling dispensaries being inadequate, 17 reserve travelling dispensaries, the equipment of which is stored at the headquarters of the districts, were mobilized to cope with the outbreaks of epidemics. These temporary units were manned either by Public Health department reserve cadre or, when such were not available, by Provincial Subordinate Medical Service officers who were transferred to the Public Health department by the Inspector-General of Civil Hospitals, United Provinces; for the charge of these travelling dispensaries (G. O. no. 5896/XVI—99, dated September 30, 1925). The cost of maintenance of these itinerant dispensaries is entirely borne by the Public Health department. Medicines, etc., for these travelling dispensaries were supplied by the Civil Surgeon or District Medical Officer of Health out of the grant of Rs. 100 placed at their disposal from the epidemic fund at my disposal.

These travelling dispensaries have proved of immense value in times of epidemic and treated 8,480 patients during the periods for which they were mobilized.

*Educational work.*—A good deal of educational work is done by these peripatetic dispensaries. A very large amount of literature on various epidemic diseases such as plague, cholera, small-pox, tuberculosis and relapsing fever reaches the rural population through the agency of these travelling dispensaries no doubt with good results. They also gave magic lantern demonstrations on public health subjects in villages and towns.

*Recognition of special services with regard to plague.*—During 1927, 14 sanads and 13 parwanas were awarded for giving assistance to push anti-plague measures in 1926.

*Plague staff.*—The plague staff consisted of four special health officers, 42 travelling dispensaries and 11 reserve duty medical officers. All the special health officers worked in the I Range during the greater part of the year.

The staff was sufficient for the work in the year under report as the epidemic was mild.

*Plague research work.*—Details of the work done in connexion with plague research have been given under the paragraph headed "The Provincial Hygiene Institute."

79. In view of the importance of the hygiene publicity work and its expansion, it was found necessary to place an Assistant Director of Public Health in whole-time charge of the Bureau. In order to avoid extra expenditure, the IV Range was abolished and amalgamated with the III Range. The headquarters of the amalgamated range was fixed at Allahabad and Dr. A. Sousa, D.P.H. Assistant Director of Public

Provincial Hygiene  
Publicity Bureau.

Health, thus relieved was placed in whole-time charge of the Bureau from October 1, 1927.

The post of the Senior Assistant Hygiene Publicity Officer was held by Dr. Abdul Hamid, B.Sc., M.B., B.S., D.P.H., and that of the junior assistant by Dr. Raj Narain Tandan, L.P.H. During the year they were on tour for 147 and 163 days respectively.

In addition to the usual methods of lantern demonstrations, etc., which were hitherto pursued, the work of hygiene publicity has been greatly improved by the production of films on cholera and small-pox which show in realistic scenes and amid familiar surroundings the cause and manner of spread of these diseases and the measures necessary to ensure protection. The films have been produced locally by the Provincial Hygiene Institute by funds granted by the Board of Public Health and have been much appreciated by the public.

The services of the inspectors of co-operative societies were enlisted at the instance of the Registrar of Co-operative Societies for giving hygiene demonstrations and lectures. Fifteen such men were trained in sanitation and first aid in 1927, the object being to gradually train all the inspectors in this work so that they may deliver popular lectures in schools and villages in their areas and educate the members of the co-operative societies so as to be useful in anti-epidemic measures.

The total number of lectures delivered by the public health personnel was 14,791, with an approximate total attendance of seven lakhs. This is exclusive of cinema exhibitions which were attended by roughly 60,000 persons. Assistant and sub-assistant surgeons in charge of fixed dispensaries under the Medical department paid more attention than usual to this work, and the staff of the Bureau themselves attended 37 baby shows, fairs and exhibitions, including the Kumbh fairs at Hardwar and Brindaban. The total number of pamphlets, posters, etc., distributed during the year 1927 was 217,330 against 119,987 in 1926. Thakur Sadho Singh Sahib, a member of the Legislative Council from Shah-jahanpur, did hygiene propaganda in his constituency.

As stated elsewhere in this report, a Provincial Public Health Exhibition was held in March, 1927, which was opened by His Excellency the Governor. Students of the boys' and girls' schools in the city and the public in general were invited to see the exhibits, living specimens under microscopes, the maternity section and other items of public health interest. In the evening lectures illustrated by magic lanterns were given, followed by cinema films on cholera. The exhibition was open for a week and was a great success.

Another Public Health Exhibition was held in December, 1927 during the visit of the members of the Far Eastern Association of Tropical Medicine. The visitors were well, impressed, and some of them expressed the opinion that this was the best exhibition they had seen.

Cinema film "Tragedy of Small-pox" was shown at this exhibition in the evening. The films "Why die of Cholera" and "Hardwar Kumbh fair" were shown in Calcutta during the Congress of the Far Eastern Association of Tropical Medicine at the request of the Public Health Commissioner with the Government of India and were well appreciated.

There are 62 sets of magic lantern equipments as against 53 in 1926. Slides and leaflets on two new subjects, viz., Village Sanitation and School Hygiene, have been prepared during the year, and also stories on Milk and Physical Culture.

The following stock was purchased during the year:—

- (1) Eleven sets of magic lanterns with 141 sets of slides on different subjects and other accessories.
- (2) 689 posters on plague.
- (3) 834 do. small-pox.
- (4) 920 do. malaria.
- (5) 950 do. cholera.
- (6) 918 do. flies.
- (7) 40 posters for exhibition.
- (8) 15,000 posters for the publicity of the Red Cross.
- (9) 5,000 booklets on rural sanitation.

The following booklets and leaflets were printed at the Government Press:—

(a)	Booklet on Popular Hygiene ..	..	..	..	566
(b)	Do. Milk ..	..	..	..	20,000
(c)	Book on Public Health Organization in the United Provinces				500
(d)	Leaflets on Child Welfare ..	..	..	..	100,000
(e)	Do. Physical Culture ..	..	..	..	10,000
(f)	Do. Exercise and Games ..	..	..	..	90,000
(g)	Do. Flies ..	..	..	..	34,000
(h)	Do. Malatia ..	..	..	..	100,000
(i)	Do. Consumption ..	..	..	..	60,000
(j)	Do. Cholera ..	..	..	..	50,000
(k)	Do. Plague ..	..	..	..	55,000
(l)	Do. Milk ..	..	..	..	10,000
(m)	Do. Small-pox ..	..	..	..	100,000
(n)	Do. School Hygiene ..	..	..	..	85,700
(o)	Do. Village Sanitation ..	..	..	..	16,000

An artist has been engaged as an experimental measure for a year from the middle of April. He has done the following work since his appointment:—

- (1) Sketches for the subject on School Hygiene, Anti-cholera inoculation and venereal diseases.
- (2) Slides on School Hygiene.
- (3) Slides for the paper by Dr. Saranjam Khan, Cholera Research Officer and myself, which was read and illustrated at the Congress of the Far Eastern Association of Tropical Medicine.
- (4) Repairs of lanterns and other stock.

For effective propaganda the people have to be informed of the actual conditions prevailing in their towns. For this purpose the Bureau intends to carry out investigations whenever time permits from the routine propaganda. This year the following investigations were carried out on Milk Supply and Child Welfare:—

*Milk Supply.*—At Lucknow out of 892 persons only 202 consumed milk daily, and out of 204 infants 52 were fed on cow's milk and the rest were fed on breast milk. The milk on bacteriological examination showed faecal bacilli in 0.1 cc. with colonies varying from 350,000 to 31,900,000 per cc. The milk boiled in the morning was found equally contaminated after storage.

*Child Welfare.*—This was investigated to find out whether the Child Welfare centres established in Lucknow did any useful work. Two centres were selected, namely, Narabi and Pir Jalil; and in these it was found that the centre dais had conducted or supervised most of the cases. The bazar dais received eight annas as reward for calling in the centre dais, and when the people were not willing for the centre dai to attend on them, the case was conducted by the bazar dai under the supervision of the centre dai, who supplied lotion and saw that the bazar dai did clean midwifery. The infantile morality in these two mohallas was 148·83 as compared to 257·47 for the whole town. This is a clear evidence that the centres are doing useful work.

The Bureau prepared a book on "The Public Health Organization in the United Provinces" for distribution to the members of the Interchange of Health Officers (League of Nations) and to the members of the Far Eastern Association of Tropical Medicine who visited Lucknow.

In the preface to his book "Health Organization in British India" Colonel J. D. Graham, I.M.S., the Public Health Commissioner with the Government of India, writes that this is the only province which has prepared and published a separate self-contained volume of its health organization and activities, and that through the kindness of the Director of Public Health, United Provinces, he has included in his book some of the articles in an abridged form.

The book on "Popular Hygiene" in non-technical language was printed during the year for the use of the school and those concerned in sanitation. This was also distributed to the above delegates and to the members of the Legislative Council. This book has been well appreciated, and by request copies in Urdu and Hindi are being printed.

In some districts night schools have been recently opened by co-operative societies, and the district medical officers of health and co-operative inspectors have been directed to hold regular classes in these.

A conference of the All-India Lady Chelmsford League for Maternity and Child Welfare was held at Delhi in February, 1927. Our posters, literature slides and models were sent there by request, and the Assistant Hygiene Publicity Officer (senior) was deputed to help the United Provinces Secretary of League in giving demonstrations.

In Gorakhpur the District Medical Officer of Health has trained 40 masters of different schools in sanitation and first aid. They in their turn will train boy scouts of their respective areas. He has supplied to the members of the district board and masters a first aid box containing medicines for simple ailments and injuries and potash permanganate for disinfection of wells. He has also with the permission of the Director of Public Instruction got all the vernacular schools in the districts to include in the school curriculum instruction in hygiene for half an hour on Saturdays, when the boys not only listen to health talks, but have to carry out personal hygiene in the way of bathing and brushing of teeth, etc.

Contributions from district and municipal boards amounted to Rs. 6,000 as against Rs. 5,500 in 1926. The increase is due to the efforts of Assistant Hygiene Publicity Officers and some District Medical Officers.

The usual recurring grant of Rs. 12,000 was kindly made by the United Provinces branch of the Indian Red Cross Society.

The work of the Bureau has been well appreciated both by the public and the press.

Three articles were contributed to the Red Cross Journal, the official journal of the Indian Red Cross Society. Copies of the publications were requisitioned by and supplied to—

- (1) The Bureau Tot Bevordering Van Het Kinine-Gebruik, Amsterdam (Holland).
- (2) Central Provinces.
- (3) Bihar and Orissa.

Major J. R. D. Webb, I.M.S. (Government of India), visited the Bureau and studied the method of its working.

80. (a) *Provincialization and unification of the service.*—As stated in paragraph 83 the services of district medical officers of health and assistant medical officers of health were provincialized and unified with the service of municipal medical officers of health. This has considerably added to the efficiency of the service.

(b) *Extension of the service.*—The district health service was further extended to the nine districts of Lucknow, Unao, Rae Bareli, Sitapur, Hardoi, Kheri, Fatehpur, Muttra and Muzaffarnagar from July 1, 1927. The total number of districts now under the operation of the service is 26. Requests are pending from the district boards of Agra, Bareilly, Cawnpore and several others for the extension of the service to those districts.

(c) *Expansion of activities of the staff.*—The activities of the staff continue to expand in many directions. In addition to hygiene propaganda, which must continue to be their chief work for a long time to come, they also supervise the sanitary arrangement of fairs, inspect the health of school children, carry out sanitary surveys of villages, inspect factories and the health of factory workers, control epidemics, inspect vaccination and travelling dispensaries, organize public health exhibitions and baby shows and are associated with all phases of public health work in the district. The work generally of all old districts showed an improvement over last year, and the new district health services have all made promising beginnings.

During 1927, at the suggestion of this department, the district boards concerned supplied a small stock of medicines and disinfectants to the sanitary inspectors for free distribution. District medical officers of health and their assistants already carried these stocks on their tours. This has increased the utility of the sanitary inspectors in administering innocuous and standardized drugs in case of urgent need, such as plague and cholera. Treatment of such cases now forms an integral part of the duties of the health staff—all officers carrying medicines for the purpose. Many cases were treated by the officers in the course of their visits to villages for the investigation or suppression of outbreaks.

During the year district medical officers of health were appointed *ex-officio* medical officers of health and superintendents of vaccination



of all the smaller municipalities within their districts not employing whole-time medical officers of health. These municipal boards were asked to delegate executive powers to these medical officers of health, and where this has been done the district medical officers of health have been of considerably practical assistance to the boards. Only the municipal board of Bulandshahr could not be prevailed upon to adopt the arrangement.

(d) *Opinion as to the value of the personnel.*—As an agency for the suppression of epidemics the value of the health staff was fully demonstrated in the districts of Jaunpur, Sultanpur and Basti where cholera broke out in a severe form in 1927. With the assistance of the revenue staff the health staff were able to bring the disease under control after strenuous work. The disease would certainly have assumed more serious proportions if it had not been tackled systematically according to approved methods and the technical advice and services of the district health staff had not been continuously available for investigation and disinfection work. The attitude of district boards to the district health service has been on the whole sympathetic.

The following extracts from the reviews of the commissioners, district magistrates and chairmen of the district boards on the annual reports of the district medical officers of health so far received will indicate the views they hold in regard to the utility of the district health personnel as an agency for the improvement of rural sanitation and suppression of epidemics:—

*District Magistrate, Gorakhpur.*—“Progress under general sanitation must be slow, but within the areas under regulations the people are beginning to have an idea of what is required. . . . At the same time I consider that your department under your (district medical officer of health's) control has fully justified itself, and in the opinion of those qualified to judge is now an integral part of the district administration.”

*Commissioner, Gorakhpur division.*—“It is satisfactory that cholera was kept under control. . . . The district medical officer of health (of Gorakhpur) has written a very interesting report showing a good year's work.”

*Chairman, district board, Basti.*—“The annual report is a splendid record of the hard work, real public service and all-round improvements and reflects a good deal of credit on the district medical officer of health and his staff. I have nothing but words of praise and admiration for the conscientious discharge of duty by the district medical officer of health and his assistant in connexion with cholera. It was indeed due to their diligence that such a virulent and widespread outbreak of the disease was so successfully brought under control. Thousands of lives would have been lost and a number of villages swept away had they not made strenuous efforts to check the spread of the disease, and our congratulations are due to them specially for the hard work which they did with untiring zeal during the hot months of May and June, 1927.”

*Commissioner, Gorakhpur division.*—“The district medical officer of health and his staff may be congratulated on another year's good work . . . . The health staff deserve credit also for the great increase in plague

inoculations, the figures having nearly doubled in 1927. It is satisfactory that there has been an improvement in reporting outbreaks of cholera, and that the epidemic in May and June was strenuously and successfully fought. . . ."

*District Magistrate, Azamgarh.*—"The work of the health staff. . . . has been carried on energetically. It was principally due to Dr. . . . . (district medical officer of health's) efforts that both plague and cholera were allowed no headway this year."

*Chairman, district board, Jaunpur.*—"The introduction of the health scheme has done useful work. . . . It is gratifying to note that cholera and plague did not assume a severe form since the introduction of the scheme as prompt measures were taken by the health staff to combat the diseases."

*Deputy Commissioner, Fyzabad.*—"An appreciable amount of publicity and propaganda work was done by the district health staff, and their efforts in this direction will, it is hoped, bear fruit in the near future. It is gratifying to note that the cause of sanitation in rural areas is receiving more attention than ever before under the district board régime. The relations of the district health staff with other officers in the district have been harmonious."

*Chairman, district board, Fyzabad.*—"The report deals thoroughly with the important points concerning the public health, and is also instructive. It seems that practical demonstrations supplemented by lectures and lantern lessons have a very salutary effect. It is highly gratifying to find that the villagers have begun to understand the manifold advantages of clean habits and leading sanitary lives."

*Deputy Commissioner, Gonda.*—"I agree with the district medical officer of health's appeal for more sanitary inspectors. . . . I am much obliged to Dr. . . . for the keenness which he has shown in carrying out his work."

*Chairman, district board, Gonda.*—"Really speaking the district health service has proved very useful in times of epidemics and in fairs. I congratulate Dr. . . . for the success which he has achieved in popularising the district health scheme to a great extent."

*District Magistrate, Ghazipur.*—"The health staff has given useful assistance in town areas and villages under the Village Sanitation Act. The question of works of improvement in such areas has now been put upon a satisfactory basis."

*Chairman, district board, Ghazipur.*—"I am prepared to say that the district medical officer of health has been found very energetic and painstaking since the establishment of the scheme. I am glad to note that the staff has been doing very well in villages by obtaining the co-operation of the village people owing to their sympathetic treatment."

*District Magistrate, Ballia.*—"I am confident that the activities of the health staff have largely contributed to the great improvement in the mortality figures. It was due to the untiring zeal of the district medical

officer of health and his assistants that the spread of cholera was restricted and fresh outbreaks were promptly nipped in the bud. I again acknowledge the assistance of the department in the matter of rural sanitation and preparing rural sanitary projects”

*Chairman, district board, Ballia.*—“I wish to congratulate you (the district medical officer of health) for the efforts which you and your staff have made in improving the rural sanitation of the district. The working of the health scheme on the whole was quite satisfactory, for which credit is due to you (district medical officer of health) and your assistant. The work during the Dadri fair was appreciated.”

*Deputy Commissioner, Bahraich.*—“So far as I have seen during my recent tour the health officers are doing good work. The outbreak of cholera which occurred in this district in August last would in all probability have spread through a large part of the district if it had not been for the prompt measures of the medical officer of health. Personally I am a firm believer in the benefits that are likely to result from the appointment of a district health staff, both in the matter of suppressing epidemics at the outset and in the wider task of teaching the villagers the elements of sanitation. It is useless to expect rapid results, but a beginning has been made.”

*Deputy Commissioner, Sultanpur.*—“I consider that on the whole the district health service has worked very well indeed in this district. I can say from my experience that the district has materially benefited by it.”

*Chairman, district board, Sultanpur.*—“. . . the health staff has done marvellous work in combating against the epidemic (cholera). Measures against plague proved effective . . . the staff have greatly impressed me with their work, and I am sanguine that the scheme will prove most beneficial to the district after a few years' trial. The scheme has just made its beginning only.”

*Deputy Commissioner, Partabgarh.*—“. . . the report portrays a considerable improvement and from my personal experience I can say that the health officers are to be congratulated in arresting the spread of plague . . .”

*Chairman, district board, Partabgarh.*—“The work of the health staff was satisfactory. I strongly hope that the health staff will shortly prove useful if the work be done with missionary spirit in the public. At the time of the prevalence of cholera in the district these officers worked day and night in combating the disease and succeeded in overcoming it.”

*Deputy Commissioner, Bara Banki.*—“The scheme has now got a little footing in the district and will bear fruit in due course. Its work is already valuable in connexion with (i) epidemics of plague and cholera, (ii) big fairs, and (iii) towns and villages, and must in time have effect, however slight, on public opinion. The most essential factor is cordial co-operation between the health and revenue staff, and this I am glad to say has been attained. I am very much obliged to Messrs. . . . (district medical officer of health and his assistant) for their good work.”

*District Magistrate, Mirzapur.*—“ It is early to expect results to be manifest, but I believe that much good is being done. I have no doubt that the efforts of the health staff did much to lessen the damage by the cholera epidemic. In suppressing plague at its inception the staff did a very good piece of work. I have nothing but praise for the work this year.”

*Chairman, district board, Mirzapur.*—“ The scheme has proved to be of great value to the health and happiness of the district as a whole. I congratulate the whole staff on their good work.”

*District Magistrate, Moradabad.*—“ . . . the working of the health staff has very definitely improved during the last year . . . I find a very general promptitude in tackling many problems which arise, and I am glad to note that the department is receiving somewhat more co-operation from both public and other departments.”

*District Magistrate, Allahabad.*—“ The district is indebted to Dr. . . . (district medical officer of health) and his staff for very valuable work in dealing with outbreaks of cholera and plague. For its effects in this direction and generally in combating disease by inoculation, etc., the staff can be said fully to have justified its existence. Dr. . . . and his assistant have shown considerable and praiseworthy energy, and my personal relations and those of the district sub-divisional officers with the public health staff have been uniformly good.”

*Chairman, district board, Allahabad.*—“ The report of . . . (district medical officer of health) records a steady progress in almost all the branches of his work. His efforts in the enforcement of the village cleaning scheme are commendable . . . Dr. . . . (district medical officer of health) and the staff are to be complimented for the success in their efforts for an all-round sanitary improvement of the district.”

*District Magistrate, Bulandshahr.*—“ It is gratifying to see that good results are already being obtained from the new health scheme. . . . I take this opportunity of expressing my appreciation to you (district medical officer of health) and your staff for the assistance you have given me in matters of the general health and sanitation of the district.”

*Deputy Commissioner, Lucknow.*—“ I welcome the appointment of the district medical officer of health and have found his work very useful. He has made a good start . . . ”

*Chairman, district board, Lucknow.*—“ The board fully appreciates the services of the health staff . . . and congratulates the district medical officer of health on his success to check the spread of cholera and plague epidemics in areas which were particularly notorious for them. Villages in which gang labourers have worked show great improvement. . . . ”

I express my gratitude to the district and assistant medical officers of health for the indefatigable work they have done in educating the rural masses.”

*Commissioner, Lucknow division.*—“ I am pleased to read the successful start made by you (district medical officer of health, Lucknow) and your staff, and I have no doubt they will be of the greatest use.”

*Deputy Commissioner, Unao.*—“The public health officers tried their best to cope with these (plague and cholera) outbreaks with courage and determination and they are generally doing good work all round . . . . My best thanks are due to Dr. . . . . (district medical officer of health) and his staff for a very promising start.”

*Chairman, district board, Unao.*—“It is a pleasure to see the increasing interest which the Government is taking in the improvement of rural sanitation, and I have been a witness at several places to note the effects of the propaganda work supplemented with demonstrations carried on by the health staff.”

*Deputy Commissioner, Rae Bareli.*—“ . . . . there is no doubt that useful pioneer work is being done in carrying out the policy . . . . in regard to the health and hygiene in this district . . . . There is no doubt that the health scheme is welcomed by the public.”

*Chairman, district board, Rae Bareli.*—“ . . . . The district has been benefited by the health scheme to a very great extent . . . . The sanitary arrangements at the principal fair sites were simply excellent and stood in great contrast to the previous years. The whole of the health staff worked ardently and skilfully.”

*Deputy Commissioner, Hardoi.*—“It is possible to say that Dr. . . . . (district medical officer of health) and his subordinates have manifested a degree of activity which has shown the meaning of work in all the towns and large villages of the district.”

*Chairman, district board, Hardoi.*—“During this short period it (the health service) has done much to improve the sanitation and prevent the spreading of epidemics. There has been very little, or I should say no, opposition on the part of the village people in whose interest the scheme has been introduced.”

*Deputy Commissioner, Kheri.*—“The district medical officer of health has made an excellent start. I expect a great improvement in sanitation and the handling of epidemics as a result of his appointment.”

*Chairman, district board, Kheri.*—“ . . . . with his small staff he (district medical officer of health) has done a great deal . . . .”

*Commissioner, Allahabad division.*—“ . . . . a very promising beginning has been made, and I trust that the endeavours of the district medical officer of health will result in a marked amelioration of the sanitary conditions prevailing in the Fatehpur district.”

*District Magistrate, Fatehpur.*—“I note with appreciation the zeal and energy with which you (the district medical officer of health) and your staff in co-operation with the revenue staff have been working in combating plague . . . . I am very much indebted to you for the indefatigable labour and patience with which you have faced the problem of village sanitation. I should like to express my conviction as to the potentiality for good of the district health scheme, given requisite good will and co-operation between the executive authorities, the district board and the district medical officer of health.”

\* The district medical officer of health and his staff have worked in an excellent way and with zeal. They deserve congratulations for the work done."

*Commissioner, Agra division.*—"I have read your report with great interest and also the review of the district magistrate, Muttra, and I may say that I associate myself with the remarks made by Mr. Dible."

*District Magistrate, Muttra.*—" . . . from the prompt manner in which you set your machinery in motion I am confident that in future your staff will prove to be a very effective agency in dealing with epidemics . . . I am satisfied that the transfer of vaccination has made for more thorough vaccination . . . I am confident that you and your staff will prove to be of the greatest assistance to secure effective sanitary arrangements in small towns. There can be no doubt that the district health scheme has been wisely conceived to meet a genuine and crying need."

*Chairman, district board, Muttra.*—" . . . the introduction of the district health scheme has caused a great relief to all concerned. The things that formerly received a superficial attention are now looked to with real and intensive interest. Vaccination work has improved a lot, and persons in the rural areas have begun to know, though not without apprehension, that there is a department to take preventive measures against cholera, plague and such other fatal enemies of human lives . . . If the scheme is handled in a missionary spirit, as it is done at present, I am sure it will prove a great boon."

*District Magistrate, Muzaffarnagar.*—"I acknowledge with gratitude the good work already done in dealing with plague . . . from what I have seen I consider that the district medical officer of health is going in the right way about educating the villagers and his enthusiasm for his duties is bound to tell in the long run. The measures adopted lessened the incidence of plague and saved a large number of lives. From this point of view alone the experiment (district health scheme) has been abundantly justified. . . Dr. . . . (district medical officer of health) is to be congratulated on an excellent beginning."

(e) *Necessity for additional staff.*—It is now admitted generally, where the health staff have been in existence for some little time and the wide field over which their activities range had been manifested, that the present staff is but a skeleton one, not sufficient to deal with the various problems that have to be tackled. Representations have been made for increase in the superior as well as subordinate personnel of the service. The necessity for increasing the number of sanitary inspectors is more urgent, but while this is fully recognized, the question of funds have also to be considered. In the scheme of apportionment of the cost of the district health service it has been decided that the entire cost of sanitary inspectors and their travelling allowance should be allocated to the district boards, and normally the cost of additional sanitary inspectors should be borne by them. At present, however, most of the boards are assisted by Government grants, pending the time when they can meet the charge; but in view of the urgency of the step I hope that the district boards concerned will provide whatever extra funds they can for additional subordinate staff. Four additional assistant medical officers of health have been sanctioned by Government for the districts of Azamgarh, Basti, Allahabad and Gonda.

during 1928-29 and one assistant medical officer of health for Benares where there was none.

(f) *Necessity for engineering staff.*—Representations have also been made by the district boards of Fatehpur, Kheri and Ballia for the provision of a qualified overseer with the health staff to assist in carrying out engineering surveys and preparing plans and estimates for sanitary works. The necessity for some such officer was specially felt when the district medical officers of health were asked in 1927 to submit definite schemes with properly drawn up projects for sanitary improvements in their areas. The chairman of the district board of Kheri remarks that “in a district like Kheri owing to the geographical position of the district and its being crossed by several rivers and surrounded by big tracts of jungles it is not an easy task for the health officer to improve its sanitation without taking in hand the engineering side of this department.” With this view I entirely agree, but the question of funds has again to be considered. I hope that the enterprize of the district boards will be directed to this aspect of rural development, as the provision of a small sanitary engineering staff in each district is an absolute necessity and will be attended with considerable progress.

(g) *Improvement of rural sanitation.*—This important question claimed a great deal of attention from the department. The following special means are at present in operation for ameliorating the existing conditions :—

(i) *Programme for sanitary works.*—The district health staff necessarily form the nucleus in all programmes for sanitary works. The district and assistant medical officers of health make sanitary surveys of villages and make recommendations to their district boards for action. In order to facilitate the carrying out of sanitary works in rural areas a systematic attempt was made to tackle the question in 1927 by having regular schemes for the development of small projects, such as drainage or water supply, prepared for the notified areas, town areas and the villages under the Village Sanitation or Village Panchayats Acts, etc. The idea was that schemes should be drawn up which may be spread over a term of years and be productive of substantial sanitary improvements in the areas treated. The district magistrates of all the districts in the United Provinces were asked to submit definite proposals to the Board of Public Health. These were scrutinized by the public health engineers and grants aggregating Rs. 1,67,264 were sanctioned on January 30, 1928. Where district medical officers of health have been appointed these proposals were submitted in consultation with them. Previously the Board of Public Health used to make grants direct to the commissioners of divisions for distribution according to requirements within their divisions, but the Board have now abandoned this procedure in favour of making grants for definite schemes properly drawn up.

(ii) *Work through labour gangs.*—Some account was given in the last year's report of the work of labour gangs. In some districts permanent, while in others temporary, gangs as required were employed. Lieut.-Colonel W. A. Mearns, I.M.S., Assistant Director of Public Health, II Range, in his annual range report remarks as follows :—

“ I am more optimistic, as a result of last year's reports, as to the ultimate success of these gangs. All districts report well of

their activities and consider that they are doing useful work, not only in epidemic seasons, but also in normal times in cleaning village sites, removing manure heaps, filling up small excavations, making soakage pits, cleaning of wells, etc. In some districts a nucleus of one trained gang man is retained with each sanitary inspector, and the gang only fully formed when required. In certain districts there appears to be difficulty in getting suitable men for these gangs."

During the year 1927 instructions were issued to the district medical officers of health to concentrate the operations of these gangs in selected villages for some length of time so as to produce definite improvements. Having regard to the limited funds and personnel and the magnitude of the task, the need undoubtedly is for greater concentration in selected villages, bazaars, etc., preferably those under some sort of legislation than too large a dispersion of effort. I agree with the district magistrates and chairmen of the district boards that greater results would be achieved by working through the village panchayats, and the health staff should always attempt to do so. For ordinary sanitary improvements no good purpose is served by the sanitary inspectors paying a casual visit to the villages or for the health staff to prepare costly schemes for towns quite beyond the financial capacities of the local bodies.

Instructions were also issued in 1927 for the sanitary inspectors to form sub-circles of twelve villages each which they were to take over for three months and by personal contact and detailed supervision educate the people in personal hygiene, popularise anti-epidemic measures, and endeavour to have the villages cleansed by the villagers themselves. In the non-vaccination season the vaccinators were similarly given charge of twelve villages each. The tendency of the villagers to rely on the gangs for works which are well within their own efforts is thus counteracted and they are also educated and made to feel that it is their own job.

For larger works, such as cleansing of wells or filling of pits, labour is engaged locally, and as they are generally the people of the villages concerned, not only are they benefited financially, but the work also proves of some educative value.

(iii) *Improvement through village panchayats.*—A brief reference was made in last year's report of the scheme for the improvement of the sanitation of panchayat villages by introducing a paid sanitary agency in them. The scheme was introduced in the middle of 1926, and the panchayats were asked to devote a portion of their funds for maintaining a part-time sweeper. The reports on its working, received from the collectors, bring to light the many difficulties that stand in the way of the improvement of rural sanitation. Owing to lack of funds a great many of the panchayats could not introduce the scheme at all. In some cases the panchayats were hampered by the absence of sweepers in the villages. In some cases the panchayats themselves were not of the right type, and the possibility of the sweeper degenerating into the private service of the panches for any miscellaneous or menial work was apprehended. In some cases the villages or groups of villages under a single panchayat were too large for one sweeper to work, while in nearly all the districts sweepers were not available on the pay suggested, viz., Rs. 3 per mensem. In some cases the available funds



were devoted to the improvement of village communication and improvement of water supply, leaving nothing for conservancy. As Mr. Wallace, the deputy commissioner of Hardoi, remarks, much depends on the personality of the sarpanch. Where these were of the right stamp good results were noticed. In other cases progress is only slight, while in a few cases, owing probably to the inability of the panchayats to enforce their decision with courage, no progress has been noticed. Local interest in sanitation will be stimulated by the propaganda of the health staff, but the question of funds remains.

(iv) *Sanitary legislation in rural areas.*—Reference was also made in last year's report to the necessity of some permanent legislation in the rural areas to enforce sanitary regulations and to preserve works or to take action in cases where instructions are ignored. The proper application of sanitary measures is greatly handicapped by the absence of all byelaws in villages, except those under the Village Sanitation Act where they are in force. While in cases of necessity assistance of the executive had to be obtained, the extension of the provisions of the Village Sanitation Act to selected villages was generally aimed at. The majority of the district boards also contemplate framing byelaws on some of the subjects, and it is hoped that by the mild action taken under the provisions of these regulations in urgent cases public opinion in the rural areas will be educated and due regard will be paid to the recommendations of the health authorities. It is true that public health work to be of permanent effect must attempt to educate and reform the villager and change his angle of vision, but the villager is generally apathetic to advice, which occasions him some inconvenience and his interest in public health is totally absent. Pure propaganda in the absence of an epidemic at his door has at present little interest for him, and a very long time must therefore elapse before he can be brought round to view the recommendations of the health authorities with any degree of intelligence or to carry them out voluntarily. Till that stage is reached recourse must of necessity be had to harmless "challans" to back up the recommendations of the health authorities in cases where the villager proves recalcitrant to persistent advice, or is setting a bad example to others. As I remarked in my last year's report, medical officers must proceed cautiously in resorting to this method of enforcing their recommendations at the present stage, especially in the absence of epidemics. Their chief aim should be in the first instance to win the co-operation of the masses by propaganda and advice and by sympathy. Where the health service has been in operation for some length of time and sufficient propaganda has been done, some slight compulsion might perhaps be advantageous; but in this matter the medical officers of health must invariably be guided by the advice of the district magistrates and the chairmen of their boards who will be able to gauge the position with more accuracy. More often the summoning of the offender by a sub-divisional officer or a tahsildar and the administering of a rebuke will be found to have the desired effect.

*Acknowledgments.*—I have to again express my thanks to all the district magistrates for their assistance to the health staff in all phases of their work. The medical officers of health have necessarily to seek the assistance and advice of the district magistrates very frequently. I am gratefully indebted to them for their continually guiding my officers, and for their instructive reviews and suggestions on the annual reports of these

officers. In some cases the direct interest taken by the district magistrates in the work of the department stimulated a similar feeling among their subordinates and reduced the opposition of the ignorant masses.

I am also indebted to the superintendents of police for their assistance to the district medical officers of health in connexion with the registration of vital statistics—a matter which presents considerable difficulty to this department. I hope that with greater co-operation between the health and police staff matters will greatly improve.

My acknowledgments are also due to some of the district boards and their chairmen who have indicated their interest in the health service and have made various constructive suggestions. I hope that they will continue to render assistance to the health staff and by co-operation and allotment of additional funds will further the object that the department has in view, viz., the improvement of the health of the rural areas.

The table given below sets out in a concise form the work done by the district medical officers of health during the year 1927 :—

Serial number.	Name.	Number of villages visited.	Number of villages visited during epidemics.	Number of schools inspected.	Number of scholars examined.	Number of villages where improvements were made on their advice.	Number of children inspected for vaccination.	Verification of births and deaths.		Number of plague inoculations.	Number of cholera inoculations.
								Number of entries checked.	Percentage of omissions.		
1	2	3	4	5	6	7	8	9	10	11	12
1	Gorakhpur..	5,572	2,278	120	11,424	651	7,814	7,727	4.7	3,518	711
2	Basti ..	2,790	1,558	416	4,856	207	1,965	1,359	5.9	5,489	32
3	Azamgarh..	2,433	1,135	537	8,459	502	15,731	18,089	15.0	7,768	..
4	Fyzabad ..	2,312	1,432	155	3,032	234	9,309	11,293	5.0	4,399	1,814
5	Gonda ..	1,632	359	131	2,680	69	3,525	4,355	27.5	325	362
6	Jaunpur ..	2,142	97	493	15,964	643	5,179	23,705	1.1	701	22
7	Ghazipur ..	2,074	923	297	2,433	124	9,900	9,448	5.5	3,752	10
8	Ballia ..	1,285	542	132	6,819	24	3,549	25,682	.6	8,613	..
9	Benares ..	733	312	70	8,825	112	3,862	6,345	1.8	609	110
10	Bahraich ..	1,632	68	80	4,022	450	2,051	4,134	6.0	..	131
11	Sultanpur ..	2,096	510	80	4,000	733	4,337	2,536	2.9	1,458	..
12	Partabgarh	1,449	379	186	3,942	154	9,339	822	2.2	..	11
13	Bara Banki	950	66	68	3,944	10	3,349	7,762	10.0	2,771	..
14	Mirzapur ..	1,209	430	131	5,776	124	2,069	6,989	5.0	285	918
15	Allahabad ..	3,520	163	71	3,244	400	2,347	2,137	5.3	109	..
16	Moradabad	1,414	60	40	1,872	516	3,957	7,548	5.3	2,659	51
17	Bulandshahr	800	50	158	1,911	200	2,354	6,442	5.7	403	..
18	Lucknow*..	546	10	151	1,616	53	1,267	2,164	.6	7	..
19	Unao* ..	281	16	43	2,061	150	556	1,633	15.1	114	..
20	Rae Bareilly*	1,000	20	42	2,316	316	336	447	.7	1,201	..
21	Sitapur* ..	436	36	45	3,075	17	285	436	5.6	1,047	..
22	Hardoi* ..	1,021	32	76	2,368	53	3,219	3,139	4.1	769	..
23	Kheri* ..	343	134	61	2,332	9	1,351	970	6.9	4,015	..
24	Fatehpur*..	239	24	117	1,774	240	1,316	7,062	15.3	267	..
25	Muttra* ..	284	20	95	3,307	284	1,663	13,739	3.3	..	..
26	Muzaffarnagar.*	233	34	77	3,122	49	1,351	5,144	5.3	4,156	393
	Total ..	33,536	10,723	4,022	115,679	6,334	103,334	136,707	6.4	54,880	4,570

\* From July 1 to December 31, 1927.

A *résumé* of the work done in various districts is given below :—

(1) GORAKHPUR.

*Registration of births and deaths.*—The registration of births and deaths in town areas was again defective in spite of definite recommendations made by the district medical officer of health. The statistics of the Deoria notified area are reported to be particularly unsatisfactory. The number of entries tested by district health staff was 7,727 and by the vaccination staff 46,887. The number of omissions discovered by the two agencies was 364 and 175, respectively.

*Epidemics. (a) Cholera.*—1,992 deaths occurred as against 1,191 in 1926. Over and above the routine precautions anti-cholera inoculation was the special feature of the year. In addition to the whole of the permanent vaccination staff employed on epidemic duty 12 extra vaccinators were also appointed. 170 lbs. of essential oils mixture and 3,357 lbs. of potash permanganate were used in the district. The health staff was handicapped by the late receipt of information of the outbreaks of the disease. In many cases notices of outbreaks of infectious diseases were received only when the disease had established itself and a large number of deaths had occurred. Medical officers were employed for the inspection of passengers entering the province by rail at Bhatni and Captainganj. The district medical officer of health is of opinion that these inspections should be continued longer, i.e., up to July.

*(b) Plague.*—The disease was first reported from known endemic centres. The attitude of the public towards anti-plague inoculation is now more sympathetic than before, but a great deal of persuasion is still necessary. Evacuation continued to be a popular measure.

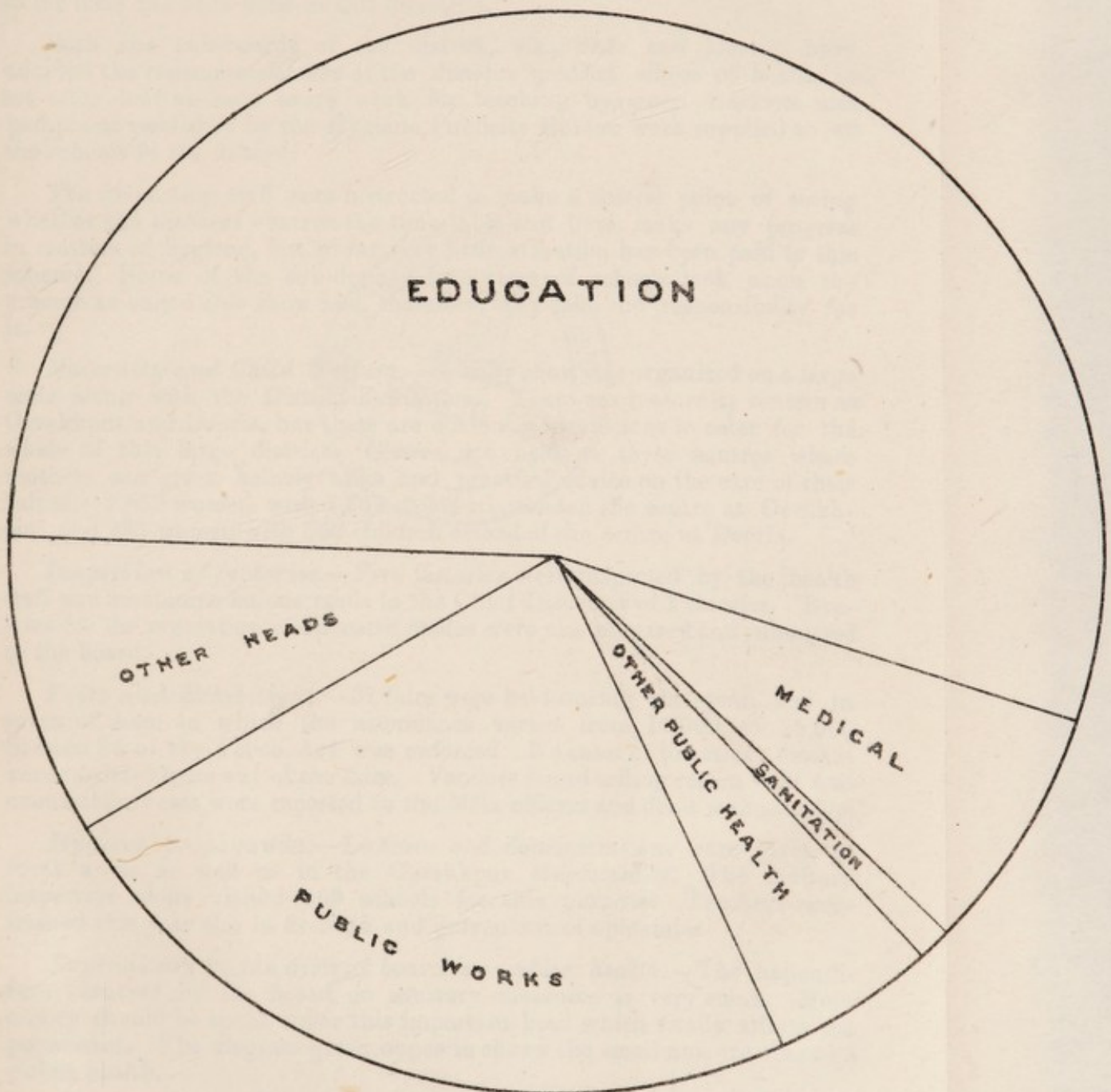
*(c) Small-pox.*—1,204 deaths were reported, or an increase of 589 over last year's figure. On the recommendation of the district medical officer of health the District Board, Gorakhpur, have employed extra vaccinators at a cost of Rs. 3,000 to vaccinate the unprotected persons, but to ensure success legal backing is necessary, as it is difficult to persuade grown-up children to submit to vaccination. The extension of the Vaccination Act to rural areas is recommended.

*(d) Malaria.*—284 lbs. of cinchona and quinine were distributed free through various agencies and schools were also stocked. A larger number of pits were filled during the year—the smaller ones by sanitary gangs. By far the largest number of deaths are reported under this head, which is due to the fact that deaths from many other diseases are included under it. The scheme for cinchonization in villages started during the year is in progress.

*Sanitation.*—The provisions of the United Provinces Village Sanitation Act were withdrawn from two villages. All the notified areas, town areas, and nearly all the villages under the Village Sanitation Act were visited during the year. The educative activities of the staff as well as their efforts for the improvement of general sanitation were chiefly devoted to these areas, where definite improvement is noticeable. The pargana officer of Hata has effected some improvement in almost all the sanitation and panchayat villages and town areas.

The total number of villages visited during the year was 5,572. In 651 of these improvements were carried out at the suggestion of the health

DIAGRAM  
SHOWING EXPENDITURE OF THE GORAKHPUR  
DISTRICT BOARD  
1926-1927.





staff. The labour gangs working with the sanitary inspectors were of great assistance in removing minor sanitary defects. Soakage pits were also made by these gangs where necessary. Parapets of wells were raised and refuse heaps were removed.

*School inspections.*—11,424 scholars in 120 schools were medically examined by the district and assistant medical officers of health. The chief diseases noticeable were ear disease, ring-worm, itch, bad teeth, trachoma, respiratory and skin diseases. Advice was given, as usual, in all cases.

The sanitary condition of buildings, hostels and water-supply was also inspected and reported to the chairmen of the sub-boards concerned, but so far little has been done in this direction.

Both the sub-boards of the district, viz., Sadr and Deoria, have adopted the recommendations of the district medical officer of health to set aside half-an-hour every week for teaching hygiene. Booklets and pamphlets published by the Hygiene Publicity Bureau were supplied to all the schools in the district.

The inspecting staff were instructed to make a special point of seeing whether the teachers observe the time-table and boys make any progress in matters of hygiene, but so far very little attention has been paid to this scheme. Some of the sub-deputy inspectors of schools look upon the scheme as only a side show and, therefore, they take no responsibility for it.

*Maternity and Child Welfare.*—A baby show was organized on a large scale along with the District Exhibition. There are maternity centres at Gorakhpur and Deoria, but these are obviously insufficient to cater for the whole of this large district. Classes are held at these centres where mothers are given homely talks and practical advice on the care of their babies. 2,859 women with 1,364 children attended the centre at Gorakhpur and 135 women with 550 children attended the centre at Deoria.

*Inspection of factories.*—Five factories were inspected by the health staff and recommendations made to the Chief Inspector of Factories. Bye-laws for the regulation of offensive trades were also prepared and submitted to the board.

*Fairs and Exhibitions.*—37 fairs were held during the year, and in seven of them in which the attendance varied from 10,000 to 25,000. Section 34 of the Police Act was enforced. No cases of infectious disease were reported from any of the fairs. Vendors found selling rotten fruit and unsuitable sweets were reported to the Mela officers and dealt with suitably.

*Hygiene propaganda.*—Lectures and demonstrations were given in rural areas as well as in the Gorakhpur Municipality. The sanitary inspectors alone visited 459 schools for this purpose. Teachers were trained this year also in first-aid and prevention of epidemics.

*Expenditure by the district board on public health.*—The expenditure incurred by the board on sanitary measures is very small. More money should be spent under this important head which vitally affects the population. The diagram given opposite shows the small amount spent on public health.

## (2) BASTI.

*Registration of births and deaths.*—1,859 entries were checked by the health staff and 26,075 by the vaccination staff. The percentage of omissions detected by the former was 5.9 and by the latter 2.5.

*Epidemics.*—There was some improvement in the reporting of primary outbreaks of epidemics after the health staff had given lectures to the chaidars and impressed on them the necessity of early reporting.

(a) *Cholera.*—4,610 deaths were reported from cholera against 360 in 1926. The infection was imported into the Khalilabad tahsil from the Gorakhpur district late in March. This outbreak was quickly brought under control, but in April another outbreak occurred in the police station of Captainganj and spread rapidly to the whole of the Harriya tahsil, infecting about 400 villages. The source of infection was the Ramnaumi fair in Ajodhya. While the health staff was engaged in dealing with this outbreak an outbreak was reported from Chilia. The infection in this case was found to have been imported from the Nepal territory. The district was divided into sixteen centres, each centre containing three groups of infected villages. One or more vaccinators were placed in charge of each group for disinfection work. The sanitary inspectors, and the assistant superintendent of vaccination supervised the permanganation of wells. The district medical officer of health and assistant medical officers of health supervised the work of these centres. Essential oils mixture worth Rs. 600 and 5,000 potash permanganate pills were distributed free; 6,014 lbs. of permanganate of potash were used in the disinfection of wells. Only 32 anti-cholera inoculations could be performed after much persuasion. The work of the public health staff was much appreciated by the people.

(b) *Plague.*—862 deaths occurred from this disease against 2,061 in 1926. Although there is still some opposition to anti-plague inoculation, yet a larger number are inoculated every year. 5,439 inoculations were done in 1927 against 2,949 in 1926.

An anti-rat campaign was started in the Basti town area in January, 1927, and continued till March. It was re-started in August. About 6,979 rats were killed by trapping and baiting.

(c) *Small-pox.*—342 deaths were reported from this disease. There is opposition to vaccination in some parts of tahsil Harriya, though the general public have more or less begun to realize the benefits conferred by vaccination. Sanitary inspectors continued to inspect the schools for unvaccinated children and lists prepared by them were forwarded to the vaccinators with orders to vaccinate the children. 1,965 students were vaccinated in this way. The enforcement of the Vaccination Act in certain rural areas is urgently needed.

(d) *Malaria.*—28,331 deaths were reported under this head against 25,762 in 1926. The geographical position of the district, cultivation of rice over a large area, innumerable depressions, pools, etc., render it extremely malarious. 70,500 cinchona tablets were distributed through the public health staff and members of the district board. 285 excavations were filled up—kachcha drains and soakage pits were made in a large number of big villages. The Board of Public Health sanctioned a sum of Rs. 10,000 for anti-malarial works at the headquarters of the district.

(e) *Goitre*.—The disease is found in this district between the rivers Sarju and Kuano and also in the tract lying between Manwar and Sarju. A few places in police station Menhdawal and Uska are also centres of endemic goitre. On investigation 40 to 50 per cent. of the total inhabitants were found suffering from this disease in certain villages. Poor dietary, unwholesome water, insanitary habits, and unclean surroundings are the determining factors of the disease. People were persuaded to take boiled water. The prevalence of cholera from April to August did not permit of the adoption of prophylactic and curative measures which were contemplated, but sodium iodide and red ointment treatment were tried at Gaighat and in its vicinity and minor cases were cured. Those who took it regularly did not develop the disease. An officer of the Lucknow University is carrying on a research on goitre.

(f) *Kala-Azar*.—No formal report regarding this disease was received, but on inquiry it was found to be prevalent in certain villages among the depressed classes who had returned from Assam and Bengal. A few slides were taken and examined, and four were found positive. They were advised to undergo regular treatment.

(g) *Elephantiasis*.—This is common in the district, especially in the Tarai.

(h) *Tuberculosis*.—The incidence of mortality appears to be rather high. The better classes, especially the *purdah* ladies, are the worst sufferers.

*Sanitation*.—There are 3 town areas and 15 villages under the Village Sanitation Act. All these were visited by the district medical officer of health and assistant medical officer of health, and the latter were in addition visited by the sanitary inspectors every month. The operations of the labour gangs were limited more or less to these villages. The revenue officials and the tahsildars took considerable interest in the work and substantial improvements in these areas were carried out.

Out of 6,921 villages in the district sanitary inspectors themselves visited 2,059 villages against 1,962 in 1926. The district medical officer of health and assistant medical officer of health visited 363 and 368 villages, respectively, against 217 and 209, respectively, in 1926. The labour gangs worked in 1,343 villages and made 365 soakage pits, 42 kachcha jagats, removed 956 manure heaps and filled up 285 excavations. They also made kachcha drains in a few places and removed rank vegetation from the inhabited area and the vicinity of wells. They were also employed at all the fairs and permanganated the wells on the pilgrim routes. Improvement by persuasion only was made in 207 villages, and in 28 villages they were carried out with the help of the district magistrate. The district board spent Rs. 528 only on rural sanitation in 1927.

*Hygiene publicity work*.—Sanitary inspectors delivered 1,104 lectures with and without posters; 47 magic lantern demonstrations were also given during the year, and lectures were also delivered in the schools and at important gatherings such as fairs.

*School inspections*.—4,856 scholars in 416 schools were medically examined during the year; 1,965 students were found unvaccinated. Carious teeth were found most common and then came in order ring-worm, trachoma, ear disease, and goitre. A scheme to train school



teachers in first-aid was proposed, but owing to the prevalence of epidemics could not be started. On the suggestion of the district medical officer of health, and, with the approval of the inspector of schools, it has been arranged by the chairman of the district board to utilize the services of the school teachers whenever a district board school is closed on account of an epidemic.

*Maternity and Child Welfare.*—The district board midwife continued to work in the town area of Basti. She visited 867 houses and conducted 31 labour cases during the year. She also gave lectures on general cleanliness, feeding of infants, epidemic diseases, etc., and distributed pamphlets on child welfare among *pardah* ladies.

*Fairs.*—Owing to the proximity of Ajodhya no less than three lakhs of pilgrims pass through the district on their way there. Vaccinators and others were deputed to watch the pilgrims, and two cases of cholera were detected on the way back from Ajodhya. They were isolated and sent to the hospital. All the wells lying on the various routes leading to the fair were disinfected before and after the fairs.

*Laboratory work.*—A small laboratory is attached to the office of the district medical officer of health, where microscopical work on a small scale is carried on.

*General.*—*Vaids* and *hakims* employed by the district board were placed under the control of the district medical officer of health, who inspected their dispensaries once every quarter.

Their services were utilized in sanitary inspections, lectures and epidemics within a radius of five miles from their dispensaries.

### (3) AZAMGARH.

*Registration of births and deaths.*—The number of birth and death entries tested was 9,579 and 8,510, respectively. The percentage of omissions found was 15. In addition to these 18,896 birth and 12,995 death entries were tested by the vaccination staff.

*Epidemics. (a) Cholera.*—Cholera was imported into this district from Mittopur, a village in the Jaunpur district. The situation was carefully controlled, all outbreaks being nipped in the bud. In all 277 deaths were reported from this cause in 1927 against 651 in 1926. It may be mentioned here that from 1881 to 1890 cholera accounted for an average of 2,512 deaths annually, while during the ensuing decennium the average mortality was 3,516. Between 1901 and 1907 it was 2,015. In view of the prevalence of the disease in epidemic form in the adjoining districts of Jaunpur, Fyzabad, Sultanpur, Ghazipur, Ballia, and Basti the staff were always on the alert, as importations were frequent. The subordinate revenue staff, with a few exceptions, rendered considerable assistance. Cholera patients were treated with essential oils mixture, and the results were gratifying. Billi-vaccine as a prophylactic was also tried with satisfactory results.

*(b) Plague.*—The district is notorious for the prevalence of plague, and there are several endemic areas. The energies of the health staff were, therefore, specially directed to this disease. The total number of deaths reported in 1927 was 3,059 against 8,414 in 1926. In 1923

plague deaths in the district numbered 21,217. 7,768 inoculations were performed in 1927.

Anti-rat campaigns were started in a few selected villages, and the disease was kept in check for some time. Beldars of the sanitary gangs were also supplied with rat-traps to carry on the campaign in addition to their routine duties and the results proved encouraging. Rat-traps are in great demand, but barium carbonate pills are unpopular. The anti-rat campaign could not be carried out on a large scale owing to paucity of funds. Experiments on the destruction of rats by Cyanogas and Horo tubes are also in progress under the Plague Research branch. Evacuation is popular and carried out more or less all over the district.

(c) *Small-pox*.—1,027 deaths were reported in 1927 against 396 in 1926. A larger number of persons were vaccinated than in the preceding year. Further improvement in vaccination cannot be carried out without making it compulsory in one form or other.

(d) *Malaria*.—18,519 deaths were returned under this head in 1927; 14,299 patients were treated for this disease in the hospitals and dispensaries of the district. Anti-malarial problems present considerable difficulty in this district. Quinine was distributed in the schools and in villages, while the methods of destroying mosquito larvæ were explained to the people. A number of pits and depressions were filled up by the sanitary gangs. A survey of larvæ-eating fish was made in six villages, and malarial surveys were also made of six villages. Twelve anti-malarial societies were established with the object of co-operating in the anti-malarial measures. 5 lbs. and 200 pills of quinine were distributed through these societies.

(e) *Snake-bites*.—Particular attention was directed to this subject. Sanitary inspectors and vaccinators were given instructions on the treatment of snake-bite and lancets have been supplied to them.

*Sanitation*.—There are two notified areas and ten town areas in the district. The sanitation of these areas showed improvement. There are 35 villages under the Village Sanitation Act. So far the health staff resorted to persuasion alone, but the ground has now been prepared for the enforcement of bye-laws. Panchayat villages were also inspected and necessary advice given.

2,433 villages were visited by the health staff, in 502 of which improvements were made by the villagers at the suggestion of the health staff. Villagers themselves improved their wells and drains and stored rubbish at more suitable places outside the village. Over 600 villages were cleaned and eight fairs were attended by the labour gangs. A scheme is under consideration for the installation of force pumps in certain areas.

*School inspections*.—8,459 scholars in 587 schools were medically examined by the health staff. Malaria, diseases of the eye, teeth, ear and skin were chiefly noticeable. Necessary advice was given to the teachers as well as the parents. A scheme has been drawn up whereby it will be possible to educate the children of every school in the district on hygiene and epidemic diseases.

*Hygiene propaganda*.—A series of lectures on cholera, plague, malaria, sanitation and vaccination and child welfare were delivered in 3,139 villages.

Lantern demonstrations were also given in the villages and in fairs. The results achieved are gratifying: the success in dealing with epidemics, increase in vaccination and evacuation, co-operation in the permanganation of wells, etc., are proofs of the success attained by the propaganda.

*Fairs.*—Owing to proximity to Benares a large number of pilgrims pass through the district on their way there. Wells on all the roads along the pilgrim route were disinfected. Many fairs are also held in the district, of which some are of importance. Nearly all these were supervised by the health staff, and the arrangements made prevented the occurrence of any infectious cases in any of them. Labour gangs were deputed to these fairs for cleansing, permanganation, and trenching.

#### (4) FYZABAD.

*Registration of births and deaths.*—11,293 birth and death entries were checked by the health staff and the percentage of omissions found was 5.

*Epidemics. (a) Cholera.*—The large number of important fairs which take place in the district and at Ajodhya make cholera a disease to be reckoned with seriously. The epidemic started after the Ram Naumi fair and spread rapidly. Prompt reporting was resorted to by patwaris, chaukidars, railway and postal officials and private individuals. Intensive propaganda was carried out and medicines distributed in large quantities. Considerable assistance was rendered by the revenue officials and the deputy commissioner. Essential oils mixture is popular and is freely taken. In all 4,343 deaths occurred in 1927 against 66 in 1926.

*(b) Plague.*—The disease is more or less endemic in the district which adjoins Azamgarh. Evacuation is more or less popular, but is generally resorted to very late, and then too close to the habitations. 4,899 inoculations were performed against 4,749 in 1926. Anti-rat campaigns have also been started in two selected villages, and the work is in progress. The number of deaths recorded from plague in 1927 was 560 against 1,364 in 1926.

*(c) Small-pox.*—503 deaths were reported from this disease against 501 in 1926. Vaccination is proceeding apace, about 4,500 more vaccinations having been performed during the year under report.

*(d) Malaria.*—9,709 deaths were reported from this disease. Cinchona was freely distributed and much propaganda work was done. Surveys of tanks and pools have been started by the health staff with a view to determine the type of mosquito larvæ found therein and to stock them with larvæ-eating fish.

*(e) Goitre.*—This disease is prevalent in the district, and several cases were noticed in various villages of the Fyzabad tahsil.

*Sanitation.*—The district medical officer of health is in charge of the sanitation of the Tanda Municipality. He visited the town from time to time and made necessary recommendations.

There are five town areas in the district. These were also inspected by the district medical officer of health and necessary recommendations made to the town magistrates.

2,312 villages were inspected during the year, and in 234 of them improvements were carried out on the recommendations of the health staff.

An endeavour was made to make the villagers clean up their villages themselves. In certain cases the operations of the gangs were limited to selected villages for some length of time, and these were put in a sanitary state. The villagers were then told to keep the villages clean in a similar manner, and in some cases they actually did so. Practical demonstrations, supplemented by talks and lantern lectures, had a very salutary effect and made some impression.

*School inspections.*—3,032 children in 155 schools were medically examined. Trachoma and pyorrhœa were fairly common. A very large number of unvaccinated children was found. Arrangements were made to vaccinate them. Lectures and demonstrations were given in all the schools visited, and it was found that they had a fair knowledge of sanitary principles and the etiology and prevention of disease.

*Hygiene publicity work.*—Great attention was paid to this branch of public health work. More attention was necessarily directed to the school children than to their elders. Lectures and demonstrations were given at fairs and in the villages visited. Pamphlets were also distributed.

*Fairs.*—All the fairs held in the district, excluding the Fyzabad Municipality, were supervised by the health staff. The fairs in the municipality were supervised in co-operation with the municipal medical officer of health. The services of the labour gangs in permanganating the wells were most valuable.

#### (5) GONDA.

*Registration of births and deaths.*—3,624 entries were checked by the health staff, and 1,081 omissions were discovered. The vaccination staff checked 19,466 entries and discovered 596 omissions. Besides, 731 entries were checked at the police stations by the district medical officer of health and 116 omissions were discovered.

*Epidemics. (a) Cholera.*—The disease was imported from the Fyzabad district. Reports were received from 121 villages, mostly on the border of the Fyzabad and Basti districts, and 480 deaths were returned during the whole year. On investigation only 99 out of 121 villages were found really affected from cholera. Reporting was very good, 112 reports out of the total of 121 reports having been received within three days. Mr. Walton, the Deputy Commissioner, took stringent measures to ensure early reporting. Anti-cholera measures were usually taken within 24 hours of the receipt of the report and proved efficacious in majority of cases.

*(b) Small-pox.*—Only sporadic cases occurred, the number of deaths being 80 during the year.

*(c) Plague.*—The disease started late in November, cases having been imported from the Basti district. Only 22 deaths occurred up to the end of December, 1927.

*(d) Malaria.*—16,900 deaths were returned under this head against 19,660 in 1926. Cinchona and quinine tablets worth Rs. 802 were distributed through various agencies. The special feature was the introduction of the cinchonization scheme in four selected villages in the later part of the year.

*Sanitation.*—There are two municipalities, two town areas, four notified areas and six villages under the Village Sanitation Act. They were visited from time to time by the public health staff and necessary suggestions made to the authorities concerned. A large number of wells have been repaired, public drains have been constructed, and cesspools have been abolished. 1,682 villages were visited by the health staff, in 69 of which improvements were made on their advice.

In the rural areas panchayats are paying some attention to sanitation in accordance with their financial condition and to the improvement of water-supply in their villages; while in some cases the taluqdars have had minor improvements made to the wells in the villages owned by them. The storage of manure heaps presents many difficulties, and while 69 villages were cleaned by the sanitary gangs and some by the villagers themselves it is doubtful if this has any permanent benefit. Byelaws in this connexion are under the consideration of the district board. In addition to a number of soakage pits made by the people themselves 126 were made by sanitary gangs.

*Inspection of schools.*—2,680 scholars in 181 schools were medically examined during the year. Eye diseases, skin diseases, bad teeth, and goitre were the chief diseases found prevalent. In the Tarabganj tahsil goitre alone was found to affect 70 to 75 per cent. of the school children. Many unvaccinated children were found this year also in the schools. The necessity of educating the scholars in personal hygiene was explained to the teachers.

*Fairs.*—Six important fairs, including the Debi Patan fair, notorious for spreading cholera, were held in the district. Sanitary arrangements were supervised by the district medical officer of health or his assistant, and the fairs passed off without the outbreak of any epidemic disease.

*Hygiene propaganda.*—A series of lectures were given to chaukidars and patwaris to help them to classify their returns more accurately. Pamphlets were distributed at the fairs, where lectures and lantern demonstrations were also given. Lectures were also given in schools; while posters were posted at prominent places, schools, libraries, etc. Sanitary gangs were usefully employed in cleaning villages, constructing soakage pits, repairing wells, etc.

#### (6) JAUNPUR.

*Registration of births and deaths.*—23,705 birth and death entries were checked by the health staff and vaccinators, and the percentage of errors detected was 1·3 for births and ·84 for deaths.

*Epidemics. (a) Cholera.*—Before the cholera season every precaution was taken to avoid the importation of the disease from outside. All the wells on the roads passing through the district to Magh Méla were disinfected. The wells situated on the boundaries of the district were also similarly treated. The disease was first imported from the Bombay Presidency in March, and owing to late reporting spread before action could be taken. One gold and one silver medal were awarded by the district board to two vaccinators who performed their duties most satisfactorily during the epidemics.

Altogether 44 villages were affected causing 595 deaths.

The infected area was divided into five circles where about two hundred men, including vaccinators and patwaris, were put on epidemic duty under the direct supervision of sanitary inspectors and supervisor kanungos. The sub-divisional officer, tahsildar, and the district medical officer of health supervised the work of sanitary inspectors. The co-operation of the school teachers was also enlisted and the disease was brought under control after strenuous efforts. A few anti-cholera inoculations were performed.

(b) *Plague*.—The first outbreak was reported from Mustafabad in tahsil Machhlishahr and was confined to the Machhlishahr tahsil only. In all 16 villages were affected, causing 171 deaths. Villagers adopted evacuation more or less voluntarily, but did not submit to inoculation unless the disease was actually in their midst. All necessary precautions were taken and anti-rat campaigns started in several places. A large number of females were inoculated.

(c) *Small-pox*.—261 deaths were reported from this disease. Evasions from vaccination were numerous in the rural areas, though the attitude of the people is reported to be improving. The extension of the Vaccination Act to the rural areas is very desirable.

(d) *Malaria*.—11,826 deaths were reported from this disease against 11,713 in 1926. The importance of filling up pits and excavations was impressed on the villagers, who were also induced to take quinine as a prophylactic measure. A sum of Rs. 100 was sanctioned by the district board for the free distribution of quinine and cinchona.

(e) *Elephantiasis*.—Steps were taken to fill small pits within the *abadi* and oil big tanks with a view to reduce the disease.

*Sanitation*.—Marked improvement was noticed in the sanitation of the notified area of Shahganj since it was put in charge of the sanitary inspector of the tahsil. Similar arrangements were made for the Badshahpur notified area, and it is expected that this will be attended with similar success. Byelaws were also framed for the notified area and were passed by the committee. The four town areas of Machhlishahr, Kiraket, Mariahu, and Zafarabad were frequently visited by the district medical officer of health and necessary recommendations made, but they met with little response from the committees.

There were up to the end of December only three villages under the Village Sanitation Act. Proposals have been made for the application of the Act to 12 more villages, and the preliminary inquiry is being made.

2,142 out of a total of 3,039 villages in the district were inspected by the health staff, and in 648 of them some improvements were made. 44 panchayats were visited and necessary advice given. Where funds were available sweepers were engaged by these panchayats and repairs to a number of wells and lanes were also made by them. Labour gangs alone made improvements in 134 villages. These gangs are chiefly utilized for construction of the kachcha drains to drain off the filthy water from the stagnant pools and for filling up small pits and excavations. Where filling up was not possible, one pool was connected with other pools to drain off the water from the smaller ones to the bigger ones.

There are a number of pucca tanks in the district which are used for bathing in addition to being sources of water-supply to the locality.

Some of the tanks, important from the religious point of view, had become so polluted that they had become sources of danger to the public health. The respective owners were compelled by the district board to cleanse their tanks under section 99 of the District Boards Act, while some of the tanks situated within the *abadi* were provided with a number of larvæ-eating fish.

*Fairs.*—A number of fairs, large and small, are held annually in this district. The fair areas were cleaned, tanks oiled and wells permanganated a week before the gathering, while permanganation was continued throughout the *mêla* period. An allotment of Rs. 300 was specially made by the district board for these measures. No cases of infectious disease occurred in any of the fairs.

*Inspection of schools.*—Out of 45,000 scholars in 572 schools in the district 15,964 scholars in 493 schools were medically examined. Of these 192 schools were visited by the medical staff and the rest by the health staff. The usual diseases were noticed among them. Medicines were supplied, when available, and necessary advice was given in all cases. Lectures were also given to improve the knowledge of the students in respect of such diseases as were contracted by carelessness. An appreciable improvement was noticeable.

*Hygiene publicity.*—A specially-organized public health exhibition was held in connexion with the district board exhibition in February-March, 1927, wherein the health section models and exhibits were displayed showing the method of the spread of various epidemic diseases. Magic lantern demonstrations were also held daily. A number of dramas were played in the rural areas and proved of help in educating the public. Lectures and demonstrations were also given at the fairs and schools. 923 lectures were in all delivered to gatherings totalling approximately 90,000 persons.

*Maternity and Child Welfare.*—A baby week was held in the month of March, at which lectures were delivered accompanied by magic lantern demonstrations. Provision has been made by the district board for appointing trained midwives at important places in the district, not only to conduct cases but also to train local *dhais*.

#### (7) GHAZIPUR.

*Registration of births and deaths.*—23,989 entries were tested by the health staff, including vaccinators, and the percentage of omissions discovered was 2·3. In the 9,448 entries tested by the health staff alone the percentage of omissions was 5·51. The work of checking these entries was facilitated by making inquiries from the *nais*, *dhobis*, *dhais*, and *pandits*.

*Epidemics. (a) Cholera.*—731 deaths were reported during the year from this disease against 426 in 1926. Reporting was somewhat slack at first, but later on it improved due to the strong measures taken by the district magistrate. Most of the outbreaks were due to importations from outside. Cholera inoculation is not popular and only 10 inoculations could be performed.

*(b) Plague.*—There is reason to believe that some of the villages are endemic foci of the disease, and these are being recommended for regular anti-rat campaigns. Evacuation is popular and was resorted to in all the

villages infected. Inoculation is also popular in certain parts of the district.

(c) *Small-pox*.—535 deaths were reported from this disease. It is difficult to persuade some people to have themselves vaccinated, and more so in the case of re-vaccination. Compulsory vaccination is the only remedy. The chairman of the district board has instructed all school teachers to get all school children vaccinated.

(d) *Malaria*.—The incidence of this disease is in no way less, 9,259 deaths having been returned under this head. Cinchona and quinine were distributed freely as usual, and a number of hollows were filled up and larvæ-eating fish were introduced in tanks and pools.

(e) *Kala-azar*.—While no death was returned under this head the district medical officer of health noticed in the course of his tours, about a dozen cases in the outlying areas of the district, in some of which there was no evidence of the persons having visited any of the endemic areas of the disease. This shows that the disease is probably endemic in the district.

*Ankylostomiasis*.—From the amount of obvious anæmia seen in some of the school children it seems very likely that this disease is prevalent in the district.

*Sanitation*.—All the town areas and villages under the Village Sanitation and Panchayats Acts were visited by the health staff—some more than once. In all 2,074 villages were visited by the health staff, in 124 of which improvements were made on their advice. Magistrates of the town areas always consulted the district medical officer of health on all points relating to sanitation.

With the assistance of the manager of the Court of Wards estate one village—Kusmi—was cleaned up and put in an orderly state. This village was visited by the district magistrate who was greatly interested in the work carried out. Some other villages are proposed to be similarly treated. The labour gangs proved of invaluable help in epidemics and were of definite utility in the non-epidemic season in constructing soakage pits and drains and carrying out minor repairs to wells. Villagers were persuaded to carry out these works after demonstration by the health staff. The system adopted is to get a few soakage pits or drains done by the beidars and then to persuade villagers to do the rest themselves.

*Inspection of schools*.—2,438 scholars in 297 schools were medically examined. Skin disease, bad teeth, and trachoma were the chief diseases noticed. Advice was given where necessary, but the paucity of outlying dispensaries rendered the carrying out of the measures suggested difficult.

*Fairs*.—The Chauchakpur mêla was held in November. Owing to the prevalence of cholera in the adjoining villages special precautions were taken. No case of any infectious disease, however, occurred.

*Hygiene publicity work*.—A regular programme has been drawn up for carrying on a vigorous programme in schools. With the assistance of the chairman of the district board two magic lantern demonstrations were given in each middle school where children from the adjoining schools were invited. The announcement of a few prizes to boys who were acquainted with ordinary points of hygiene gave an impetus to the attendance which was fairly good.



*Supervision of bazaars and inspection of big shops.*—This was regularly done by the district medical officer of health and assistant medical officer of health during their visits to the villages. Great necessity is felt here for the application of the provisions of the United Provinces Prevention of Food Adulteration Act, particularly in respect of *ghee* and edible oils.

## (8) BALLIA.

*Registration of vital statistics.*—25,682 entries were checked by the health staff. The percentage of omissions found was '63.

*Epidemics*—(a) *Cholera.*—The disease broke out early in March and persisted in sporadic form till October. In all 157 villages were affected, causing 1,262 deaths. All the villages were visited by the district medical officer of health or his assistant. In one place—Srinagar—it was found that dead bodies were being thrown into a tank, the water of which was used for drinking. The matter was at once brought to the notice of the district magistrate who issued orders prohibiting the practice. Thousands of patients were treated in their homes and a number of them recovered. Cholera case cards which were maintained for all cases revealed that the disease was imported from Bengal and Bihar, and that the increase of cholera in Bihar was followed by an increase in this district.

(b) *Plague.*—642 deaths were altogether reported from this disease against 2,899 deaths in 1926. In certain parts people are not averse to inoculation, while in others they are opposed to it. In all 8,613 inoculations were performed. Endemic areas were selected for anti-rat campaigns in October.

(c) *Small-pox.*—221 deaths were reported from this disease against 421 in 1926. School inspections revealed that many children of 5 to 10 years of age were still unprotected. Such children are generally of better class families. Almost all the cases in the district were imported from Bihar, and a number of these were intercepted by the medical officers posted to examine passengers in the incoming trains in the month of April, 1927.

(d) *Malaria.*—6,764 deaths were returned under this head against 7,665 in 1926. Several anti-malarial surveys were carried out during the year, but had to be given up either on financial grounds or for other reasons. The Board of Public Health sanctioned a grant of Rs. 4,000 for one work which is in progress.

*Sanitation.*—Notified and town areas in the district were inspected several times in the year and projects for sanitary works for these were prepared. The sanitation of the Ballia Municipality was also supervised by the district medical officer of health.

1,285 villages were inspected by the health staff, in 24 of which definite improvements were carried out on their advice. Notices were served under sections 96 and 99 of the District Boards Act, and in certain cases recommendations were made to the district magistrate for action under section 290 of the Indian Penal Code. A few more villages were brought under the Village Sanitation Act.

*School inspections.*—6,819 scholars in 182 schools were medically examined. Pyorrhœa, ear disease, conjunctivitis, and skin diseases were most commonly noticed.

*Hygiene propaganda.*—This was carried out throughout the year by all members of the public health staff by lectures, lantern demonstrations, etc., in the schools, villages, and the fairs.

*Maternity and child welfare.*—Work was more systematically carried out in the year 1927. A midwife was appointed in October, 1926, who actually conducted a number of cases and supervised a large number of other cases. The district magistrate is the president of the committee. Efforts are being made to put the whole scheme on a sound financial footing.

*Fairs.*—All the fairs were supervised by the public health staff and passed off without any epidemic of cholera.

#### (9) BENARES.

*Registration of births and deaths.*—Registration of vital statistics was satisfactory in the notified area of Sheopur and town area of Gangapur, but unsatisfactory in Moghal Sarai. 30,990 entries were tested by the health staff, including vaccinators. The percentage of omissions found was 1.25.

*Epidemics—(a) Cholera.*—The district of Benares is annually visited by a large number of pilgrims from all parts of India and the control of cholera is, therefore, difficult. The distribution of the disease in the district is very unequal—some portions showing persistent and heavy infection and the other being comparatively free. The eastern part bordering Bihar and Orissa shows the highest mortality. The first case was imported from Gaya into the Benares Municipality from where infection was brought into the district. All the registration circles were affected and 733 deaths occurred during the whole year. Reporting of primary outbreaks was not good. Mukbias, school teachers, and members of the district board were supplied with potassium permanganate. About 3,000 wells were permanganated by the health staff.

Essential oils mixture was freely used and 110 inoculations were performed.

*Plague.*—In all nine villages in two registration circles were infected during the year, resulting in 24 deaths against 575 of last year. Inoculation is not yet popular. Anti-rat campaigns were started in two centres, but owing to the objection and hostility of the people to the destruction of rats the results were not satisfactory.

*(c) Small-pox.*—There still are a large number of people who evade vaccination. It is a common sight to see a large number of pock-marked faces in the schools and the number of unvaccinated children is quite large. Teachers in the schools refused to give assistance to vaccinators. 417 deaths were reported during the year of which 50 occurred in the Benares Municipality. Compulsory vaccination would appear to be the only remedy.

*(d) Malaria.*—10,483 deaths were returned under this head. Leaflets, pamphlets, and hand bills and cinchona pills were freely distributed through the various agencies, panchayats, etc. The district board sanctioned a sum of Rs. 300 for the purchase of cinchona pills. Many small pits inside and near the *abadi* were filled up by the sanitary gangs and the villagers themselves. Permanent collections of water were surveyed to find out the species of fishes living in them and will be stocked with larvæ-eating fish. A resolution prohibiting the netting of small fish from the tanks has been passed by the board.

*Sanitation.*—There are two notified areas and two town areas and twelve villages under the Village Sanitation Act. All these were visited by the health staff and necessary recommendations were made. 733 villages were also visited by the health staff and improvements were carried out in 112 of them. A few drains were constructed and in the notified area of Moghal Sarai and in one village, Umerha, many “*nabdans*” were closed and replaced by soakage pits. Panchayats are taking some interest in the sanitation of their villages. The condition of the wells in the district is not satisfactory and local finances are not sufficient for carrying out the necessary repairs. A grant of Rs. 33,000 was received from the Board of Public Health for covering wells and installing pumps. This work is in progress. Numerous improvements were carried out through labour gangs.

*School inspections.*—8,825 scholars in 70 schools were medically examined by the health staff. Bad teeth, skin diseases, and eye diseases were chiefly noticed. Advice was given in all cases. The sanitary condition of the school buildings, boarding-houses, kitchens, and water-supplies was inspected and recommendations were made to the district board.

*Inspection of factories.*—All the factories in the district were inspected and reports submitted to the Chief Inspector of Factories.

*Maternity and Child Welfare.*—In order to lessen the incidence of infantile mortality and to improve the condition of indigenous *dhais* Mrs. I. Mehta started a maternity and child-welfare scheme and a trained *dhaxi* was appointed at Chandauli. Another midwife is proposed to be posted at Gangapur. The midwife at Chandauli visited 18 villages and conducted some cases.

*Fairs*—Fairs held in the district are numerous, but the most important ones were Panchcham Bahni Ashnan, Markande Mahadeva, Sarnath, and Lunar Eclipse. Sanitary inspectors were deputed to look after the sanitary arrangements of these fairs, and the larger gatherings were supervised by the district medical officer of health.

*Hygiene publicity work.*—In each and every village visited by the health staff lectures were given to the people. Lectures were also given in the schools and pamphlets were also distributed.

#### (10) BAHRAICH.

*Registration of births and deaths.*—4,134 entries were verified by the public health staff and the percentage of omissions discovered was about 6.

*Epidemics—(a) Cholera.*—The disease was imported from the Ajodhya Sawan Jhula fair in August, 1927, and was responsible for 23 deaths in six villages. Reporting was not satisfactory as most of the deaths had occurred before the health staff received notice of the outbreak. All necessary precautions were taken.

*(b) Plague.*—The district was entirely free from the disease during the year. Villages which are the chief centres were subjected to anti-rat campaigns, scavenging, and lectures and demonstrations.

*(c) Small-pox.*—This disease was responsible for 207 deaths against 145 of the previous year. Vaccination was continued up to the end of May. There is a fairly large number of persons who are unprotected against

small-pox, being averse to vaccination. Compulsory vaccination is very desirable.

(d) *Malaria*.—This disease assumed a severe epidemic form in the Kaisarganj and Nanpara tahsils during the months of October and November and was responsible for 13,986 deaths against 13,483 in 1926. Quinine from the Government stock and the district board stock was distributed free on an extensive scale. Tanks were oiled and small insanitary pits were filled up as far as possible. Malarial surveys were carried out in certain places, and the Board of Public Health sanctioned a grant of Rs. 5,100 for certain works to be carried out at Fakharpur, Ikauna, and Piagpur.

(e) *Goitre*.—This disease is very prevalent in Kaisarganj tahsil, specially along the Ghogra. Every possible assistance was given to the medical officer who is carrying on goitre research. In certain schools a fair percentage of the scholars were found affected. 231 cases were treated by one of the travelling dispensaries alone.

*Sanitation*.—All the villages under the Village Sanitation and Village Panchayats Acts were visited by the health staff, and recommendations made.

1,632 villages were visited during the year, and in 450 of them improvements were made on the recommendations of the public health staff. Several centres were selected where the operations of the labour gangs were continued for a definite period for sanitary improvements, such as construction of soakage pits, etc. Villagers were shown better ways of storing manure heaps outside the *abadi*, but the difficulty as to spare land still exists. One new village was laid out at the suggestion of the district medical officer of health on modern sanitary lines, while some panchayat-villages which are better planned were also improved with the assistance of the labour gangs to approximate as far as possible to model villages. Nearly all the panchayats have now engaged sweepers and surface cleanliness is appreciably improved.

*School inspections*.—The number of scholars examined medically was 4,022 in 80 schools against 3,340 in 93 schools in 1926. About 20—25 per cent. were unvaccinated. Bad teeth, dyspepsia, round worms, enlargement of cervical glands, goitre, and ringworm were common.

Recommendations were made for the improvement of the sanitation of the school premises. The district board sanctioned the installation of hand pumps in 10 schools on the recommendation of the district medical officer of health.

*Hygiene publicity work*.—Posters containing instructions for personal hygiene and pamphlets on epidemic diseases were given to nearly all the school teachers for the contents to be explained to the students. The health staff themselves gave demonstrations and lectures in the schools, while the teachers were asked to devote an hour every week to the teaching of hygiene.

*Fairs*.—All the fairs in the district were attended by the public health staff and sanitary arrangements made.

*Factories*.—Factories were inspected and reports submitted to the Chief Inspector of Factories.

## (11) SULTANPUR.

*Registration of births and deaths.*—2,536 entries were checked by the district health staff, the percentage of omissions detected being 2.97. The officials at fault were reported upon and punished by their officers.

*Epidemics—(a) Cholera.*—The district being situated between Allahabad and Fyzabad—the two great pilgrim centres—is specially liable to infection from cholera, because of the fact that pilgrims pass through this district in great numbers. This fact, together with its close proximity to the districts of Jaunpur, Partabgarh and Azamgarh, which are also notorious for cholera, has been responsible for a large number of deaths in this district in the year 1927. The disease was imported from the districts of Jaunpur and Fyzabad by certain marriage parties. Reporting was lax in certain parts at first, and this caused the epidemic to get a firm grip before the health staff could take action. By the personal assistance rendered by the deputy commissioner, who himself moved into camp in the affected area, and the co-operation of the revenue staff, the epidemic was brought under control after a very severe struggle. The whole of the public health staff was concentrated in the affected areas and special coolies were employed for permanganating wells.

Essential oils mixture was profusely distributed. All the workers were sent on duty protected with billi-vaccine, but one of the vaccinators died of cholera three weeks after taking billi-vaccine. After that all the workers were inoculated with anti-cholera vaccine. No deaths among the inoculated occurred.

*(b) Plague.*—The district was practically free from plague, only 34 deaths having been reported against 685 in 1926. In all 13 villages were affected. 1,458 inoculations were performed and anti-rat campaigns were started in those villages which were the foci of the last epidemic. Up to the end of the year about 9,700 rats were destroyed.

*(c) Small-pox.*—This disease was responsible for 122 deaths in 78 villages—the disease being of a mild type. As a result of the direct interest evinced by the revenue staff and the propaganda carried out by the health staff the aversion of the high caste Hindus to vaccination has begun to wane. The tendency in the district is for people to have their children vaccinated at the age of 3 or 4 years. As a proof of the efficiency of vaccination the following instance may be quoted. In village Ghatampur only four children escaped small-pox, while all the others were affected irrespective of their age and sex. These four boys had been vaccinated in school. After this not only did the inhabitants of this village get their children vaccinated, but induced their neighbours also. Still the state of vaccination in the district is most deplorable as the old balance of some 70,000 unprotected children up to the age of 14 is always left in hand for want of adequate personnel, etc.

*(d) Malaria.*—The district is not malarious and this is borne out by the fact that of about a thousand children examined only 62 had enlarged spleen. Yet the old-time chaukidar reports every case of death as from malaria whenever his poor knowledge fails to ascribe any other cause for it. During the year 15,969 deaths were returned under this head against 13,378 in 1926. The district board sanctioned an allotment of Rs. 500 for the purchase of quinine.

*Sanitation.*—2,096 villages were visited by the health staff, out of which 510 were visited for epidemics alone. The advantages of drainage, absorption pits, improvement of water-supply, etc., were explained to the villagers. As far as possible, villagers themselves were instructed in the cleaning of their villages as it was found that cleaning by the sanitary gangs conferred no permanent benefit, because of the villagers resorted to insanitary practices soon after the gangs had left them. A number of important villages were selected in each tahsil where drains, etc., were constructed by men engaged locally. Persuasive methods were mostly used. In cases where villagers ignored the instructions of the health staff they were reported to the revenue officers who warned them. Only in one or two cases were a few people fined. This had a deterrent effect, and there was no necessity after this for the health staff to resort to severe methods. 719 villages were cleaned up and improved by the villagers themselves and 19 were improved by the labour gangs. In a few of the larger villages the panchayats have employed sweepers according to the suggestions of the Director of Public Health.

*Hygiene propaganda.*—In all the villages visited, whether for epidemic purpose or for the inspection of general sanitation, lectures were given by means of posters on different diseases, personal hygiene, etc. In important villages magic lantern demonstrations were given. Lectures and demonstrations were also given in the fairs held in the district, while in two of them a health exhibition on a small scale was arranged. Two special lectures were given to the panches and landlords of Gauriganj and Amethi.

*School inspections.*—4,000 students were medically examined in 80 schools. 49 per cent. of the scholars were unvaccinated; of these 23 per cent. were protected by previous attacks of small-pox. Medicines which could be administered by the teachers were given to them with full instructions. Cases requiring special treatment were referred to the nearest dispensaries. Parents were found apathetical in carrying out the recommendations.

Teachers were asked to devote half-an-hour every Saturday to the teaching of hygiene.

## (12) PARTABGARH.

*Registration of births and deaths.*—The health staff checked 822 entries and the vaccination staff 15,259. The percentage of omissions in the former was 2·19 and in the latter ·76.

*Epidemics—(a) Cholera.*—The disease was imported from the Allahabad district by four marriage parties in the month of May. Infection was also introduced by carrier cases from Jaunpur and by a pilgrim from Ajodhya. One naib-tahsildar was specially deputed by the deputy commissioner for cholera duty. 38 patwaris were also placed on epidemic work by the settlement officer. These patwaris were given preliminary instructions in epidemic duties. The secretary to the district board also worked with the health staff to suppress the disease. The disease was brought under control by June after it had caused 435 deaths.

*(b) Plague.*—Only one death from plague occurred in the district, the case being an imported one from Badshahpur in Jaunpur about four miles from the district boundary. Anti-rat campaigns were started in time in eight villages believed to be endemic foci of the disease.

(c) *Small-pox*.—106 deaths were reported from this disease against 323 in the previous year. A larger number of vaccinations than last year were done, and special attention was directed to the school children. 9,839 children were inspected by the district and assistant medical officers of health alone and the district board passed a resolution appreciating the vaccination work done in the district.

*Sanitation*.—1,449 villages were visited by the health staff for inspecting sanitation and epidemics. In 154 of these improvements were made by the labour gangs. These gangs proved of considerable help in the cholera epidemic when new men were impossible to obtain for work in the infected area.

*Hygiene publicity work*.—206 lectures and 27 lantern demonstrations were given by the district and assistant medical officers of health on the various diseases. Pamphlets were also distributed. Sanitary inspectors also gave lectures in the villages and schools.

*Inspection of schools*.—3,942 scholars in 186 primary schools were medically examined and lectures were given on the value of personal hygiene and the chief diseases. The head teacher was supplied with booklets and illustrated charts.

### (13) BARA BANKI.

*Registration of births and deaths*.—7,762 entries were checked by the health staff, and the percentage of omissions discovered was 10.

*Epidemics*—(a) *Cholera*.—The disease was introduced in the district early in May by a person returning from Calcutta, who developed the symptoms of cholera and died the second day of his return. The epidemic did not assume serious proportions, being confined to Ramsanehighat and causing 184 deaths.

(b) *Plague*.—459 deaths were reported from this disease, three tahsils being affected. 2,771 inoculations were performed and all the infected villages were visited by the district and assistant medical officer of health.

(c) *Small-pox*.—Only 25 deaths were reported from this disease. This is fortunate, as vaccination in the district is defective, there being much opposition to it.

(d) *Malaria*.—The malarial problem in the district is difficult to be tackled. The district is full of innumerable tanks and parts are liable to floods owing to the Gogra and Chauka rivers.

*Sanitation*.—There are in the district one municipality, one notified area, 8 town areas and 21 villages under the United Provinces Village Sanitation Act. All these were visited by the health staff. The sanitation of most of the villages under the Sanitation Act is not satisfactory as the conservancy staff is not well paid. Recommendations were made where necessary. Drainage of the town areas is also defective. With the assistance of the tahsildar of Fatehpur the district medical officer of health effected remarkable improvement in the town area of Ramnagar so much so that the inhabitants of surrounding villages ignorant of the fact that they were not under any sanitary regulations have been cleaning up their manure heaps lest they should be similarly dealt with.

In all 950 villages were inspected and in 10 of them improvements were carried out.

*School inspections.*—3,944 scholars in 68 schools were medically examined by the district and assistant medical officers of health. Eye diseases, ear diseases, skin diseases, etc., were chiefly noticeable. Most of the students were free from enlarged spleen, and the general health was on the whole good.

*Fairs.*—Altogether 10 fairs—large and small—were held in the district, and all of them passed off without the occurrence of any epidemic disease. The sanitary arrangements at all of them were supervised by the district and assistant medical officers of health.

*Hygiene publicity work.*—During school inspections lectures on various diseases were always given to teachers and students. Teachers were asked to question the boys about them during school hours. Sanitary inspectors also gave lectures in the villages they visited.

#### (14) MIRZAPUR.

*Registration of births and deaths.*—6,989 entries were checked by the health staff against 4,417 in 1926. The percentage of omissions found was 5 against 3.9 in 1926.

*Epidemics—(a) Cholera.*—This disease broke out in an epidemic form in the month of March in various villages throughout the whole district. About 25,000 wells were disinfected and 918 inoculations against cholera were performed.

Almost all the infected villages were visited by the district or assistant medical officer of health, and all necessary measures taken. The total number of deaths reported from this disease was 2,435 out of 4,739 seizures.

*(b) Plague.*—This disease broke out in six villages of the Chunar tahsil in January. Preventive measures, in the shape of inoculation, evacuation and rat-destruction by trapping and poisoning, were immediately adopted. Only 37 deaths were returned under this head. Reports were again received from the same circle in September of mortality among rats. Anti-rat campaigns and inoculation were commenced and the spread of the disease was checked.

*(c) Small-pox.*—486 deaths were reported from this disease. In spite of the efforts of the health staff cases continued to occur in the distant parts in the hills throughout the whole year. Deaths were chiefly among those who had declined re-vaccination or were unvaccinated.

*(d) Malaria.*—11,428 deaths were returned under this head in 1927 against 11,496 in 1926. The number of patients treated for this disease in the hospitals was 14,482 against 15,995 in 1926. The health staff distributed quinine and cinchona tablets and gave lectures to the people to educate them as to the cause of the disease.

*Sanitation.*—1,209 villages were in all visited by the health staff in 1927 against 1,118 in 1926. In 124 of these improvements were made, consisting of filling up of insanitary pools and excavations, and the construction of kachcha drains and soakage pits. In many cases villagers themselves constructed these.

Some improvement was noticed in the notified areas this year in the shape of the repairs of roads, paving of lanes, and the construction of public latrines and slaughter houses. Town areas show some improvement as the town magistrates are giving attention to the recommendations of the district medical officer of health.



20 more villages have been brought under the Village Sanitation Act. In consultation with the collector and the district medical officer of health a definite policy and line of action has been adopted.

Rubbish heaps were removed to the neighbouring fields. Some of the villagers, whose fields were far away from the *abadi*, keep their rubbish in pits covered up with enough earth.

*School inspections.*—5,776 scholars in 131 schools were medically examined by the health staff, against 3,080 scholars and 44 schools in 1926. The usual ailments were noticed. In the vernacular schools it was noticed that the scholars were required to study from 7 to 11 p.m., and again from 4 to 8 a.m. in very dim light. They were, again, called and required to study from 10 a.m. to 5 p.m. The students thus had little rest except 5 hours' sleep in the night. Such excessive hours being injurious to health the matter was reported to the inspector of schools.

*Fairs.*—Three fairs, with fairly large attendances, were held in the district during the year. With the assistance of the district magistrate proprietors of fairs, who derived some income from the fairs, were made to provide adequate sanitary staff and appliances. Wells were permanganated in the night, and restrictions were imposed on bathing at ghâts from which water was taken for drinking.

*Hygiene publicity work.*—Lectures, lantern demonstrations, and friendly talks on common epidemic diseases, personal hygiene, and physical culture were given at fairs and all religious gatherings and in schools, etc. Village women and grown-up girls were also collected at various places where they were given lectures on maternity and child welfare. At the conclusion of the lectures they were questioned on the subject-matter and their replies indicated that they were intelligently following the discourse. More attention was paid to educating children and women than men.

#### (15) ALLAHABAD.

*Registration of births and deaths.*—1,235 birth and 952 death entries were checked by the health staff, and the percentage of omissions discovered was 4.05 and 8.2, respectively.

*Epidemics—(a) Cholera.*—As a result of a year's hard labour in lecturing the village chaukidars some improvement has been effected and reports of primary outbreaks are now better received. Cholera was imported into tahsil Handia about the end of April from Jaunpur, in Phulpur tahsil from Partabgarh, and in Karchana and Chail tahsils from Allahabad city. In all 106 villages were subsequently affected. There were 708 seizures and 498 deaths against 43 deaths in 1926. Essential oils mixture was freely distributed and proved a success in about 60 per cent. of the cases.

*(b) Plague.*—This disease prevailed in the district from the beginning of the year and continued up to the middle of August. It again broke out in November and December. 326 deaths were reported from this disease against 819 in 1926. Evacuation was resorted to in all the villages. Inoculation is gradually gaining ground.

*(c) Small-pox.*—573 deaths were reported from this disease in 1927 against 327 in 1926. In some of the schools nearly 50 per cent. of the scholars were found unvaccinated. The high caste Hindus are much opposed to vaccination.

(d) *Malaria*.—13,939 deaths were recorded under this head. Quinine worth Rs. 240 was distributed freely together with cinchona febrifuge tablets supplied by the Government.

*Sanitation*.—3,520 villages were inspected and 400 of these were cleaned, including panchayat villages. The scheme adopted of assigning a set of selected villages to sanitary inspectors and vaccinators (in the off season) last year was carried out steadfastly.

*School inspections*.—3,244 scholars in 71 schools were medically examined. A series of lectures were given to the scholars and teachers on general sanitation, infectious diseases, and personal hygiene.

*Hygiene publicity work*.—While on tour the health staff continuously gave lectures to the villagers. Lectures were also given in fairs. The district medical officer of health and assistant medical officer of health together have given 1,093 lectures with an approximate attendance of 14,358, while the sanitary inspectors gave 2,325 lectures to approximately 29,760 persons.

*Fairs*.—Almost all the fairs in the district were supervised by the health staff. The fair areas were standardized and plots were reserved for different trades, sanitary camps, police, tahsil, and health staff. Wells were permanganated every night. Section 34 of the Police Act was applied, and the tahsildars tried the defaulters on the spot. The fair areas were cleansed a few days before the commencement of the fair and also after the fair was over.

#### (16) MORADABAD.

*Registration of births and deaths*.—7,548 entries were checked by the health staff. The percentage of omissions detected was 5.34.

*Epidemics*. (a) *Cholera*.—Only 76 deaths were reported under this head in the whole district. Out of this 23 occurred in the municipalities and notified areas. One village in the Sambhal tahsil was responsible for 18 deaths. Here, in addition to permanganation of the wells, the tanks were oiled to prevent people drinking their water. Wells of the neighbouring villages were permanganated, and, as the infection still persisted, the rubbish heaps inside the *abadi* were burnt with the help of the police authorities.

(b) *Plague*.—534 deaths were reported from this disease which was prevalent in nearly all the tahsils. An anti-rat campaign was started in the endemic centres, but owing to the prejudices of the people towards killing rats no satisfactory results were achieved.

(c) *Small-pox*.—63 deaths were recorded under this head. Reporting of primary outbreaks of this disease was bad. While a larger number of school children was vaccinated, there are still a considerable section of the population who evade vaccination altogether.

(d) *Malaria*.—29,483 deaths were returned under this head in 1927 against 32,601 in 1926. Quinine and cinchona worth Rs. 658 were distributed free in schools and villages through the members of the district board, school teachers and the public health staff. 1,564 pits were filled up by the sanitary gangs, while about 70 were filled up by the villagers themselves by persuasion. Anti-malarial works are also in progress in two selected villages. The cinchonization scheme was started in four of the most malarious villages.

*Sanitation.*—The two small municipalities of Amroha and Sambhal, 11 town areas, one notified area and 20 villages under the Village Sanitation Act are under the sanitary charge of the district medical officer of health. These were frequently visited and necessary recommendations were made. Little could, however, be done for lack of funds. Drainage and wells are both bad in the notified and town areas.

Out of a total of 2,657 villages in the district 1,414 were visited by the health staff—60 for epidemic purposes only. In 516 of these sanitary improvements were carried out. Nine wells were newly constructed, 23 were repaired, 182 were cleaned and permanganated, and 577 wells in 138 villages were only permanganated. In many villages the people are reported to be willing to contribute some money for new wells if they receive assistance from the Government.

In some places, by persuading the zamindars, barren pieces of land were acquired for storing rubbish heaps. In other places, where no land could be secured, people persisted in collecting rubbish near their houses, and the cleaning done by the gangs had no permanent benefit in such cases.

About 1,129 pits and excavations were filled up by the labour gangs. Soakage pits were made, ruinous buildings were levelled, and drains were dug.

*Fairs.*—The “Ganga Ashnan” fair at Tigri and three other small fairs were held in the district. The sanitary arrangements were supervised by the health staff and no epidemic occurred at any of these fairs.

*School inspections.*—1,872 scholars in 40 schools were medically examined. Medicines were given as far as possible, and the parents of others were advised to seek medical help. Lectures on elementary hygiene and infectious diseases were given to the teachers and the boys, and the knowledge of the boys, when tested, was found fairly satisfactory. Teachers were asked to pay special regard to the personal cleanliness of the boys.

*Hygiene publicity work.*—About 2,432 lectures were delivered by the health staff and 25 by the municipal staff of Amroha. Demonstrations were given in the villages, schools, village bazars, and fairs.

#### (17) BULANSHAHR.

*Registration of births and deaths.*—Registration in the notified and town areas was not satisfactory owing to non-enforcement of the byelaws by these bodies. In the rural areas 37,103 entries were checked by the public health staff, including vaccinators, and the percentage of omissions found was 2.21. The percentage discovered by the district health staff themselves was, however, 5.69. In villages where there are schools the assistance of the school teachers was enlisted in entering up the chowkidars' registers and in verifying them now and then.

*Epidemics. (a) Cholera.*—19 villages were affected, causing 47 deaths, compared to 117 in 1926 and 1,327 in 1925. The disease was imported from Shahdara (Delhi) through a marriage party. The largest number of deaths occurred in a village called Sihi due to late receipt of information regarding the outbreak of the disease. All the infected places were visited by the district medical officer of health or his assistant. Wells were permanganated, those on the pilgrim route being specially looked after. Essential oils mixture was freely used. Only 50 inoculations could be performed as the people are generally opposed to inoculation.

(b) *Plague*.—110 deaths were reported from 13 villages and towns from this disease against 2,473 in 1926. The usual methods were adopted. People do not readily come forward for inoculation.

(c) *Small-pox*.—62 persons died of small-pox during the year against 780 in last year. In the schools it was generally found that there were always some children who have not had their primary vaccination. A list of such was obtained and sent to vaccinators for action.

(d) *Malaria*.—22,743 deaths were returned under this head against 32,312 in 1926. The highest number of deaths was recorded in the month of January, 1927, which clearly shows that many deaths from pneumonia and respiratory diseases were included under this head. 14,486 patients were treated for this disease in the various hospitals and dispensaries in the district. A set of byelaws for filling up the existing pits and hollows were drawn up and submitted to the district board. 211 pits and hollows were filled up by labour gangs during the year. In some places paris-green was used, while the edges of the bigger tanks were treated with kerosine oil. A number of tanks were surveyed and the varieties of fish found in them identified. The district board has been advised to stock the permanent collections of water with larvæ-eating fish.

*Ankylostomiasis*.—Some cases of anæmia were seen almost in every village.

*Sanitation*.—There are two notified areas, 14 town areas, and 20 villages under the Village Sanitation Act in the district. Almost all of these were visited by the health staff and necessary recommendations made for their improvement.

More than 800 villages were visited by the health staff during the year. Byelaws relating to rubbish heaps passed last year had a good effect. In the beginning some persons were prosecuted, but later on the villagers began to remove the heaps to a suitable distance on being ordered to do so by the sanitary inspectors. 117 villages have been treated in this way. Several panchayats have now employed sweepers, and the condition of the villages was found markedly improved. A sum of about Rs. 1,000 has been promised by the villagers for sanitary improvement of their villages.

*School inspections*.—1,911 scholars in 158 schools were medically examined by the health staff. Enlargement of the spleen was the chief ailment noticed. Diseases of the ear and teeth were also fairly common. A teeth-cleaning drill was started once a week, and the teachers were asked to pay more attention to the physical training of scholars. Several teachers were supplied with cinchona pills for distribution to scholars in case of need.

*Hygiene publicity work*.—Lectures and demonstrations were given in the fairs, at the bazaars, and in schools and village chaupals. Pamphlets were distributed at the fairs and schools.

*Fairs*.—All the important fairs were supervised by the district medical officer of health or his assistant. All the wells along the roads used by pilgrims to the Hardwar *Kumbh* fair were regularly permanganated and suitable arrangements were made for the sanitation of local fairs.

*Maternity and child welfare*.—The indigenous dais were collected at several places and necessary instruction was given to them. A scheme is under the consideration of the district board for starting 8 child welfare

centres in the various parts of the district. A private donor has offered a recurring subscription of Rs. 600 per annum and the free gift of a suitable building.

### (18) LUCKNOW.

The service was introduced in this district on July 1, 1927.

*Registration of births and deaths.*—2,164 entries were checked by the health staff, and the percentage of omissions found was 60.

*Epidemics—(a) Cholera.*—50 deaths were reported from this disease, of which 20 were from the Lucknow city circle alone and 16 from the Mohanlalganj circle. Immediate steps were taken with successful results.

*(b) Plague.*—115 cases were reported out of which 92 were from Mohanlalganj and Mau which are the endemic foci. Special attention was paid to these centres and the anti-rat campaign was continued.

*(c) Small-pox.*—205 deaths were reported from this disease. The disease is often confused with measles and is not reported. Many people are still opposed to vaccination.

*(d) Malaria.*—8,386 deaths were recorded. Cinchona and quinine were distributed.

*(e) Other diseases.*—Leprosy is not separately reported, but is quite prevalent in the rural areas. It is almost impossible to persuade people to get into a leper asylum. Instructions were, however, given in each case which came to notice.

*Phthisis.*—962 deaths were reported from this disease, of which 943 were from Lucknow city alone.

*Sanitation.*—There are four town areas and ten villages under the Village Sanitation Act. These were visited by the health staff and necessary recommendations were made.

546 villages were also inspected by the staff and places for the storing of manure were fixed in many cases. Fifty-three villages were cleaned and hundreds of soakage pits were constructed. Labour gangs did useful work in removing ghuras, filling depressions, cleaning old drains, and carrying on anti-rat campaign.

*School inspections.*—1,616 students in 151 schools were medically examined by the health staff. Sanitary defects were brought to the notice of the educational authorities and the ailments noticed in the scholars were explained to them as well as to the teachers and recommendations made. Of the 1,267 scholars examined for vaccination 410 had small-pox, 520 had been successfully vaccinated, and 337 were unprotected. In some cases the teachers did not co-operate with the health staff and the matter had to be brought to the notice of the authorities.

*Hygiene propaganda.*—Lectures on health subjects were given to approximately 42,867 persons. Lectures were also delivered to school boys and teachers during the inspection of schools. The district board held two exhibitions—one at Goshainganj and the other at Kakori. At each of these a special health court was erected, where models, etc., were exhibited. Nearly 31,000 people passed through these courts during the seven days, including school children and teachers. At Goshainganj one day was reserved specially for ladies and a lady doctor was in charge of the show.

## (19) UNAO.

The service was introduced in this district on July 1, 1927.

*Registration of births and deaths.*—1,683 entries were checked by the health staff and the percentage of omissions discovered was as high as 15.1.

*Epidemics. (a) Cholera.*—Only 17 deaths were reported from cholera in 1927 against 62 in 1926. The disease was at its height in June and subsided rapidly in July.

*(b) Plague.*—231 deaths were reported from this disease against 1,484 in 1926. July and August were entirely free from the disease which re-appeared in September and caused 42 deaths till the end of the year.

*(c) Small-pox.*—84 deaths were reported from this disease against 126 in 1926. 19.5 per cent. of the children in upper primary schools were found unvaccinated, while a large percentage had small-pox marks.

*(d) Malaria.*—11,305 deaths were returned under this head against 8,842 in 1926. Experiments are in progress to reduce the incidence of malaria by steepening the edges of tanks, etc. In one tahsil the labour gangs filled up some hollows and pits.

*Sanitation.*—There are five town areas and 26 villages under the Village Sanitation Act. All these were visited by the health staff. Panchayats were also given advice for the improvement of the sanitation of their villages, asked to keep their villages clean, and have the wells repaired.

281 villages were visited by the health staff. Improvements were carried out in a large number of villages. People were persuaded to remove some of the common defects themselves, while the labour gangs in two tahsils constructed 201 soakage pits and cleaned 60 villages.

*School inspections.*—2,061 students in 43 schools were medically examined. Reports regarding surface cleanliness, ventilation, lighting, water-supply, etc., were forwarded to the chairman of the district board. The usual diseases were found prevalent among the boys and medicines and advice were given, wherever necessary. 19.3 per cent. of the boys were found unvaccinated. Their names were taken down and forwarded to the vaccinator of the circle with instructions to vaccinate them.

*Hygiene publicity work.*—Lectures and demonstrations were given by the health staff at the schools, villages and fairs visited by them. Posters were hung up in prominent places, and the chairman of the district board was asked to introduce hygiene booklets in the upper primary and middle schools.

## (20) RAE BARELI.

The health service was extended to this district on July 1, 1927.

*Registration of births and deaths.*—447 entries were checked by the health staff, and the percentage of omissions found was .7.

*Epidemics. (a) Cholera.*—427 deaths were reported from this disease. About 60 per cent. of the deaths occurred in the month of June, just before the appointment of the health staff. There was considerable difficulty in obtaining information of the primary cases, and the district medical officer of health, therefore, arranged to obtain information through

school masters, mukhias and other influential and reliable persons to whom he explained the importance of the step.

(b) *Plague*.—259 deaths were reported from this disease, giving a rate of .28 per 1,000 against .45 in 1926. The largest number of cases was returned from the Dalmau tahsil. 1,201 inoculations were performed and other measures, including anti-rat campaign, were adopted. Experiments were carried on with hydro-cyanic acid gas as a rodenticide.

(c) *Small-pox*.—Only 28 deaths occurred in 1927 against 334 in 1926. Most of the cases had occurred in June, before the inception of the health service. Measures adopted by the district medical officer of health had good results and the further progress of the disease was stopped.

(d) *Malaria*.—9,646 deaths were returned under this head against 9,230 in 1926. All necessary anti-malarial measures were adopted.

*Sanitation*.—From the middle of August, the district medical officer of health was placed in charge of the sanitation of the Rae Bareilly municipality. The municipality was inspected and recommendations made to the board who took no satisfactory action. The district medical officer of health therefore confined his attention in the municipal areas to the detection of adulteration. The sanitation of Dalmau town area, which was inspected frequently, has improved markedly. The district magistrate, to whom suggestions were submitted, did whatever he could to carry them out.

There are seven villages under the Village Sanitation Act. One of these has a population of 12½ thousand, and on the recommendation of the district medical officer of health action is being taken to convert it into a town area. The rest of the villages show marked improvement.

1,000 villages were also visited by the health staff in 316, of which improvement was effected on their advice. The panchayat officer was asked to induce the panches to keep the villages under their jurisdiction clean.

*School inspections*.—2,316 students in 42 schools were medically examined. A list was prepared of all the students who were not protected against small-pox and instructions were issued to the vaccinators to vaccinate them. Trachoma and pyorrhoea were very common. Boils and skin diseases were also fairly prevalent.

*Fairs*.—The Kartiki-Puranmashi fair was held at Dalmau and was attended by a lakh of pilgrims. Adequate sanitary arrangements were made by the health staff and were appreciated by the public.

*Hygiene publicity work*.—The school children and teachers were requested to devote some time every day to short lectures on ordinary sanitary topics. Illustrated pamphlets were supplied to most of the schools and posters were put up in the chaupals of the villages.

*Maternity and child welfare*.—The district board have resolved to establish centres for the training of indigenous dais.

#### (21) SITAPUR.

The health service was extended to this district on July 1, 1927.

*Registration of births and deaths*.—436 entries were checked by the health staff and the percentage of omissions found was 5.6. Vaccinators

checked 13,510 entries in which 59 omissions were reported. This is apparently much below the actual.

*Epidemics, (a) Cholera.*—35 deaths were reported under this head. Necessary measures were adopted. There was at first some laxity on the part of the chaukidars in reporting primary outbreaks, but on the matter being brought to the notice of the deputy commissioner action was taken by him and resulted in prompt reporting subsequently.

*(b) Plague.*—The district has been more or less an endemic area for plague for some years past. 324 deaths were reported from this disease in 1927.

Nimsar, Nabinagar, Behat, Machretta, Laharpur, and a few villages round about these places are the chief endemic centres. With the assistance of the court of wards and the district officials 1,047 inoculations were performed.

*(c) Small-pox.*—83 deaths were reported from this disease. Opposition to vaccination is met from Thakurs and Brahmans. Large number of boys in primary schools were found unvaccinated, and were vaccinated in the presence of the district medical officer of health or his assistant.

*(d) Malaria.*—The innumerable lakes, defective drainage, and swamps render this district specially malarious. As many as 18,606 deaths were returned from malaria. The stock of quinine with the district board, which was formerly sold by them through mukhias, was transferred to the health staff and was used for free distribution.

*Sanitation.*—There are four towns and eight villages under the Village Sanitation Act. All these were inspected by the health staff except two. The conservancy staff of the town areas is sufficient, and the sanitary condition of the villages under the operation of the Sanitation Act is also better than other villages. Tube wells have been sunk at Mahmudabad and Biswan.

436 villages were inspected by the health staff in the six months they worked in 1927. Ghuras were removed, soakage pits were constructed, kachcha jagats of wells were built, and pits and depressions were filled up, through the agency of the labour gangs.

*Inspection of schools.*—3,075 scholars in 45 schools were medically examined by the health staff. Most of them were found to have suffered from malaria. A fairly large percentage of the scholars was found unvaccinated.

*Fairs.*—A fairly large number of fairs is held in the district. All these were supervised by the health staff.

*Hygiene publicity work.*—The usual publicity methods were followed. During school inspections students were asked simple questions on hygiene and infectious diseases and short lectures with the help of posters were given to them by the health staff. The teachers have been supplied with books on village sanitation from which they have been asked to put questions to the boys.

## (22) HARDOL.

The service was extended to this district on July 1, 1927.

*Registration of births and deaths.*—The total number of entries checked by the health staff was 3,139, and the percentage of omissions found was 4.1.



*Epidemics.* (a) *Cholera.*—75 deaths were reported from this disease, of which 34 occurred after the health staff had taken over charge. There was delay in receiving information of the first few cases, and the chaukidars at fault were severely punished by the district magistrate. All necessary precautions were taken.

(b) *Plague.*—423 deaths were reported under this head of which 100 occurred after the health staff had taken charge. The old focus at Shahabad seems to be responsible for the outbreak. Evacuation was resorted to by a minority, and that, too, in an inadequate manner. An anti-rat campaign by cyanogas was also tried. Only 322 inoculations could be performed.

(c) *Small-pox.*—The disease did not assume an epidemic form, and only 10 deaths occurred during the period the service was in existence.

(d) *Malaria.*—17,778 deaths were reported from this disease in 1927. This district abounds in numerous ponds and jhils (several of them fairly large) and the question of anti-malarial work is a very difficult one. A number of the larger collections of water will, however, be drained by the branches of the Sarda canal. The edges of ponds are being trimmed and weeds, etc., cleared out of them at regular intervals. Small excavations were filled up by the sanitary gangs.

*Sanitation.*—There are three municipalities, four notified areas, and three town areas and nine villages under the Village Sanitation Act in the Hardoi district. All these were inspected by the health staff and necessary recommendations were made for improvement.

1,021 villages were visited by the health staff, and in 53 of them improvements were made on their advice. The difficulty of obtaining suitable land for storing manure heaps was present in this district also. An attempt was made to put the important villages within a radius of five miles of the tahsils in a sanitary condition. In a number of villages kachcha drains were dug, while 150 wells altogether were cleaned. The assistance of the panchayat officers was enlisted in persuading the panchayats to improve their villages. In addition to the sanitary gangs which were part of the health staff the zamindars in some cases were asked to provide men to help the gangs in their work.

*School inspections.*—2,368 scholars in 76 schools were medically examined. The usual complaints were found. Medicines and advice were given to those suffering from any disease. Teachers were given lectures by the health staff and they gave regular lectures to the scholars.

*Hygiene publicity work.*—Sanitary inspectors carried on regular propaganda in the villages they visited and tried to persuade people to remove the ordinary nuisances in their presence. During epidemics lectures were given on the prevention of disease and demonstrations and lectures were given at the fairs.

*Fairs.*—Sanitary arrangements, which were probably made for the first time in the history of the fairs, were supervised by the health staff.

*Maternity and child welfare.*—A maternity and child welfare centre was established, where 25 indigenous gais were trained.

## (23) KHERI.

The service was extended to this district on July 1, 1927.

The physical features of this district, its geographical position, with innumerable streams and marshes and the prolonged rainfall rendered extremely difficult the preliminary task of the new health staff whose appointment was made at the commencement of the heavy rains. It was only about the month of November that regular touring could be organised and the amount of work herein shown represents more or less two months' work only.

*Registration of births and deaths.*—970 entries were checked by the health staff and the percentage of omissions found was 6.9. It was found by a systematic comparison of the thana registers with the chaukidars' books that it was a common practice for entries to be made in the thana registers 6 to 12 months after. For instance, 19 deaths which occurred between May and December, 1926, in a certain village were only registered in July, 1927.

*Epidemics.*—Great delay was observed in receiving information of outbreaks of epidemics. The matter was brought to the notice of the district magistrate and the action taken by him and the superintendent of police, along with lectures given by the health staff, created a distinct improvement in the promptness of reporting.

(a) *Cholera.*—232 deaths were reported from this cause. The origin of the disease could not be determined definitely. Small localised outbreaks of the disease had made their appearance by July and the health staff had to wade through the water in some cases to reach the affected village, 849 wells were permanganated. There was opposition to this and people persisted in drinking water from rivers and kachcha tanks in preference to the red water and in one case a villager had to be prosecuted under sections 100 and 107 of the District Boards Act for refusing permanganation.

(b) *Plague.*—316 deaths were reported under this head. The first case was reported in August but on enquiry it was found that rats had been dying in that village off and on since almost the beginning of the year. During the rains it was very difficult to induce people to evacuate into temporary huts and there was also opposition to inoculation. As a result of persistent propaganda as well as the increase of plague a little change in the attitude of the people is perceptible and larger numbers are coming forward for inoculation. The anti-rat campaign was not very successful. Barium carbonate was used with success in some places.

(c) *Small-pox.*—There were 50 deaths from this disease against 221 in 1926. A great effort is being made with the help of the district officials and court of wards authorities to overcome the opposition of the people to vaccination and in some cases the health staff went from door to door with the vaccinator and got children vaccinated.

(d) *Malaria.*—16,695 deaths were returned under this head against 20,444 in 1926. Certain areas along the edge of the forests suffer from this disease. Quinine and cinchona tablets were distributed and jungles in the abadi were cleared. Smaller collections of water were drained.

*Sanitation.*—849 wells were permanganated in the epidemic area. Labour gangs themselves removed 507 manure heaps but by persuasion

practically every rubbish heap in the district has been removed to a suitable distance except in the case of those who for very special reasons have been given an extension of time for removal. Arrangements are in progress to fix suitable permanent sites for storing the heaps outside the abadi in each village. 253 soakage pits were made by the gangs and about 100 by the people themselves. 110 pits were filled by the gangs and about 190 by the villagers themselves.

*School inspections.*—2,332 scholars in 61 schools were medically examined. Advice as to treatment was given in some cases but as a rule examination and advice did not bring the students any nearer to actual treatment or cure.

*Fairs.*—The sanitary arrangements at the Gola fair were supervised by the district health staff.

*Hygiene publicity work.*—No opportunity was lost of hammering away at ignorance and prejudice. Lectures were given to single individuals as well as to hundreds. Altogether, 425 oral lectures and 20 lantern lectures were given from July to December to approximately 17,850 people. Nearly all the chaukidars have now received lantern lectures on epidemic diseases and a course of lectures is proposed to be given to school teachers, patwaris and mukhias.

#### (24) FATEHPUR.

The health service was extended to this district on July 1, 1927.

*Registration of births and deaths.*—This was very defective. The number of birth and death entries checked was 7,062 and the number of omissions detected 1,078 giving a percentage of 15.3.

*Epidemics—(a) cholera.*—Only 3 deaths were reported from this disease. With early information from patwaris prompt measures were taken and the outbreak was under control. Anti-cholera measures were also adopted in the district in connexion with the Magh mela at Allahabad.

*(b) Plague.*—The disease was reported from one police station, causing 33 deaths. About one-fifth of the male population was inoculated but despite the offer of the services of a lady doctor very few inoculations were performed amongst the females. A fair number of children was also inoculated.

*(c) Small-pox.*—25 deaths were reported from this disease. Vaccination was performed amongst the contacts, and the unprotected children. A large number of school children was found with small-pox marks. These must have escaped vaccination.

*(d) Malaria.*—6,242 deaths were returned under this head. Quinine and cinchona were distributed and propaganda work done by demonstrations and lectures.

*Sanitation.*—The sanitation of the Bindki notified area needs much improvement. Recommendations have been made to the district magistrate who is taking necessary action. Three meetings of the notified area committee were attended by the district medical officer of health.

697 visits were paid to 289 villages. At the lowest estimate some 20,000 rubbish heaps were removed outside the habitation. While difficulty was experienced in obtaining suitable land for the purpose, things appear to be adjusting themselves now. It is not possible in every case

to remove the heaps to a distance of 200 yards. Some 400 piggeries were removed to a suitable distance. The difficulty in this lies in the fear of the theft of the animals in the night. Over 2,000 cesspools which used to overflow on the road were put right. "Hawdas" were put in certain places. In a few places soakage pits were also constructed. A large number of wells in the district require repairs. About 700 wells have been surveyed by the health staff and 2,035 by the vaccinators; 358 wells were permanganated and the measure appears to be welcomed by the villagers.

*Hygiene publicity work.*—660 lectures, including 27 magic lantern demonstrations, were given to an audience approximately 51,000. Of these 525 were patwaris, 690 chaukidars, 1,000 females, and 11,000 school students. Help of the local press was enlisted in propaganda work.

*School inspections.*—Scholars were, on the whole, clean. Out of 1,774 scholars examined 263 were found unprotected against small-pox. The schoolmasters rendered all possible assistance in the inspections.

*Fairs.*—These were attended by the public health staff and the necessary sanitary arrangements made.

*Maternity and child welfare.*—A maternity and child welfare scheme has been approved by the district board for Kishanpur town area and will be put in operation as soon as a trained midwife is available.

#### (25) MUTTRA.

The health service was extended to this district on July 1, 1927.

*Registration of births and deaths.*—18,739 entries were checked, and the percentage of omissions detected was 3.32.

*Epidemics. (a) Cholera.*—Cholera was present in Brindaban and Mahaban from January, 1927, and was imported into the villages in April. 144 deaths were reported from January to June and 11 deaths from July to December. The district abounds in pilgrim centres which are visited every year by pilgrims from all over India specially from Bengal and Gujrat. The disease is imported into the district by these pilgrims.

Reporting of epidemics was not good. The health staff visited the places infected promptly and took necessary measures.

*(b) Plague.*—44 deaths were reported from this cause, of which 23 occurred in the month of March prior to the appointment of the health staff. 254 inoculations were performed. Experiments for destroying rats with cyano gas are in progress in the Chhatta tahsil.

*(c) Small-pox.*—65 deaths were reported from this disease, of which 51 occurred up to June. There were numerous evasions from vaccination in the rural areas. 33.3 per cent. of the scholars in the primary schools had small-pox marks and 18 per cent. had no marks at all. Only 48.4 per cent. of the students inspected were found with vaccination marks. All the unprotected children were vaccinated in the presence of the district and assistant medical officers of health.

*(d) Malaria.*—8,131 deaths were reported from this disease during the year. Certain parts of the district are very malarious owing to water-logging and obstructions to natural line of drainage. A scheme

for the construction of a "ganda nala" is under consideration. Quinine and cinchona were distributed in the effected parts and a number of depressions and pools are being filled up in some of the towns. Some of the larger collections are proposed to be stocked with larvæ-eating fish.

*Sanitation.*—The district medical officer of health is in charge of the sanitation of the Brindaban municipality and the Kosi notified area. These were frequently inspected and necessary recommendations made to the authorities. There are 12 town areas in the district. These were also inspected. Most of them are places of pilgrimage and are, therefore, of considerable importance from the health point of view. They are, however, financially badly off, and there generally are no funds for sanitary improvements. They, therefore, rely on Government grants for the betterment of their sanitation. Byelaws have been framed for these areas and are awaiting sanction.

There are three villages under the Village Sanitation Act and 21 under the Panchayats Act. As a result of the propaganda led by the district medical officer of health applications were received from the people of many other villages for the enforcement of the Village Sanitation Act in them. The district magistrate, and under his orders the sub-divisional officers, are dealing with these proposals, as also the application of the Panchayats Act and many more villages will shortly be added to those already under the operation of the Act.

Efforts are being made, with the assistance of the labour gangs, to make definite improvements in some of the villages under the Sanitation Act and to bring them up to the model type. *One model village, for which funds are available, will shortly be built near Muttra on the other side of the Jumna.* The health staff have been persuading the zamindars to make model villages named after their names, but nothing has so far been done in this direction.

284 villages were visited by the health staff. Manure heaps were removed by the people on persuasion and the villages were cleaned out. Sites have been selected for the storage of heaps. The co-operation of the villagers was enlisted by distributing medicines by explaining to them the elementary principles of hygiene and by sympathising with them in their sufferings. All the medicines and equipment were supplied by the district board.

*School inspections.*—3,807 scholars in 95 schools were medically examined by the health staff. Bad teeth, granular eyes, and skin diseases were commonly prevalent. Medicines and advice were given wherever necessary and the teachers were asked to see that the advice was followed.

*Fairs.*—In addition to the two Banjatras 24 fairs were held in the district during the year, of which 19 were held after the health staff had been appointed. Adequate sanitary arrangements were made by the health staff.

During the two "Banjatras" disinfection of the wells along the route and cleaning of sites were undertaken before the parties started. One medical officer and the sanitary inspectors of the circle were deputed with the *jatris* to look after the medical as well as the sanitary arrangements.

The district and assistant medical officers of health also went along the route and halting places supervising the arrangements at the halting places.

*Hygiene publicity work.*—58 lectures and health talks were delivered to approximately 4,730 persons and 28 magic lantern demonstrations were given to about 15,700 people by the district and assistant medical officers of health alone. Sanitary inspectors and medical officers in charge of travelling dispensaries gave 256 lectures to about 23,040 people. Villagers were not only given lectures and demonstrations, but were actually shown mosquito larvæ and maggots of flies and the way they grew. Lectures were also delivered at the fairs to village chaukidars and to members of the co-operative societies.

#### (26) MUZAFFARNAGAR.

The service was extended to this district on July 1, 1927.

*Registration of births and deaths.*—5,144 entries were checked by the health staff and the percentage of omissions found was 5.32.

*Epidemics.*—(a) *Cholera.*—16 deaths were reported from this disease against 4 in 1926. 398 inoculations were done by the health staff.

(b) *Plague.*—787 deaths were reported during the year against 3,191 in 1926. Of these 634 occurred from January to June and 153 from July to December. During the latter half of the year the first outbreak was reported from Khatauli. All the inhabitants of the infected area were inoculated. As there were no deaths among the inoculated in Pindora, inoculation became so popular that 850 out of a total of 2,500 got themselves inoculated. Evacuation is not popular in this district.

(c) *Small-pox.*—29 deaths were reported from this disease against 174 in 1926. First reports were received in the month of July and prompt action rapidly controlled the disease.

(d) *Malaria.*—16,031 deaths were reported from malaria during the year. The total number of patients treated for malaria in the various fixed dispensaries of the district in 1927 was 13,130 against 17,420 in 1926. The high incidence of the disease is due to the waterlogged condition of the district. Pits and depressions were filled up in 9 villages and cesspits were made in streets found retaining waste water. Cinchona and quinine were distributed.

*Sanitation.*—The district medical officer of health was placed in charge of the sanitation of the Muzaffarnagar and Kairana municipalities. The sanitation of the latter was, on the whole, fairly satisfactory, while that of the former was not so. Recommendations of the district medical officer of health were not given much consideration, and things are, therefore, nearly as they were before.

There are 11 town areas in the district, all of which were inspected by the district medical officer of health, and detailed inspection notes submitted to the proper authorities.

There are 26 villages on the list of those under the operation of the Village Sanitation Act, but each village has two or three villages attached to it, so that there are altogether about eighty villages with a population of 181,202 under the operation of the Act. There are sweepers employed in some of the villages to clean the streets and drains. There are 503

villages with a population of 416,203 under the operation of the Village Panchayats Act.

238 villages not under the operation of any Act were visited by the health staff. Refuse heaps were removed by the villagers at the direction of the health staff. Some of the villages were cleaned by beldars.

*School inspections.*—3,122 scholars in 77 schools were medically examined by the health staff. 33 per cent. of the scholars had enlarged spleens. 40 per cent. were anæmic, while 8 per cent. were unprotected against small-pox. Other diseases were also noticed.

*Inspection of factories.*—Flour mills at Khatauli, Miranpur, Shamli, and thana Bhawan were inspected.

*Hygiene publicity work.*—Lectures were given in fairs, schools and villages. Homely talks were given by the sanitary inspectors at the chaupals of the villages.

*Fairs.*—There are 42 fairs held in the district, in 11 of which the attendance averages three to five thousand. Only two of these were supervised by the health staff, but it was admitted that this supervision carried a remarkable advance over any previous ones.

81. An attempt was made to get the total income of the various district boards in 1927 as well as of the expenditure incurred therefrom on vaccination, other public health establishment, anti-epidemic measures, and on the improvement of wells, drainage, village sites, etc., and also the expenditure incurred on these heads from the grants made by Government and the Board of Public Health or from other sources (private subscriptions, etc.), but in spite of the fact that the boards were first addressed on December 15, 1927, and many reminders sent a few districts have vouchsafed no reply. In the other districts the returns of expenditure are in many cases obviously incorrect. It would appear that some district boards seem to be unable to keep a record of the grants received from Government and the purposes they were granted for as they have debited expenditure to heads of grants which were either not made at all or given for other purposes altogether. The net result is that the amounts spent on public health by district boards, except on the vaccination establishment which they are bound to maintain, are infinitesimal in comparison to their income.

82. During the year under report a medical officer of health was appointed in the Mirzapur municipality and one was appointed in Hapur in January, 1928. The municipal boards of Gorakhpur and Bahraich have decided to appoint medical officers of health in their municipalities and officers will be posted there shortly. The municipal board of Budaun, who had abolished the post of their medical officer of health, re-appointed one in March, 1928.

Out of the 31 municipalities where, according to the sanctioned scale, there should be a medical officer of health, four, viz. Ghazipur, Jaunpur, Pilibhit and Sitapur, are still vacant. These boards plead their inability to appoint these officers on financial grounds, but as the Government now meet the full cost on account of salaries of medical officers of health this plea is untenable. It is hoped that they will shortly follow the example of other boards.

Since the service has been provincialized the sections of the Municipal Act governing the appointment of medical officers of health require amendment as it is anomalous that a municipal board, which is not a "city" board, can refuse to appoint a medical officer of health when a provincial cadre is now maintained for the purpose.

The district medical officers of health have during the year under report been appointed health officers and superintendents of vaccination in the municipalities of Ballia, Rae Bareli, Sultanpur, Hardoi, Shahabad, Sandila, Lakhimpur, Muzaffarnagar, Kairana, Brindaban, Unao and Fatehpur. In Bulandshahr the district medical officer of health supervises vaccination work only. This is against the orders of Government as the district medical officers of health have taken over all the public health duties of the Civil Surgeon who was previously the sanitary adviser of the boards not having a whole-time medical officer of health.

85. An important measure of reform which was carried out during the year 1927 was the re-organization of the Public Health Service in the Province. A quasi-provincial service of municipal medical officers of health was formed by the Government in the year, 1914, and in view of the dual system of control brought about by the rules of procedure and conditions of appointment then laid down, considerable difficulties were experienced in the posting or transfer of these officers. There was little security of tenure in the case of these officers. The service of district medical officers of health was initiated in 1922, and has been expanding since then. No definite conditions of service had been laid down for this class of appointment. Owing to the large measure of local control exercised over the district and municipal medical officers of health it was not possible always to post men to appointments for which they were particularly suited. There were also a few appointments paid by the Government which were outside the regular service of municipal medical officers of health. After considering the various points of view and the opinion of the local bodies the local Government sanctioned, with the vote of the Council, the unification and provincialization of the public health service, with effect from July 1, 1927, and its formation into two distinct classes—class I carrying a salary of Rs. 350—50/2—800 and class II carrying a salary of Rs. 200—20/2—400 per mensem. Those possessing a British or Indian Diploma in Public Health are eligible for class I and those possessing an Indian licence in Public Health are eligible for class II. The restriction as to the possession of a British diploma in public health for appointments to I class municipalities in these Provinces was thus dispensed with, members of the new class I being eligible for appointments to such posts.

The equated contribution which the municipal boards were formerly required to pay towards the pay of their medical officers of health was waived by the Government. On the other hand Government discontinued the contributions which they used to pay to these boards for their sanitary inspectors. Care was, however, taken in carrying out this re-organization that no municipality was put to any financial loss.

84. Mr. P. S. MacMahon, M.Sc., held charge of the office of the Public Analyst to Government, United Provinces, from January 1 to April 28, 1927, and again from September 4, 1927, to the end of the year. During his absence on University vacation and extraordinary leave from April 29 to September 3 his assistant, Dr. B. M. Gupta, M.Sc., Ph.D.,



acted as Public Analyst. During the period when Dr. B. M. Gupta officiated for the Public Analyst, Mr. S. C. Roy, M.Sc., was appointed as Assistant Public Analyst.

During the year under report the provisions of the Prevention of Adulteration Act were extended in respect of different common articles of food to the municipalities of Bela (Partabgarh), Jhansi, Kasganj, Dhampur, Sultanpur, Etawah, Fatehpur, Balrampur, Jaunpur, Ujhani and Bahraich, the notified area of Rikhikesh (Dehra Dun) and town areas Laharpur, Biswan, Nimsar and Misrikh in the Sitapur district. The provisions of the Act were also extended in respect of ghee only to the notified areas, town areas and several villages of the Moradabad district. Besides these, the provisions of the Act were further extended to the rural areas of Lachman Jhula and Sat Narain for the period of the *Kumbh* Mela at Hardwar in 1927 in respect of ghee, edible oils, ata, sweetmeats and puris, and to Hardwar municipality in respect of sweetmeats and puris also in addition to the articles notified in G. O. no. 288/XVI—73, dated December 11, 1916.

The total number of samples received for analysis during the year under report was 1,611 against 968 in the preceding year. The large increase in the number of samples was due to the fact that the Local Government issued orders emphasising the necessity of exercising the utmost vigilance in the detection and prosecution of offences involving the adulteration of ghee and also extending the provisions of the Act to more municipalities and rural areas. The 1,611 samples received consisted of 310 samples of milk, 10 of butter, 1,186 of ghee, 36 of edible oils, 60 of flours, 2 of tea and 7 miscellaneous (3 of sweetmeat, 2 of sugar and one each of cocogem and salt). Out of the above 65 samples (40 of milk, 23 of ghee and 2 of oils) could not be analysed as they were received either in a damaged condition or were found unfit for analysis.

68 samples are still under analysis, as they require detailed examination for which the necessary apparatus has not yet been received from abroad.

A very large number of samples was received in the latter months of the year under review, with which the existing staff and laboratory equipment was unable to cope. Steps were taken in November to meet the situation, and at the end of February, 1928, Government sanctioned the appointment of two additional assistants, who are now under training. In addition, extra apparatus was ordered by cable from England but it has not been received.

It is hoped that these measures will prevent a recurrence of the present congestion.

128 samples of milk, 6 of butter, 335 of ghee, 33 of flour, 2 of tea and one of cocogem were certified as adulterated and the remaining 973 samples were declared genuine.

463 persons were prosecuted under the Act of whom 329 were fined and 14 discharged. The cases against 35 were withdrawn, and those of 85 persons are still pending before the court.

The total amount of fines realized was Rs. 8,339 against Rs. 4,696 realized last year.

The Public Analyst is of opinion "that the fines imposed are still absurdly light and in many ghee offences they may be regarded as an

incentive rather than a deterrent. The evils of adulteration can be checked by the courts, which should impose fines heavy enough to render the business unprofitable." With this view I entirely agree.

The adulteration of ghee having increased in these provinces to such an extent as to make it difficult in many places for a purchaser to obtain pure ghee municipal medical officers of health or the civil surgeons, where the former do not exist, were ordered—

- (1) to exercise the utmost vigilance in the detection and prosecution of offences involving the adulteration of ghee ;
- (2) to submit quarterly statements showing the number of cases prosecuted and their results ; and
- (3) to report to Government all cases in which they considered that the punishment awarded was insufficient. Similar orders were also issued by Government to chairmen, municipal boards. Quarterly statements showing the number of cases prosecuted for the adulteration of ghee and their results were accordingly sent to Government.

Government also circulated to all chairmen, municipal and district boards, a note on the vegetable ghee showing what these substitutes were, how far they differed from ghee and what was the problem of dealing with them.

No samples were received from the following places:—

1. Ballia.	11. Sitapur.
2. Baraut.	12. Kasganj.
3. Bijnor.	13. Dhampur.
4. Firozabad.	14. Lachman Jhula and Sat Narain.
5. Hardoi.	15. Balrampur.
6. Kanauj.	16. Rural areas of the Moradabad district.
7. Karwi.	17. Ujhani.
8. Khairabad.	18. Rural areas of the Sitapur district.
9. Sambhal.	19. Bahraich.
10. Shahabad.	

Necessary action is being taken in the matter.

The total number of samples (1,611 mentioned above) included 4 samples (2 of tea and 2 of ghee) received from the District Magistrate, Cawnpore. Both the samples of tea were certified as adulterated while ghee samples were certified genuine. One person was prosecuted in the case of tea samples, but he was acquitted by the court.

A sum of Rs. 10 was deposited into the Government treasury at Cawnpore as fee for examining tea samples.

During the year under report two samples of ghee received from the Allahabad municipal board were analysed by the Chemical Examiner to Government, United Provinces, Agra, which were certified as adulterated. No prosecutions were made in that connexion.

With the further extension of the provisions of the Adulteration Act the work of the Public Analyst is getting so heavy that Government will very shortly have to consider the expansion of the organization for adequately dealing with the situation. Proposals will be submitted to Government for this purpose in due course.

85. As stated in last year's report all the district and municipal medical officers of health were instructed to intimate to me instances of delay in the disposal of cases instituted under the Public Health Acts and of inadequate punishment awarded by honorary magistrates, to enable me to bring the fact to the notice of the district magistrates concerned. Reports were received accordingly and cases of delay and light punishment were reported to the district magistrates concerned and to Government. From the reports received it appears that many magistrates still inflict inadequate fines.

86. The following note on the maternity and child welfare work done through the Lady Chelmsford Maternity and Red Cross Society Child Welfare League, United Provinces branch, has kindly been furnished by the Honorary Secretary of the League :—

The work of the League is at present directed to four objects, viz.—

- (i) Maternity and child welfare.
- (ii) Improvement of indigenous dais.
- (iii) Training of midwives, dais, health visitors and maternity supervisors.
- (iv) Propaganda work, such as holding of baby weeks or other things conducive to the attainment of the objects.

The Local Government's grant during the year 1927-28 was increased from Rs. 50,000 to Rs. 59,600. In addition a sum of Rs. 500 was received from the Red Cross Society for baby weeks and Rs. 3,300 from the Central Committee of the Victoria Memorial Scholarship Fund towards the improvement of indigenous dais. The amount received as subscription was very small.

The local boards are beginning to realize the importance of child welfare work and there is a great demand from them for financial assistance.

Maternity and child welfare and the improvement of indigenous dais are being carried on side by side. New maternity centres were opened at Aligarh, Ballia, Hardoi, Kheri, Partabgarh and Unao, bringing the total number of centres from 27 in 1926 to 33 in 1927. At these centres, in addition to maternity work and the treatment of mothers and infants, regular classes are held for indigenous dais. The work of these centres was checked by the Superintendent of Medical Aid to Women who herself paid over a thousand house to house visits.

Training of probationer dais and midwives was also carried out at the centres which are recognized by the United Provinces State Medical Faculty. 28 dais and midwives were successful at the examination held in 1927. Three midwives sent for health visitors' training at the Lady Reading School, Delhi, passed out in 1927 and are working at Farrukhabad, Dehra Dun and Meerut.

The provincial organization is at present under the control of the United Provinces Provincial Committee of the League and the Superintendent of Medical Aid to Women, who now holds a permanent Dufferin Fund appointment, is the organizing secretary. The district and municipal medical officers of health of the Public Health department are also associated with

these welfare centres, being in many cases the secretaries to the managing committees. They, therefore, form an important link in the organization to carry the schemes into effect. The Director of Public Health and the Assistant Directors of Public Health inspect and report upon these centres. Work done in this direction by the district medical officers of health in some of the districts is indicated in the summary of their work given in para. 80. Reports submitted by municipal medical officers of health indicate that the movement is gradually increasing in popularity, necessitating in some cases the appointment of extra dais and the opening of additional centres. A great deal of success depends on the type of persons employed as midwives. In Benares, for instance, owing to the small salary (Rs. 25 p. m.) given by the municipality, proper class of persons are not attracted to the work and the municipal midwives are therefore of an inferior type.

The following is a brief summary of the reports submitted by the medical officers of health in the municipalities:—

*Lucknow.*—For the greater part of the year five centres were maintained. A sixth centre was opened in November, 1927. Lists of births in the area served by a centre are obtained by the staff of that centre who visit the cases and inform the mothers of the help that the centre is prepared to give them. These visits are of value in making the work of the league more widely known. Mothers are encouraged to come to the baby clinic once a week for advice and to have their babies weighed and are also instructed to bring them at any time if they are ill. The total number of births in the wards where the scheme was in force was 8,147. Of these 1,698 cases were attended by the maternity staff. The rate of death per mille of births attended and not attended was, respectively, 99·52 and 282·36.

An enquiry conducted by the officers of the Hygiene Publicity Bureau in the areas served by two centres of the city revealed the fact that the centre dais had conducted or supervised nearly all cases and the infantile mortality in those areas was 148·83 against 257·47 for the whole town.

*Benares.*—The lady doctor in charge of the maternity work is in additional charge of the work at Kashi Anathalaya. The necessity is felt for a whole-time lady doctor in this town, but the ways and means of the municipality do not permit the engagement of one at present. The local branch of the league offers all kinds of encouragement to the indigenous dais, such as offering of cash rewards for calling in the municipal midwives in the labour cases conducted by them. The medical officer of health held three or four conferences of the chamarins and barber women in his office and explained to them the necessity of co-operation with trained midwives, but very little effect has so far been produced. The lady doctor holds dais' classes once a week. The total number of births in the municipality during the year was 10,245. Of these 666 were attended by the maternity staff. The general infantile death-rate for the year for the municipality was 225·08 against 313·56 in 1926.

*Allahabad.*—There are two centres in the city. A third centre will shortly be opened. In addition, qualified midwives and dais have also been posted in different localities commanding certain mohallas. 2,900 cases of confinement were attended by the staff of which 1,800 were actually conducted and the rest were attended to after confinement. In 750 cases the

indigenous dais were present. 15,000 after-visits were paid to the confinement cases by the whole of the maternity staff and 400 expectant mothers were visited by the lady doctor or health visitors and necessary advice was given. Demonstrations were given to the indigenous dais at the bed side to adopt clean and aseptic methods. Out of the 1,800 cases conducted by the staff 295 infants died from a variety of causes including syphilis, marasmus, etc. Arrangements were made for the free distribution of milk to poor and needy mothers and infants. The infantile mortality rate per thousand registered births for the municipality was 230·71 per mille while the rate for the cases attended to by the maternity staff was 163·88. The death-rate among children not attended by the staff was 254·74.

*Bareilly.*—The staff continued the work of delivering mothers in their own homes. The cases were attended to for about ten days while the new babies were looked after for one year. In all 1,627 cases were conducted by the staff of which 834 were conducted with the help of the indigenous dais. 23,900 house-to-house visits were paid. The infantile death-rate among the infants looked after by the society was 129·30 per mille. The death-rate among the cases not attended to by the staff was 168·95 per mille. 46 classes were held for the training of indigenous dais with an average attendance of about six dais per lecture.

*Meerut.*—The total number of births in the municipality was 2,716. Of these, 75 were conducted by the maternity staff and 1,053 were attended to after birth. Among 2,641 cases not attended by the maternity staff during labour and 1,663 cases after delivery the death-rates were, respectively, 148·30 and 111·20 per mille.

*Jhansi.*—The Jhansi municipality maintains a midwife who visits from 10 to 15 houses every day and finds out expectant mothers and sees the new-born babies. 74 cases were conducted by her, 13 with indigenous dais and 4 with the lady doctor. There is also a maternity and child-welfare centre which is financed by the provincial branch.

*Muttra.*—The staff attended 1,088 infants at their houses and 277 at the centre clinics; they also attended 290 expectant mothers in their own houses and 94 of these subsequently attended the clinics at the centre. A series of lectures were given to 33 indigenous dais and about six women of the higher caste are being trained in maternity work.

*Pilibhit.*—Eleven cases were conducted with the indigenous dais against 46 in 1926. Eleven cases were delivered by the maternity staff independently. 557 patients and 440 house-to-house visits were paid by them during 1927 against 503 and 876, respectively, in the preceding year. There are also maternity centres at Bisalpur and Puranpur both of which remained vacant for a part of the year owing to the midwives having resigned.

*Gonda.*—The centre is attached to the maternity ward of the hospital at Nawabganj and has continued with marked success. It is now maintained by the district board of Gonda. 25 patients were admitted during the year of which only five were normal labour cases. Five were abnormal and operative surgery cases and 15 gynaecological cases. The resident midwife conducted 41 labour cases herself and 79 cases with the indigenous midwives. She visited and revisited 604 cases at the houses of the patients. 28 classes for the training of dais were held.

There is also a centre at Colonelganj. A trained dai was appointed in November, 1927; who conducted four cases during the two months ending December 31, 1927.

*Bahraich.*—In addition to the centre at Bahraich two centres have been opened at Bhinga and Nanpara. Another centre is proposed to be opened at Fakharpur. The total number of births in the three centres during the year was 1,958 of which 236 were attended by the maternity staff. There were no deaths among the cases attended. The rate among the cases not attended was 185·92 per mille.

*Dehra Dun.*—2,205 births were registered in the municipality during the year. 510 births were attended by the centre staff of which 189 were through the indigenous dais. 3,315 visits were made after ten days of birth and 2,868 visits were made within six days. 1,270 mothers and children were treated at the centre dispensary.

87. Baby weeks were held at 22 places during the year. The question of discontinuing the holding of these weeks in places where permanent maternity and child welfare centres have been established is under the consideration of the provincial league. The Hygiene Publicity Bureau of the Public Health department deputed one of its officers to give lectures and demonstrations at the baby shows.

Baby weeks and exhibitions.

#### D.—GENERAL REMARKS.

88. The details of sanitary improvements effected or in progress in the province during the year under report are given in section IX and appendix A of this report as also in the report of the Superintending Engineer, Public Health department, annexed to this report.

Sanitary progress.

89. Five meetings of the Board were held during the year—three at Lucknow and two at Naini Tal. For further details a reference is invited to the report of their proceedings which forms appendix A.

Board of Public Health, United Provinces.

90. As the grants made to district boards for installing pumps in wells had not been used in many cases owing to difficulties experienced in their working and lack of provision of suitable types of pumps in spite of issue of detailed instructions and as there were large balances of the previous grants with the boards, only a small grant of Rs. 3,870 was made by the Board of Public Health to the district board of Bara Banki, for this purpose. Grants were however sanctioned for the construction of, and repairs to, wells in notified and town areas and villages, especially those in which Village Sanitation or Village Panchayats Acts are in force. Appendix B attached to this report gives details of the grants made to district boards for rural sanitation, balances of previous grants in hand and the amounts expended by them during the year under report.

91. The Local Government could not accept the proposal of the Salvation Army to acquire a large area of land at Raja-ka-Talab near Benares for a leper colony owing to objections having been made by the owners and tenants of the land. An endeavour is, however, being made to find some other suitable site for a leper colony.

Leper asylums.

I propose to discuss the whole question of leper hospitals, asylums and colonies with the Inspector-General of Civil Hospitals, United Provinces, shortly and if necessary will submit proposals to Government.

92. The Magh Mela at Allahabad, at which the medical and sanitary arrangements were in charge of the Assistant Director of Public Health, III Range, was held from January 14 to February 16, 1927, and passed off without the appearance of any epidemic disease. The gathering was smaller this year owing to the *Kumbh* Melas at Brindaban and Hardwar. To prevent fly-breeding a special method was adopted at the fair this year for filling the trenches with sand and covering them with gunnies soaked in a mixture of crude oil and coaltar. This was very successful.

*The Kumbh fairs.*—The *Kumbh* fairs, held after every 12 years, were held at Brindaban and Hardwar in February, March and April, 1927, and arrangements had to be made simultaneously at both the places. These were begun in June, 1926, and in consultation with all parties concerned, adequate sanitary arrangements were made. At the *Kumbh* fair of 1915 at Brindaban there was an outbreak of cholera and a large number of pilgrims succumbed to the disease and the infection was carried to the Hardwar *Kumbh* fair. To avoid a repetition of this, the sanitary and medical arrangements of the fair were taken over this time by Government. This forethought and precaution undoubtedly saved the United Provinces from an extensive epidemic. An Assistant Director of Public Health was in charge of the arrangements at Brindaban while another was in charge at Hardwar. Sufficient gazetted and subordinate public health personnel was either provided by this department or obtained on loan from the local bodies and the very elaborate and careful arrangements made at these places seemed to win universal praise, including that of the non-official public. On April 13, 1927, which was the chief bathing day at Hardwar, 900,000 people were present while the total number of persons who came and went during the whole fair was estimated at 8,000,000. Full details of the medical and sanitary arrangements made in connexion with the *Kumbh* Mela at Hardwar are given in the special report submitted to Government. This forms appendix D of this report.

At Brindaban the number of people present on the chief bathing day was estimated at 300,000. The total attendance at the fair during 50 days (February 1 to March 22) was estimated at 2,900,000. There occurred 53 cases of cholera with 39 deaths at the *Kumbh* fair at Brindaban. Of the 53 cases, 49 were imported from Bengal where cholera was prevalent. Prompt action was taken and proved successful. Anti-cholera inoculation was pushed and 2,865 inoculations were performed, special care being taken to inoculate the contacts and those proceeding to Hardwar. A special grant of Rs. 50,000 was made by the Local Government for expenditure on the organization of the fair in addition to the smaller monetary grants usually made and the cost of anti-cholera vaccine supplied from the epidemic grant at my disposal.

*Control of epidemics in connexion with these fairs.*—These fairs were visited by people from all parts of India, including Bengal and Bihar, where cholera is endemic and Bijapur (Bombay) where cholera was already very prevalent. The control of epidemics was therefore rendered exceedingly difficult in view of the grave danger of the spread of cholera to all parts of India if imported into these fairs. In order to reduce the

danger of importation of infectious cases to these fairs, temporary orders were promulgated under the Epidemic Diseases Act for the inspection and interception of infectious cases entering the United Provinces by rail. Medical officers were posted to certain railway stations which bordered on the United Provinces and the co-operation of the police and the railway departments was secured. The medical officers passed through the carriages, looking for obvious signs of disease and intercepted and segregated those found suffering from any infectious disease in the huts specially provided and equipped for the purpose.

As a very large number of persons in the neighbourhood of Hardwar came to the fair on foot, seven inspection posts were also established on all roads leading to Hardwar.

As this organization was a new one, the greatest care was taken to carry out these inspections with the least possible annoyance to the travellers and every care was taken to make the isolation huts reasonably comfortable. The work was carefully supervised and inspected by the superior officers and special reports were obtained to discover and remove any difficulty noticed in the course of the working of the scheme.

In order to prevent infectious cases, which occurred after arrival at the fair from going back and infecting their districts or provinces, these inspections were carried out in the case of the out-going pilgrims as well.

Fourteen cases of cholera, 16 of suspected cholera, 89 of small-pox, 3 of measles, 4 of plague and 25 undiagnosed cases were intercepted by the railway inspection posts and segregated in the isolation huts. In view of the short stoppage and over-crowded state of the trains, the work was very difficult but the success attending the measure has fully justified its enforcement and it has been decided to enforce the regulation in the pilgrim season every year. Owing to the outbreak of a severe epidemic of cholera in Bengal, travelling dispensaries have again been posted at Captainganj, Bhatni, Ballia and Moghal Sarai railway stations from December, 1927.

*Cholera inoculation.*—In addition to the above measures devised to intercept actual cases, the spread of outbreaks at the fair itself was averted as far as possible by giving free inoculations against cholera and special arrangements for inoculation were made in every district and dispensary in this province and also at various places in the two fairs. Instructions were issued to the medical and public health staff all over the province to afford every facility to those wishing to be inoculated either in their own district before leaving for the fair or at the fair itself. A large number of inoculations was performed.

*Arrangements on the pilgrim route in the Garhwal district.*—The district of Garhwal was in special danger of infection in view of the *Kumbh* at Hardwar after the dispersal of which, people usually visit the pilgrim centres of Badri Nath and Kedar Nath. Special arrangements were made to prevent the spread of epidemics in this district. Altogether 1,102 deaths occurred in the whole district of Garhwal from cholera and only 11 on the pilgrim route, against 5,527 which occurred after the last *Kumbh* fair. 12,873 anti-cholera inoculations were done in this district alone. In the district of Almora also, elaborate arrangements were made and about 12,000 inoculations were performed. A staff of one special health officer and five travelling dispensaries was deputed by this



department and the civil surgeon himself moved into camp to supervise the arrangements. Proposals for the protection of water supplies and the provision of better sanitation on the pilgrim route are under consideration.

*Control of epidemics in other districts after the dispersal of the fairs.*—In view of the danger of the spread of cholera which is always present after the dispersal of a large fair, special arrangements were made for the investigation and suppression of outbreaks in the different districts of the Province. The task was facilitated in places where district medical officers of health have been appointed but their energies were tried to the utmost in endeavouring to suppress the disease. Permanganate of potash was supplied, as usual, and grants were also made for meeting other charges. The following figures showing the number of deaths from cholera which took place in the United Provinces after the dispersal of the last three *Kumbh* fairs will indicate the measure of success achieved by the steps adopted by the department this year:—

1903	..	..	..	..	46,806
1915	..	..	..	..	89,998
1927	..	..	..	..	28,285

This success would have been much greater but for a disastrous epidemic as the result of importation from Bijapur (Bombay) which occurred in the districts of Jaunpur, Sultanpur, Fyzabad, Partabgarh and Rae Bareilly, which were responsible for about 7,000 deaths totally unconnected with the Hardwar fair, when these districts were partially depleted of staff to provide for Hardwar.

The medical and sanitary arrangements of the Ram Naumi and the Sawan Jhula fairs, Ajodhya, the Dadri fair (Ballia), the Garhmuktesar fair (Meerut district), the Batesar fair (Agra district), the Tigri fair, Moradabad, the Shahkumber and the Piran Kaliar fairs (Syharanpur district) and the Etawah Exhibition were either organized or inspected by the Assistant Directors of Public Health of the ranges concerned. A few sporadic cases of infectious diseases occurred at the Ram Naumi and Sawan Jhula fairs (Ajodhya), the Chaiti fair Gola, the lunar eclipse at Kashi (Benares) and the Debi-patan fair (Gonda district). All necessary precautions were taken and the disease was controlled. A number of tube wells were sunk at the Piran Kaliar fair and their cost met from a grant of Rs. 3,000 made by the Board of Public Health for the purpose.

Magic lantern and cinema demonstrations were as usual given by the officers of the Hygiene Publicity Bureau at most of these fairs and religious gatherings. In districts with district health services, local fairs and gatherings were supervised by the district health staff and magic lantern demonstrations given and other hygiene propaganda carried out.

93. Ten wholetime medical officers (with right of private practice)

Inspection of schools were appointed by the Education department, at and medical examination of scholars. the ten centres with large school population, viz., Allahabad, Lucknow, Agra, Benares, Cawnpore, Meerut, Bareilly, Gorakhpur, Fyzabad and Jhansi. This scheme was introduced in the year 1926-27 as an experimental measure for three years in place of the system of examination of the health of scholars by Assistant or Sub-Assistant Surgeons in the Medical department on payment of small allowances, which was previously in vogue. The Director of

Public Instruction has kindly furnished a note on the working of this new scheme.

The duties of these school medical officers are to visit each recognized English School, Normal School, and training college in the town for which they have been appointed and to conduct a medical inspection of the scholars at least once a month in accordance with the instructions of the Director of Public Instruction, and to treat free of charge the boarders residing in the hostels attached to these institutions. Their duties also include lectures on hygiene in the training colleges and normal schools and examining candidates for the St. John Ambulance Certificate and First Aid. In their reports to the Director of Public Instruction these officers have pointed out some of their difficulties. Apathy of parents in the matter of the health of their children, due to ignorance, insufficient realization of the importance of good physique and lack of appreciation of the new system is chiefly mentioned. In a number of cases the recommendations of the medical officers are disregarded or little attention is paid to them despite the presence of adequate facilities for treatment in the towns. The school medical officers therefore emphasise the necessity for the provision of facilities for free treatment as a sequel to their advice—at least in the case of the poorer pupils. As a result of their work, however, the apathy and ignorance of the public has broken down appreciably and a hygienic conscience has been created among parents. The school medical officers unanimously recommend the establishment at each centre of a central dispensary for the treatment of scholars. The Education department are considering further improvement of the scheme which they report has worked well on the whole.

The work of the above officers is confined to the cities for which they have been appointed.

The district and assistant medical officers of health conduct similar inspections in the rural areas of the districts where they have been appointed, while municipal medical officers of health conduct this work in their respective charges in co-operation with the medical inspectors of schools in the towns for which these officers have been appointed.

During 1927 district and assistant medical officers of health inspected 4,022 schools and medically examined 115,679 scholars, while municipal medical officers of health inspected 459 schools and colleges and medically examined 43,917 scholars. The Assistant Directors of Public Health also inspected a number of schools and examined the scholars. Altogether 4,489 schools were inspected and 160,373 scholars were examined. A districtwise summary of the work done by the district medical officers of health and their staff in the rural areas has been given under each district in paragraph 80 of this report. Difficulties as regards co-operation of the scholars and parents and lack of facilities for treatment were naturally noticeable more in the rural areas than in the towns. To make these inspections of the fullest use the district medical officers of health themselves supplied necessary medicines out of the stocks carried by them on tour. A scheme has also been prepared for stocking all the village primary schools with certain simple medicines for the chief ailments noticed among the scholars, with instructions for their use. The stocks will be held by the head teachers who will distribute the medicines to scholars requiring them. This scheme has been introduced in the district of Sitapur in the first instance as an

experimental measure and further expansion will depend on the success attending this venture.

In the case of the schools situated in the towns the reports of the municipal medical officers of health reveal a variety of sanitary defects in the buildings and ill-health among the scholars. Ventilation and lighting were defective in many schools, particularly in those housed in rented buildings, while some of the class rooms were damp and overcrowded. Some of the schools were situated in unhealthy areas while in a fairly large number sanitary conveniences, such as latrines and urinals, were absent or inadequate. In one case boarders were found reading in insufficient light in their hostels at night. In many cases benches and desks required adjustment, while in some cases the water-supply was defective. Among the ailments noticed in the scholars a fairly large percentage of the boys were found unvaccinated. This is to be particularly noted in case of towns where vaccination is compulsory. The other diseases noticed were—in order—defective teeth (carious teeth and pyorrhoea), diseases of the eye (trachoma or granular lids), enlargement of glands and defective vision. Malaria and goitre naturally varied according to the general health conditions of the district and its geographical situation. Uncleanliness, scabies, ring worm, nits in the head, etc., were more noticeable in the lower classes and in the lower middle schools than in the higher classes.

It may be hoped that the problem of facilities for treatment in the case of schools will be solved gradually both in the towns and villages by the efforts that the Education, Medical and Public Health departments are making in providing the necessary hospitals and medicines, but the question of overcoming the ignorance which leads to these diseases remains to be solved. I am of opinion that no permanent or substantial improvement can be effected in the general mentality of the scholars or their parents by these methods or by propaganda alone, as is being carried out in the rural areas. *The only way to inculcate in them sanitary habits is to teach hygiene as a compulsory subject in all the primary, middle and high schools—both boys' and girls'—and to hold examinations in them along with the other subjects.*

As education is making considerable progress in the urban and rural areas and compulsory education is being extended I consider that the opportunity should not be lost of compulsorily teaching school children hygiene along with other subjects.

At the suggestion of the district medical officers of health the district boards of Gorakhpur and Ghazipur have agreed to devote half an hour a week to instruction on hygiene and I hope that other district boards will also do the same, in consultation with their educational authorities.

94. Dr. D'Herelle, the authority on bacteriophage who arrived in Bombay in April wanted to study plague from his particular point of view in a place where plague cases were occurring and where hospital accommodation to study the clinical material was available. Bareilly was suggested as a possible place but as Captain Malone of the Central Research Institute, Kasauli, did not find the conditions there suitable he gave up the idea of coming to the United Provinces.

Visit of Officers to the United Provinces.

Sir Malcolm Watson, a member of the council of the Ross Institute and Hospital for Tropical Diseases, London, and a leading authority on malaria paid a visit to these provinces in connexion with the 7th Congress of Far Eastern Association of Tropical Medicine. Advantage was taken of his presence and various schemes connected with malaria prevention were discussed with him. Sir Malcolm Watson, after inspecting villages with me and the Assistant Director of Public Health (Malariology) expressed the opinion that the policy pursued by us was the only one possible and that it would succeed provided that Government made up their mind to provide sufficient recurring funds and continual expert supervision.

95. The delegates of the Congress of the Far Eastern Association of Tropical Medicine visited these provinces in December, 1927, after the session held at Calcutta. They were shown the King George's Medical College, the Provincial Hygiene Institute, a specially organised public health exhibition and the propaganda films on Cholera and Hardwar *Kumbh* fair. This visit was followed in January, 1928, by the Interchange of Health Officers under the auspices of the League of Nations, a party of whom visited Hardwar, Lucknow, Cawnpore, Allahabad and Benares and saw many things of public health interest. They were in addition supplied with a large amount of useful literature relating to this department. A booklet giving in detail the Public Health organisation of these Provinces was specially prepared for their information. The arrangements were very successful and were greatly appreciated by the delegates.

96. The question of an increase in the pay of non-service Assistant Directors of Public Health has been hanging fire for several years. In 1920, Government had sanctioned a temporary increase of 33½ per cent. on their pay originally fixed in 1912. It is gratifying to note that during the year under report a permanent scale of pay was sanctioned by Government, viz., Rs. 900—50—1,500 per mensem.

97. Appended is the note on the principal meteorological and weather conditions in these provinces, kindly furnished by the Director-General of Observatories :—

*The cold weather period, January and February.*—Of twelve western disturbances which entered India during the period two gave rain in the province in January and four in February. In the Kumaun hills precipitation was widespread on almost all occasions. The total fall in January was in large defect throughout the province. In February, however, the United Provinces East recorded a moderate excess and the United Provinces West a large excess. Skies were less clouded than usual in January and more clouded in February. Humidity was in defect in January. Maximum temperature was below normal in the United Provinces West in February; minimum temperature was lower than usual over the whole province in January, the deficiency over the United Provinces West being 7°. Mainpuri reported a minimum temperature of 29° on the 11th which is the lowest ever recorded.

*The hot weather period, March to May.*—The eight western disturbances which affected the province in March were more active than usual, and the associated rainfall was in large excess in the United Provinces East and in moderate excess in the United Provinces West. In April there was a break in the activity of the western disturbances and, though seven of them passed over the province, rainfall was in large defect in the United Provinces East and in moderate defect in the United Provinces West. The rainfall in May was associated with only three western disturbances, but they were considerably active and produced a moderate excess of rainfall in both the sub-divisions. In connexion with the last disturbance, a violent storm passed over Mussoorie and Dehra Dun on the 28th May, causing damage to property. Humidity was in defect in March and April. Maximum temperature was below normal in March. Minimum temperature was below normal in the United Provinces East during March and in the United Provinces West throughout the period.

*The Monsoon period, June to September.*—The monsoon was weaker than usual over the province in June. The only noteworthy spell of wet weather occurred between the 18th and 20th due to a storm which advanced from the Bay of Bengal, passed through the Central Provinces and ultimately filled up over the United Provinces West. Under the influence of this storm there was heavy rain at a few stations, Bareilly recorded 7" on the 19th and Muktesar 5" on that date and again on the next. The monsoon then weakened and weather was practically dry over the province till the end of the month. The total rainfall for the month was in large defect in the United Provinces East and in slight defect in the United Provinces West. In July the monsoon revived and extended up the Gangetic plain by the 4th. It was active till the 8th but weakened again during the next week. On the 15th a depression appeared over the south-west Punjab and directed the Arabian Sea monsoon current to the United Provinces and the neighbouring hills, where widespread rain fell on the 16th and 17th. Mainpuri had 5" and Lucknow, Bareilly, Jhansi and Roorkee 4" each on the 16th, on the 19th Jhansi again recorded a fall of 9". The monsoon continued active till the end of the month. Allahabad recorded 5" of rain on the 30th. The total rainfall for the month was nearly normal. On the first four days of August rainfall was continuous and locally heavy, especially in the hills and the submontane plains. Mussoorie had 4" on the 1st and 6" on the 4th and Dehra Dun 4" on the 3rd. The rest of the month was marked by the advance of three depressions from the Bay of Bengal. The first of these lay over the east United Provinces on the 14th and over the west United Provinces between the 15th and 17th and produced a widespread rain in its neighbourhood. The unsettled conditions persisted between the 9th and 19th. Several heavy falls were recorded: Dehra Dun had 6" on the 9th and Roorkee and Meerut 5" and 7" respectively on the 10th. The second depression was near Allahabad on the 19th, but passed westwards without causing any heavy rain in the province. The residual unsettled conditions over the western Himalayas, however, gave some heavy falls, Dehra Dun had 8" on the 23rd and Mussoorie 5" on the 24th. The third depression merged into the seasonal trough of low pressure along the Gangetic plain on the 27th and caused widespread rain there till the 29th. The monthly total rainfall was normal in the United Provinces East and in moderate excess in the United Provinces West. Weather was disturbed over the Gangetic plain between the 1st and the 3rd of September due to a low pressure area which

moved from the Bay of Bengal to Bihar. Subsequently the seasonal trough of low pressure along the Gangetic plain moved northwards towards the Himalayas and rain fell on the Kumaun hills from the 7th to the 10th. Weather was dry till the 26th when, under the influence the unsettled conditions appeared over north-west India on the 26th the monsoon extended into the United Provinces and gave locally heavy rain there on the next two days. Bahraich had 3" on the 27th and Benares and Mussoorie 3" each on the 28th. The total rainfall of the month was in slight defect in the United Provinces East and in moderate defect in the United Provinces West. The percentage departures from the normal of rainfall in the two sub divisions were as set down in the following table:—

Sub-division.	June.	July.	August.	September.	The whole period.
United Provinces East .. ..	-51	-5	+1	-17	-12
United Provinces West .. ..	-16	-9	+38	-40	..

Cloud amount and humidity were below normal in June. Maximum temperature was above normal in both the sub-divisions in June and below normal only in the United Provinces West in August.

*The retreating monsoon period, October to December.*—The rainfall in October was mainly associated with a deep depression which, advancing from the Bay of Bengal, lay over the east United Provinces on the 8th and disappeared by the morning of the 9th. Wet weather prevailed over the province from the 5th to 8th and several heavy falls were registered. Bareilly had 6" on the 6th and 5" on the 7th and Cawnpore 4" on the 6th. Heavy rain in the east United Provinces caused breaches in the Cawnpore-Achnera section of the Bombay Baroda and Central India Railway and floods in the Hardoi district where some villages were washed away. During the rest of the month there were only a few scattered thunder showers. The monthly rainfall total was about five times the normal in the United Provinces West and in moderate excess in the United Provinces East. The weather in November was mainly affected by the advance of two storms, one from the Bay of Bengal and the other from the Arabian Sea. The Bay storm gave rain in the province between the 2nd and the 4th and the Arabian Sea storm between the 12th and 15th. The rainfall was generally widespread and very heavy for that time of year. Benares had 3" on the 13th and Bahraich 3" on the 14th. Of the four western disturbances that entered India during the month, only one gave a few falls of rain in the Kumaun hills on the 8th. The total rainfall for the month was nearly thirteen times the normal in the United Provinces East and seven times the normal in the United Provinces West. In December rain fell between the 18th and 20th and on the 30th and 31st, in association with two of the eight western disturbances which passed over northern India. The monthly total of rainfall was nearly normal in the United Provinces West and in moderate defect in the United Provinces East. Skies were more clouded than usual throughout the period and humidity was in excess in November and December. Maximum temperature was about 5° below normal in November. Minimum temperature was above normal in the United Provinces East in November and December and in the United Provinces West in December.

98. In connexion with the prosecution of a head clerk of one of the civil surgeons' offices, on charges of bribery brought against him, the court remarked that the assistant superintendent of vaccination of the district obtained bribes for the head clerk in order to gain his favour and that the assistant superintendent of vaccination was favoured by the head clerk for his services in securing bribes for him. This fact was brought to my notice by the civil surgeon only when the assistant superintendent of vaccination had actually retired. In view of these remarks, I ordered his pension to be reduced. Prompt inquiries are always ordered to be made in any suspicious case brought to notice and suitable action taken.

99. Two temporary clerks employed last year were made permanent by Government during the year under report. I regret that M. Tahir Uddin, head clerk, Epidemiology branch, had to retire in February, 1928, owing to ill-health. His retirement is a distinct loss to the office. Khan Sahib Hafiz Mohi-ud-din has, as usual, managed my office to my entire satisfaction, and my head clerk and second clerk, M. Abdul Hakim and Babu Brij Lal, have carried out their duties satisfactorily.

C. L. DUNN, C.I.E., D.P.H.,

LIEUT.-COLONEL, I.M.S.,

PATWA DANGAR:

*Director of Public Health, United Provinces.*

April 30, 1928.

**Thirty-third Annual Report of the Superintending Engineer,  
Public Health department, United Provinces, for the year  
ended March 31, 1928.**

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During the year under review three divisions were again maintained with headquarters at Meerut, Allahabad and Cawnpore, respectively.

1. *Expenditure.*—The sum of Rs. 22,01,111 was realized in revenue and Rs. 12,67,954 was spent on maintenance of municipal water-works, under Superintending Engineer's supervision, the sum of Rs. 3,50,820 was spent on municipal drainage works, and the divisions of this department carried out construction (original works) amounting to Rs. 3,85,248 during the year.

The establishment charges of this department amounted to Rs. 3,66,051. An amount of Rs. 27,632 was earned as fees on projects completed during the year against an amount of Rs. 19,667 realized. Including the arrears of the previous year a sum of Rs. 21,828 was realized as fees on the preparation of projects. Earnings for construction carried out departmentally amounted to Rs. 34,505. For local works a total sum of Rs. 56,333 was thus realized.

For provincial works no fees have been realized as orders of Government have not yet issued. Projects for provincial works were prepared amounting to Rs. 11.05 lakhs and construction costing Rs. 0.66 lakh was carried out by this department. If fees were leviable on provincial works as on local works a sum of Rs. 50,555 would have been credited in addition to the earnings of Rs. 56,333 above mentioned.

Seventeen forecasts were prepared, the total sum involved being Rs. 30.18 lakhs. These forecasts have all been provided free of charge.

Advice has been given free also in many cases and all projects which have been submitted to the Board of Public Health from local authorities have been technically examined. Special reports have been made and inspections undertaken at the instance of the Board of Public Health and Government.

During the year under review the sum of Rs. 1,45,559 was made available by the Board of Public Health in grants to small local bodies for work in the nature of rural sanitation and in particular the protecting of village well supplies and the provision of hand pumps.



Estimates for over one thousand small projects were examined and grouped in the order of their urgency and utility with a view to making systematic grants for rural sanitation.

The tendency for local authorities to delay in carrying out works, for which they have obtained funds, has been noticed in several cases. Agra, Allahabad and Chandausi furnish instances of this description.

The manner in which municipalities submit their working returns has been adversely remarked on in previous reports; this year is no exception to the rule.

In many cases the abstracts have been carelessly prepared and do not agree with the monthly records, and sometimes the abstracts themselves do not even agree with the supporting data. Much extra labour is occasioned in this office in reconciling discrepancies and in corresponding with boards who delay to submit their returns.

#### WATER-WORKS (GENERAL).

2. The system of periodical inspections of municipal water-works has now been in vogue since 1920, and this is a suitable opportunity to review the result of the system for which Mr. Mallett, the Mechanical Adviser, is mainly responsible.

The following table gives the totals of expenditure and revenue on all the municipal water-works in the province:—

Year.	Expendi- ture.	Revenue.	Gain or Loss.
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
1920-21	17·47	13·26	—4·21
1921-22	20·63	15·97	—4·66
1922-23	23·41	16·47	—6·94
1923-24	20·37	18·20	—2·17
1924-25	20·41	19·35	—1·06
1925-26	20·41	20·64	+0·23
1926-27	18·81	21·94	+3·13
1927-28	19·52	22·01	+2·49

The saving in coal, oil fuel, lubricants, waste and such like stores due to fall in prices since 1922-23 is approximately Rs. 2·00 lakhs. Due also to the re-assessment of house and property taxes the water rating has automatically increased by approximately Rs. 2·50 lakhs.

Making due allowance for the two factors mentioned above I estimate that an improvement in the revenue received on all water-supplies has taken place amounting to about Rs. 5 lakhs annually.

I have reason to anticipate that a further increase of at least Rs. 3·00 lakhs annually could be arrived at if the local authorities would accept and work in a proper spirit the recommendations so frequently made by the Mechanical Adviser.

These figures prove that a public water-supply can, with little care, be made a self-supporting business, and that grants-in-aid are not justified except during the initial stage of a supply.

The census of private connexions and the preparation of up-to-date plans does not receive the interest and is not being pursued with the vigour necessary for efficient working in many of the municipalities.

The same tendency which has been noticed in previous reports of the boards to interfere in details of management and staff has again been noticed, and the public interest has, in many cases, not been well served.

#### MAINTENANCE OF WATER-WORKS.

3. *Agra*.—The supply to the high zone districts of Maithan and Chhili-Int has been much improved by the new electro-motor-driven centrifugal pumps installed at the St. John's tower. Considerable lengths of the mains in these two districts were found to be badly incrustated, and they were taken up and cleaned.

The census of connexions, started nearly two years ago, has not yet been completed. Additional staff is required for this and other work in connexion with waste prevention and water-rating assessment.

The pumping plant was well maintained throughout the year, and an additional quantity of spare parts was obtained. The quantity of the coal supplied was satisfactory.

The sand bank formed three years ago in front of the water-works intake, although reduced in depth by the last rains, still necessitates a channel across the river bed, almost to the opposite bank to bring the water to the inlet wells. A flush of water from the Kitham canal seriously affected the filter beds and the water-supply. The filter beds were clogged with decayed vegetable matter, and it has taken some time to recondition them.

This board still fails to realize the necessity for sufficient labour for the proper maintenance of the works and distribution system, and that greater assistance should be allowed to the Water-works Superintendent in these matters.

4. *Allahabad-Karellabagh*.—The year under review was a fortunate one in connexion with these works, for at Karellabagh only slight movement of the river bank took place during or after the rains. This enabled the suction gallery and pipe culverts to stand up, and only one fracture took place in the suction pipes. In addition to the dismantling of a portion of the suction gallery and the removal of earth so as to lighten the bank the lower portion of the gallery was strengthened by brickwork and cement pressure grouting. One of the vertical spindle electro-motor-driven centrifugal pumps, ordered in connexion with the reorganization scheme, was installed as semi-permanent plant in the

old inlet well and was worked for several weeks, but was eventually put out of action on account of the water-level in the river falling below the level of the suction intake.

At the time of writing this report it does not seem likely that the new intake wells and plant will be completed in time to avoid danger of a shortage again in the coming year.

The new barrels fitted to the old beam engines have made a considerable difference to the running of these engines and pumps. The pumping plant was maintained in good running order with the exception of the Babcock and Wilcox boiler which developed defects, and was laid aside for four months.

5. *Allahabad-Khusroobagh*.—The settling tanks, slow sand filters and rapid filtration plant were maintained in good order, but the cracks in the walls and floorings of the clear water reservoirs which have been referred to in inspection reports for the last four years have not yet been repaired.

The demand for water and the hours of pumping did not permit the beam engines to be overhauled and maintained as well as could be wished. Temporary pumps were installed during the last few months to supplement the supply.

The Mayo Hall tube-well electro-motor-driven centrifugal pumping plant worked satisfactorily throughout the year and gave a useful additional supply and increased pressure to the district.

6. *Benares*.—Due to the efforts of the Water-works Superintendent, this plant has been kept in good running order.

The extension of the workshops was completed and comprises not only the new building but additional machine tools which form a valuable addition to these works.

This board is one of the worst offenders in these Provinces in the matter of showing no real desire to make the water-works a self-supporting proposition. Years have passed in discussions, and whereas this board could make a substantial profit every year on its water-works, yet it again shows a deficit of Rs. 64,083, and in the last six years the annual deficit has varied from Rs. 53,000 to Rs. 1,60,000, the total deficit for the six years being Rs. 5,57,000.

7. *Cawnpore*.—The condition of the pumping plant was well maintained considering its age. The embankments and channels of the settling tanks were maintained in fair order since the banks were raised two years ago, but No. 1 settling tank contains a large amount of silt which should be removed. The Puech-Chabal, rapid filters, and the slow sand filters were maintained in good running order.

While this board has succeeded during the last three years in making its water-works a paying concern, yet it shows considerable dilatoriness

in such matters as the census of connexions and in the provision of an adequate number of water-meters and the upkeep of its record maps.

8. *Lucknow*.—The generating plant (Aishbagh) and the electro-motor-driven filtered and unfiltered water-supply pumps worked satisfactorily throughout the year, although occasional difficulty was experienced at the riverside station (Gaughat) due to the high suction lift consequent on the lowering of the water-level and the flushing of the river by dropping the weir gates. Serious consideration should be given to reducing the length of time that the weir gates are kept down; at present it would appear to be excessive.

The alteration to the impeller of one of the filtered water pumps at Aishbagh and the economy affected thereby apparently convinced the Municipal Board that other recommendations were worth consideration, and there followed the raising of the banks of the settling tanks and other work in connexion therewith which increased the capacity of these tanks by 3·5 million gallons and improved the working conditions of the new rapid filtration plant and the running conditions of the pumping plant at the riverside station (Gaughat). It is now possible to complete the pumping at this station in one run per day, compared with two or three intermittent runs before the settling tanks were raised. This produces a more even demand for steam at the generating station and an economy in coal. These alterations cost less than Rs. 7,000, and effect an economy of three to four tons of coal per day for seven months of the year.

The distribution system has been maintained by the Water-works Superintendent in a satisfactory manner, and the ratings and records are kept up to date. A marked improvement has been observed in the finances of these works since better control of the distribution system and the demand and collection has been looked into more closely during the last two or three years.

The demand now threatens to exceed the filtering capacity of the Aishbagh station and immediate steps are necessary to meet this situation.

9. *Dehra Dun*.—The water-supply has been satisfactorily maintained since the Baldi springs were brought into use, but numerous complaints have been received regarding the hardness of the water, and a project for softening and chlorinating the water is in hand.

10. *Fyzabad*.—The pumping plant ran satisfactorily, but the supply was restricted as the yield from the four tube-wells is insufficient to meet the demand. A fifth well is to be constructed to increase the supply.

Although the water-works was only completed three years ago it is very popular, and shows a slight profit this year. This profit could be increased if a larger yield could be obtained from the tube-wells.

11. *Gola Gokaran Nath*.—These works are primarily for the maintenance of the water-level in the bathing tank. A few standpost supplies are given to the town. This supply was formerly pumped direct to the standposts, but during the last year an elevated tank was constructed. The pumping plant was kept in running order, but the District Board frequently delay the purchase of stores and other material necessary for proper maintenance.

Complaints have been received that the tube-well pumps have not succeeded in maintaining the requisite depth of water in Chakra Tirath tank owing to excessive evaporation and absorption in May and June.

12. *Hardwar*.—These works were maintained in good order and the pumping plant ran satisfactorily throughout the year. It was necessary, however, to remove the electric motor from No. 1 well on account of dampness arising from the sweating of the masonry steining during and after the rains. The steining in this well is to be lined. The yield of No. 1 well, which at first was limited to 60 gallons per minute, is now increased to 90 gallons per minute by regular pumping. The yield from the other two wells has also increased slightly.

The Irrigation Department supplies electric energy to the Municipal Board in bulk. The electric and water-supplies, since they were started in December, 1926, have become popular, but it has been necessary to adjust the ratings for the former since the first rules were published.

13. *Jhansi*.—The pumping plant was ill-maintained due to the action of the board in delaying the ordering of essential spare parts, and in having the pumps overhauled. Two adverse reports were made during the year. No apparent effort was made by the board to improve the supply, or to make it self-supporting.

14. *Meerut*.—The pumping plant was well maintained. The overhauling and repair work was executed in the water-works workshops. A new shaft and wheel was obtained for one of the water turbines, and will be installed as opportunity permits.

The settling tanks and filters and works generally were well maintained. One filter was entirely reconditioned, two filters were reconditioned in the previous year, and provision is made to recondition the fourth filter.

15. *Mirzapur*.—The impounding reservoir, service tank and pipelines have been maintained in good order, and the supply was satisfactory. Work was commenced for the installation of the Venturi meter in the supply main near the city, as recommended four years ago. The board has taken in hand the census of connexions and the production of record maps, but there appears to be little desire on the part of the board to restrict the demand for water and the erection

of standposts which have been provided in a reckless manner. Although new water-supply rules were drafted two years ago, these were abandoned after some discussion, and there is no prospect of increasing the revenue as matters stand.

If the demand at Mirzapur increases so as to stress the capacity of the impounding reservoir, a very serious situation will arise.

16. *Moradabad*.—The pumping plant ran satisfactorily throughout the year. The Municipal Board are slow to carry out recommendations.

17. *Mussoorie*.—The pumping plant was maintained in good running order. The distribution system was generally well maintained and the public enjoyed an adequate supply of pure water.

18. *Muttra*.—The pumping plant was maintained in good running order although the spares ordered were reduced to a minimum on account of one of the centrifugal pumps being operated by electric energy taken from the Muttra Electric Supply Company. The Diesel oil engine generating sets are now only maintained as stand-by plant. The yield from the tube-wells was insufficient to meet the demand, and an additional well should be constructed.

No serious effort to make these works self-supporting has been undertaken by the board, although much correspondence and many resolutions have passed.

This board deliberately budgets for a heavy loss on water-works, and at the same time expects assistance by grants-in-aid.

Much friction has been reported among the operating staff, and the situation is anything but assuring as regards the supply.

This board failed to consult this department concerning the terms of electricity supply, and now find this system more expensive than their original Diesel plant.

19. *Naini Tal*.—The electro-motor-driven pumping plant was maintained in good running order and the old steam pumping plant kept as stand-by. The lakeside infiltration wells and motor-driven centrifugal pump and chlorinating plant were used for some weeks to supplement the supply from the springs.

The plant at the hydro-electric station at Durgapur for the electric supply and energy for water-works pumping was maintained in good running order.

The registers and record maps have been brought up to date by the Electrical Engineer and Water-works Superintendent.

This year again a loss of about Rs. 45,000 has been shown in the electric supply. The profit on the water supply amounted to Rs. 12,290.

The power used on water supply pumping has not been shown in the return at its proper value. There still exist some demands for electricity which should be met with a view to making the electric supply self supporting.

20. *Unao*.—At Unao the new water-works were completed and handed over to the Municipal Board in June, 1927. The works comprise an oil engine, driving an air compressor for operating the air-lift pump in the two tube-wells and a centrifugal pump to pump the water from ground-level to the elevated tank from which the water gravitates through the distribution system. It was originally intended that the supply should be for standpost only, but the popularity of the water-supply has been such that over one hundred houses have already been provided with service connexions.

This pumping plant was delivered, erected and set to work by Messrs. Jessop and Company, Calcutta.

#### WATER-SUPPLY, CONSTRUCTION AND PROJECTS.

Efforts were made throughout the year to obtain tenders for the construction of tube-wells and each work was widely advertised and ample time given for firms to tender. The results have not been reassuring and show that it will be impossible to abolish the Well Boring Operations Division.

Those firms which have tendered have relied on the loan of Government plant and on staff trained in the division, and the delays which have taken place have shown that there are few, if any, of these firms who are skilled in this class of work and who can be relied on.

The main cause of this state of affairs would seem to be the fact that there is not a sufficient number of wells on our programme to warrant any private concern investing large sums in well boring plant and employing the necessary skilled staff for which high rates of pay are required.

Efforts have been made to accelerate the progress of well boring work and one bore is at present being carried out by means of the hydraulic jet system which promises to materially reduce the time taken in constructing wells.

The success which has been recorded on recent well boring operations is due in no small measure to the energy of the Executive Engineer, Mr. N. D. Chaudhury.

21. *Agra water-supply improvements, Rs. 3·85 lakhs*.—Two small electrically-driven boosting pumps have been installed on the ground floor in the central chamber of the St. John's reservoir, for the purpose of supplying water to the highest localities in Maithan and Chhili-Int

where a shortage of water has hitherto been experienced during the hot season.

The pumping plant was supplied by Messrs. Worthington and Simpson, and the whole work has been satisfactorily completed at a total cost of Rs. 7,300.

The high zone area of Maithan and Chhili-Int now receives a very good supply of water.

A chokage in the supply main to this area was discovered and rectified, which has also conduced to the present improved pressure.

Contract documents for the projects extending the unfiltered water pumping plant (Rs. 0·91 lakh) and augmenting the filtration plant (Rs. 2·84 lakhs) were prepared, and the works were advertised for tender.

22. *Aligarh water-supply improvements, Rs. 7·49 lakhs.*—The wells, which have lain idle since they were completed in 1916 have again been tested and cleaned at a cost of Rs. 0·11 lakh. The discharge from these wells was found to be much less than that shown on the first test after construction. A revised estimate including one additional well (Rs. 7·49 lakhs) has been presented to the board. A discussion has arisen regarding the rates at which power is to be supplied by the Electric Supply Company for water-supply pumping and the work may be delayed further on this account.

23. *Allahabad water-supply, Rs. 31·17 lakhs.*—The reorganization work estimated to cost Rs. 31·17 lakhs is being carried out by the Municipal Board. This work was commenced in 1925 and so far the mechanical filters only have been completed; work is in progress on the Karellabagh intake wells and at the Khusroobagh pumping station, and the contract for the raised reservoir has been let. The pumping plant has been delivered but cannot be tested till the building work is completed. More rapid progress is desirable. Expenditure to date amounts to Rs. 10·45 lakhs.

24. *Allahabad Magh Mela water-supply, Rs. 0·48 lakh.*—The oil engine-driven air lift-cum-centrifugal pumping set has been successfully installed and set to work. Messrs. Jessop and Company supplied and erected the pumping plant including a Sullivan air pump and belt-driven compressor and a Tangye oil engine with a Worthington centrifugal pump. A copious supply of pure water was thus made available for the Mela and for Daragunj bazar from this very successful well.

The discovery of a coarse sand strata by this—the deepest bore yet made at Allahabad—will render the construction of successful tube-wells in the Allahabad area much less a matter of doubt.

25. *Almora.*—A project for improving the water-supply to this town is in hand, the forecast of which is Rs. 1·39 lakhs.



26. *Benares*.—A trial bore to explore the strata at Bhadaini was completed and the contracts for the new intake well, the Bhelupura pumping station buildings and the pumping plant were let to Messrs. Noorullah Ghazanfarullah, and to Messrs. Worthington Simpson and Company, Limited, respectively. Good progress has been maintained on the building. Pumping plant is commencing to arrive.

Special shoring operations had to be undertaken at Bhelupura owing to an unforeseen rise in the spring levels on foundations.

The banks of the settling tanks were raised and the construction of diversion walls and the puddling and lining of the inner slopes of the banks is in progress.

The Municipal Board have decided to extend the filtration area and raise the settling tanks and are carrying out these themselves. I regret to record that this board are constructing more slow sand filters instead of rapid filters of a modern type.

27. *Brindaban water-supply improvements, Rs. 3.97 lakhs*.—Messrs. Scott and Saxby undertook to sink a trial bore, which they completed to a depth of over 400 feet. The strata proved to consist of continuous clay beds, and, as a successful tube-well was not considered possible, recourse must now be had to surface percolation wells on the banks of the Jumna. An estimate for this work (Rs. 0.10 lakh) was sanctioned by the Municipal Board.

It is proposed to utilize the savings from the trial bore towards the construction of percolation wells, and the necessary sanction of the Board of Public Health is awaited to start the work.

28. *Cawnpore water-supply improvements, Rs. 9.70 lakhs*.—A first instalment of the reorganization works costing Rs. 9.70 lakhs is being carried out by the board through the agency of Messrs. Lane Brown and Hewlett, Consulting Engineers.

At Benajhabar the canal raw water pumping station has been completed and the three electro-motor pumping units installed. The earthen channel from the canal has also been completed. Two slow sand filters have nearly been completed, and the two Peuch-Chabal filters finished. The new filtered water pumping station foundations have been completed to plinth-level for the electro-motor sets and the transformer station is complete.

At Bhaironghat the transformer station is complete and work has been started on clearing the old steam plant and preparing the foundations for the new electric motor-driven pumps.

29. *Dehra Dun water-supply improvements, Rs. 2.98 lakhs*.—*Baldi spring water-supply*.—Parts I and II of this work comprising head-works, main pipe-line and the reorganization of the eastern district were completed in 1926, and the reorganization of the western districts (part

III) was completed and handed over to the Municipal Board on August 15, 1927.

The Municipal Board made several additions and alterations to the original proposals of part III, and to regularize the deviation the estimate had to be revised.

The source of supply is from Baldi springs, and the water is very hard. Many complaints had been made by the public and an estimate amounting to Rs. 0·53 lakh has been prepared for a water-softening and chlorinating plant. Arrangements are being made to carry out this work.

The total expenditure on Baldi water-supply scheme to date is Rs. 2,35,500.

30. *Farrukhabad flushing scheme, Rs. 1·03 lakhs.*—This work has been held in abeyance pending the arrangement of a loan by the municipality.

31. *Fatehpur-Sikiri water-supply improvements, Rs. 1·54 lakhs.*—The existing Hakims and Baoli wells having failed to supply sufficient quantity for water-supply, it was decided to construct a tube-well costing about Rs. 12,000. The Board of Public Health have given this amount as a grant. The boring has been carried down to 142 feet below the ground surface, and sufficient water-bearing strata have been met with. Strainers and pipes have arrived at site, and tube-well will be completed shortly.

32. *Fyzabad water-supply improvements, Rs. 0·50 lakh.*—To meet the increased demand an estimate for another tube-well with pumping plant (Rs. 0·50 lakh) has been sanctioned. A part of the funds (Rs. 0·34 lakh) has already been allotted by the Board of Public Health. Arrangements are in progress to start the work.

33. *Ajodhya water-supply improvements, Rs. 4·28 lakhs.*—An estimate for the water-supply has been prepared, and a trial tube-well (Rs. 0·19 lakh) is being sunk as a preliminary to taking up the work. This work was held up for a considerable time due to delay in land acquisition.

34. *Gola Gokaran Nath water-supply improvements, Rs. 0·07 lakh.*—An elevated balancing tank has been constructed and handed over to the District Board.

35. *Gorakhpur water-supply improvements, Rs. 3·25 lakhs.*—The Municipal Board decided to drop the preparation of the project, as they are of opinion that they will require all their resources to carry out the drainage improvements for the city.

36. *Hardwar water-supply improvements, Rs. 4·69 lakhs.*—The construction of Hardwar water-supply and electric-supply schemes was started in December, 1925, and by the end of November, 1926, both the

works were completed satisfactorily. Street-lighting and water-supply-pumping was started on December 3, 1926, and since then continuous supplies were maintained.

After a month's trial both the supplies were opened to the public from January 1, 1927.

Extensions of water pipes and electric lines to areas occupied by pilgrims and Mela Camp, during the Mela of 1927, were also carried out, and sixty-eight pitcher spout hand pumps were provided in certain areas where the water pipe-line could not be extended easily.

Although most of this work was completed during the year 1926-27, it is included in this year's report in view of the great improvement in the conditions pertaining during the Mela of 1927 over previous Melas. The almost total absence of cholera in 1927 can, in a large measure, be attributed to the existence of a pure and convenient supply throughout the town, which rendered it unnecessary for the pilgrims to draw their drinking water from the river and shallow wells. The pitcher spout pumps sunk in the camping grounds in outlying area rendered excellent service.

The existence of electric light in all the streets of the town made it much easier for the police, sanitary staff and other officers to carry out their duties.

The expenditure to the end of March, 1928, on Hardwar electric-supply is Rs. 1,65,400 and on Hardwar water-supply Rs. 2,43,300; the latter figure includes Rs. 5,700 recently expended on filling up hollows and dressing the earth in the water-works compound.

The expenditure to date on the Kumbh Mela water-supply extension is Rs. 22,500, and the Kumbh Mela electric-supply extension was carried out by the Municipal Board themselves.

37. *Hathras water-supply improvements, Rs. 5.38 lakhs.*—*(a) Tube-well No. 1.*—The bore-hole was sunk down to 426 feet below the ground surface, but the water-bearing strata consisted of very fine sand in which strainers would be useless; the conditions were, however, favourable for a strainerless tube-well and the well was thus completed. It was found that five such tube-wells would be required for water-supply to the town.

*(b) Tube-well No. 2.*—The work has been taken up departmentally at the request of the Chairman Municipal Board. The work was started in February last, and the bore-hole taken down to 89 feet below the ground surface.

38. *Jaunpur water-supply improvements, Rs. 3.50 lakhs.*—This work was held up for a considerable time owing to delay in land acquisition. The tube-well is to be sunk sufficiently deep to explore every possibility of making it a success in a strata which is not excellent for

tube-wells. The necessary fund for this trial has been given by the Board of Public Health. The work was started in February last. Boring has been carried down to 128 feet below ground-level.

39. *Jhansi water-supply improvements, Rs. 20·82 lakhs.*—It has been decided that the work of water-supply from a dam at Babina will be undertaken by the Great Indian Peninsula Railway authorities, and that the distribution system for the municipal area will be undertaken by this department. The estimate for this latter work is being revised.

40. *Kosi water-supply improvements, Rs. 1·02 lakhs.*—The 9 inch tube-well (Rs. 0·13 lakh) was completed in 1926. The project for water-supply has been sanctioned and tenders have been invited for the work.

41. *Lucknow water-supply improvements, Rs. 15·65 lakhs.*—A project for reorganizing the distribution system (Rs. 9·90 lakhs) has been completed and sanctioned, and proposals for augmenting the filtration plant (Rs. 2·75 lakhs) and constructing a balancing tank (Rs. 3·00 lakhs) to give better supply to the cantonment area have been made. The reorganization work of the distribution mains is also to be commenced.

42. *Mussoorie hydro-electric and water-supply.*—This work is being carried out by the Municipal Board under their own Engineer and fair progress has been maintained to date. The new Diesel generating station at Kulugarh has been completed as far as the buildings are concerned, and the erection of the generating plant is in hand.

At Galogi the work of replacing the existing hydro-electric plant was taken in hand, but this cannot be completed until the Diesel station is in operation without affecting the continuity of the supply.

The high tension transmission overhead ring main is well in hand, and a considerable length has been completed.

The Landour water-supply pumping station building has been held up owing to a delay in acquiring the land for the station site and energetic steps are necessary to push on with this acquisition if the pumping station is not to be delayed.

43. *Muttra water-supply improvements, Rs. 0·82 lakh for new tube-wells.*—The increased discharge from the tube-wells was maintained after cleaning.

The Muttra Electric Supply Company are now supplying electric energy to Muttra, and the Municipal Board are taking electric power for water-supply pumping purposes according to their agreement. One old direct current motor has been replaced by an alternating

current motor (Rs. 0·07 lakh). An estimate for an additional tube-well (Rs. 0·50 lakh) was sanctioned, and work will be started on the board's raising funds.

44. *Muttra district: Banjatra route water-supply improvements, Rs. 0·28 lakh.*—The construction of one well with a hand pump has been completed and four more wells with hand pumps are in hand. More attention is required on the part of the District Board as regards the maintenance of these pumps.

45. *Roorkee electric-supply, Rs. 0·55 lakh.*—The contract for this work has been let and orders have been given to the contractors to start the work.

46. *Rae Bareli water-supply improvements, Rs. 1·76 lakhs.*—A forecast of cost for water-supply has been approved by the Municipal Board and funds for a trial tube-well (Rs. 0·20 lakh) have been given.

47. *Unao water-supply improvements, Rs. 1·22 lakhs.*—The work was successfully completed and handed over to the Municipal Board.

48. *Other works.*—Besides the works noted, proposals for an electric-supply at Fyzabad (Rs. 2·00 lakhs), at Khurja (Rs. 1·87 lakhs), Muzaffarnagar (Rs. 1·69 lakhs), and water-supply at Bareilly central jail (Rs. 0·70 lakh), Kanauj police station (Rs. 0·03 lakh), Piran Kaliar water-supply (Rs. 0·38 lakh) and Bhowali electric and water-supply (Rs. 2·00 lakhs) are under consideration. Also considerable work was done in connexion with water-supply to provincial buildings, e.g., the unfiltered water-supply to Government House, Lucknow, which was finally completed, the water-supply to Naini central jail (Rs. 0·19 lakh) and Bareilly district jail (Rs. 0·06 lakh), together with the water-supply and sanitary fittings to the Provincial Hygiene Institute, Lucknow (Rs. 0·63 lakh) and the Technological Institute, Cawnpore, (Rs. 1·67 lakhs).

#### DRAINAGE (GENERAL).

49. In no sphere of municipal activity is the want of properly trained and experienced technical staff more apparent than in the drainage and conservancy arrangements in the large cities of this Province.

The four largest cities possess more or less efficient systems of main sewers, and some of them many miles of street sewers connecting to the trunk sewers, yet advantage is not taken of this underground work, but foul water is allowed to flow in the road-side surface drains, more often than not under the platforms of shops, becoming a nuisance and a menace to health, while an insignificant sum of money would suffice to trap the foul water and lead it off in the underground system. Large quantities of valuable filtered water are used in futile attempts to flush these surface drains, and no effort is ever made to

bring those bye-laws into force whereby property owners can be compelled to make arrangements for discharging foul water from their premises into the sewers provided for public use.

Much greater sums of money should be spent in the large cities of these provinces on drainage work and there is a great need for some comprehensive programme of construction. I know of no more urgent needs than the extension of underground drains in the mohallas of the large cities where the sanitary conditions are deplorable. Assistance by means of grants-in-aid for such a programme would be fully justified.

No regular and periodic examination is made of sewers and surface drains nor are timely steps taken to keep the works in repair. This is evident in cases where cunettes have been provided in earthen storm channels. The existence of the masonry cunette is sometimes completely forgotten owing to the deposit of silt resulting in complete obliteration of the masonry work.

Manholes are often used as convenient dumping places for rubbish, the covers being broken or left unrepaired, connexions are often made without any precaution as to the quality of the work and the necessity for providing gully grates and traps. This procedure, sooner or later, results in the sewers becoming heavily silted.

There are many instances where the Municipal Boards could save in the cartage of night-soil by the intelligent provision of additional water-flushed pail dépôts.

The provision of public conveniences is everywhere found to be meagre and unoccupied grounds in the vicinity of habitations tend to be used by the public the consequent fouling being the cause of the intolerable fly nuisance in the large cities, as the conservancy staff is never adequate enough to cover the area exposed.

The sewage farms which exist also betray the same lack of skilled supervision, only a small fraction of the value of the cultivated land being recovered by the boards. The leases given to cultivators are, in many cases, far too long. In every case, the methods of sewage treatment are open to grave abuse, some fields are over-sewaged and the crop ruined, while other cultivators are deprived of the necessary flow to irrigate their land, and the great bulk of the sewage is allowed to run to waste.

Sewage farms if properly looked after, should constitute an important source of municipal revenue, and, if intelligently used, they should keep the prices of fodder and vegetables to a reasonable level in their respective cities.

#### DRAINAGE MAINTENANCE.

50. *Agra*.—Attention was drawn by an inspection note to the neglect to maintain in proper order the Shahganj sewer, and to take

full advantage of its existence. It was also pointed out that great waste of water was taking place by the water-supply connexion being allowed to run to waste in the flushing tank.

The nuisance at the Fort still remains as acute as ever, and becomes intolerable at the end of the rains and the commencement of the hot season. The board derive a considerable revenue from cultivators by letting out the sand-bed in the Jumna river to cultivators and providing pipes by means of which a small fraction of the sewage flow from the city can be used for irrigation purposes. The necessity for a proper main intercepting sewer and a pumping station at Agra is one of the most urgent works in the province, and a properly operated sewage farm would yield a return sufficient to pay for the bulk of the capital expenditure.

51. *Allahabad.*—The municipality shows little initiative in putting to proper use the existing underground system. There are many surface drains carrying foul water through the bazars at present—a nuisance which could easily be prevented.

An accident took place at the sewage pumping station on December 15, 1927, when engine No. 2 broke down. The engine frame, trunk, piston liner, connecting rod, big end bearing bolts and balance weights, etc., were all broken or badly damaged. The crank shaft bearings were also cracked and the exhaust valve lever broken. This placed the engine out of commission for the last four months. Had the spare parts, recommended in January, 1927, been obtained, this engine could have been re-conditioned in two or three weeks.

As regards the sewage farm, the great bulk of the sewage is permitted to run to waste in the Jumna and pollute the *Sangam*. No serious effort has been made to take advantage of this extra sewage flow, and it is stated that the rights of the cultivators have become so vested under the law that they have acquired permanent rights to the ground. They can only use a small portion of the sewage available, and they obstruct its use by extensions to other areas.

52. *Benares.*—The drainage system of this city has now extended to a large mileage, and there are signs that private house owners are commencing to realize the advantage of connexions.

During recent inspections the drains in many places were blocked with earth and screenings, and the ghat sewer, owing to a subsidence, was choked and the sewage was overflowing into the Ganges at several points where bathing was in progress. The board seem to have no constructive proposals for dealing with this matter.

53. *Cawnpore.*—This city, perhaps, takes greater interest than any other in its drainage work, and has persistently followed a policy of extending its drainage with immense benefit to its population. The most urgent need at Cawnpore is the reorganization of the Permit Ghat pumping station, and the board have been given advice as to how to

proceed in this matter. It is hoped that the work will not long be delayed.

54. *Lucknow*.—The western intercepting sewer which was constructed from a grant made by the Government some years ago, and which failed near the sewage pumping station owing to the excessive flood-level in 1924, has, so far, not been reinstated. The work is in hand, however, and it is hoped that before the rains break the sewer will be in full operation. This is a matter of great importance, as practically the whole of the city sewage, which is not intercepted by the eastern sewer, finds its way via the storm channels to the Gomti, and causes a great nuisance and a threat to health by the pollution of the river.

The same remarks apply to the eastern intercepting sewer which at present overflows near the Paper Mills Bridge, causing a nuisance bitterly complained of by the public. The sewage pumping station has been reinstated and has been working satisfactorily since the beginning of January last.

Only a small portion of the sewage farm area is brought under sewage irrigation, and the bulk of the sewage pumped finds its way via the watercourses to the Gomti. There is great scope for increasing revenue from this farm.

55. *Mussoorie*.—The sewerage system in this hill station functions satisfactorily. The board should explore the possibility of reducing their night-soil cartage charges by the use of modern appliances, the extension of the sewers and the provision of pail dépôts. It should be possible to bring larger areas under treatment at the sewage farms, and thereby derive greater revenue.

56. *Naini Tal*.—The intercepting sewer between Malli Tal and Talli Tal still gives considerable trouble. Its replacement by a properly graded sewer is an urgent necessity.

57. *Dehra Dun*.—The defect noticed is the tendency for the conservancy staff to neglect the periodic cleaning of gratings on the surface drains. This results in foul water flooding into the storm channels and creating a nuisance. Particular attention should be paid to those gullies in the Arhat Bazar.

At the sewage farm here, as well as in other municipalities, it has been noticed that the great bulk of the sewage is not used but allowed to run to waste in the ravine, appreciable revenue being lost to the board in this manner.

58. *Muttra*.—The sewerage system at Muttra functions very satisfactorily and is maintained in fairly good order. The main sewer has effectively prevented pollution to the bathing ghats, and when the sewage pumping station is finally completed there should be no complaints regarding the fouling of the burning ghat by the present outfall.



Particular attention will have to be paid to the sewage farm so that it may be developed on proper lines, and not allowed to become a source of loss instead of revenue to the board.

59. *Rikhikesh*.—The drainage work has been sadly neglected, and has been the subject of adverse inspection reports recently. The foul water which was intended to be collected and discharged well downstream of the bathing ghats was found during the recent inspection to be overflowing from the inspection covers of manholes and discharging among a throng of bathers. The attention of the Chairman of the Notified Area was drawn to this state of affairs, and advice on the necessary points given.

#### DRAINAGE CONSTRUCTION AND PROJECTS.

60. *Agra*.—The project for Agra sewerage and sewage disposal (Rs. 49·56 lakhs) has been sanctioned, and the programme of expenditure of the first instalment of the work costing Rs. 8 lakhs has been decided upon. Proposals for financing the work are under consideration.

61. *Agra Circuit House drainage extension Rs. 0·02 lakh*.—The work has now been completed and the sewage from the Circuit House will be disposed of by means of contact beds and percolating filters.

62. *Ajodhya drainage improvements, Rs. 4·60 lakhs*.—A project for this work has been prepared and presented to the board. The work is arranged to be carried out in three instalments as funds permit.

63. *Allahabad sewerage and sewage disposal, Rs. 1·08 lakhs*.—The Municipal Board have shown inordinate delay in completing the work of diverting the emergency outfall to the Jumna (Rs. 0·15 lakh). Grants were made to cover the whole cost of this work in 1924 and 1927. The Board of Public Health have required the Municipal Board to refund the allotment if this work is not completed without further delay. The construction of the Katra Colonelganj drainage (Rs. 0·92 lakh) is also being carried out by the Municipal Board. Adverse reports have been received as to the manner in which the Municipal Board are handling this work, and the quality and rate of progress of the work has also been questioned.

64. *Benares sewerage and sewage disposal, Rs. 8·24 lakhs*.—A report is under preparation for recommending steps necessary to prevent pollution of the ghats by several subsidiary sewer outfalls.

As Benares possesses a main sewer, and no large sum of money is required to treat the sources of pollution, it is a pity that this state of affairs has been permitted to continue for such a long period.

65. *Budaun drainage improvements, Rs. 1·00 lakh*.—The fair project for this work has been taken in hand.

66. *Barcilly anti-malarial work, Rs. 1.27 lakhs.*—A first instalment of this work (Rs. 0.42 lakh) consisting of re-grading and lining a storm channel has been completed. Further extensions are under consideration. The full benefit of this work, already completed, cannot be derived until the storm channel through railway land receives attention, and the railway authorities have been addressed on this subject.

67. *Cawnpore sewerage and sewage disposal, Rs. 8.06 lakhs.*—The Municipal Board have in hand some extensions to the sewerage system, and the question of land treatment of sewage and purification by the activated sludge method is under consideration.

An estimate for draining the Agricultural College and an experimental plant for sewage disposal, there, by the activated sludge method (Rs. 0.66 lakh), is under preparation.

68. *Dehra Dun drainage improvements Rs. 2.97 lakhs.*—A project for improving the western portion (Rs. 2.97 lakhs) was sanctioned.

69. *Gorakhpur drainage improvements, Rs. 2.61 lakhs.*—A project for this work is being prepared.

70. *Hardwar sewerage and sewage disposal, Rs. 8.14 lakhs.*—An estimate has been completed and presented to the board.

71. *Kaimganj drainage improvements, Rs. 0.61 lakh.*—This work has been undertaken to improve the system of surface drainage of Kaimganj Notified Area in Farrukhabad district. The progress of this work has been interfered with by an outbreak of plague.

72. *Kanauj drainage improvements, Rs. 0.15 lakhs.*—This work, consisting of an outfall sewer and a sewage farm, has been satisfactorily completed and handed over to the board.

73. *Lucknow sewerage and sewage disposal.*—The work of remodelling the sewage pumping station (Rs. 0.47 lakh) has been completed by this department, and repair to the intercepting sewers (Rs. 1.56 lakhs) are in progress by the Municipal Board's agency. It is hoped that the latter work will be completed before the break of the rains.

74. *Lucknow anti-malarial and drainage of Ghazi-ud-din Hyder canal, Rs. 5.67 lakhs.*—The nuisance due to the stagnation of foul water and the ponding of surface water in the bed of this canal, which has been under discussion for some decades, has now been taken up in earnest as a corollary to the Sarda canal construction.

The major portion of the catchment area of this derelict canal, which has developed into a storm channel of formidable dimension, will now be cut off from the Lucknow area, and the drainage diverted.

An estimate for lining the Ghazi-ud-din Hyder canal between the Canning Street Bridge and the Gomti and laying a 24-inch sewer to intercept the sewage, now finding its way into the canal, was prepared

and sanctioned. Tenders for the work of construction were also called for. This work, when completed, will prevent the breeding of mosquitoes over a large area, and the sewer will meet a long-felt want by providing an efficient method of foul water drainage.

75. *Meerut drainage improvements, Rs. 11.54 lakhs.*—Due to pressure of other work much progress was not possible on this work.

76. *Muttra sewerage and sewage disposal.*—An estimate for providing additional electro-motor pumps has been sanctioned, and the work started. The Municipal Board have also been advised concerning the steps necessary for letting out the sewage farm to the best advantage.

77. *Naini Tal sewerage and sewage disposal, Rs. 2.47 lakhs.*—The work of certain drainage improvements, approved by the Municipal Board, will be undertaken on funds being received.

78. *Shahjahanpur drainage improvements, Rs. 11.95 lakhs.*—A forecast of cost for essential drainage improvements has been prepared and presented to the Municipal Board. To facilitate the financing of the scheme the work has been divided into instalments.

79. *Saharanpur drainage improvements, Rs. 1.70 lakhs.*—The first instalment of the drainage scheme (Rs. 1.70 lakhs) is being revised at the request of the Municipal Board.

This municipality has been very slow to move in matters of public health. A pure water-supply and proper drainage are matters of vital importance for this town and have been discussed and put aside on numerous occasions without anything being accomplished.

80. *Unao drainage improvements, Rs. 1.79 lakhs.*—Since the introduction of water-supply to the town, the necessity for a proper drainage system is accentuated. Preliminary proposals were presented to the board, and the question of financing the scheme is under consideration.

81. *Other works.*—In addition to the works noted, proposals for Brindaban drainage (Rs. 3.00 lakhs), Gokul drainage (Rs. 0.66 lakh), Jhansi Intermediate College drainage (Rs. 0.20 lakh) together with those for drainage improvements for certain jails and police lines and a number of anti-malarial works are in hand.

82. *Staff.*—Mr. G. McC. Hoey handed over charge of the office of Superintending Engineer, Public Health Department, United Provinces to Mr. F. D. Tunncliffe on March 30, 1927, the latter officer occupied the post till November 14, 1927, from which date Mr. Hoey, having returned from leave, resumed charge till the close of the year.

Mr. P. S. Viswanathan occupied the post of the Personal Assistant to Superintending Engineer, Public Health Department, United Provinces, up to February 9, 1928, on which date his services were transferred to the Public Works Department, Buildings and Roads Branch. Mr. H. G. Trivedi relieved Mr. Viswanathan and held the

post of Personal Assistant to Superintending Engineer, till the close of the year.

Mr. W. Saise continued as Executive Engineer, I Division, Public Health Department Meerut, throughout the year.

Mr. K. Chattopadhyaya held charge of the II Division, Public Health Department, Allahabad, from March 25, 1927 to November 16, 1927, and Mr. F. D. Tunncliffe from November 17, 1927, to March 21, 1928, when he proceeded on leave to England; Mr. S. B. Mathur thereupon took charge of this Division which he held till the close of the year.

Mr. N. D. Chowdhry held charge of the Well-Boring Operations Division, Cawnpore, throughout the year.

In addition to the above, one Assistant Executive Engineer, eight Assistant Engineers, twenty-five subordinates and the requisite number of computers, draftsmen and clerical staff were employed.

The services of Mr. M. C. Gupta, Assistant Executive Engineer, who left this department in June, 1926, for the post of Municipal Engineer, Allahabad, terminated on expiration of his agreement with effect from April 22, 1927.

The post occupied by Mr. F. J. Mallet was designated Water-works Engineer and Mechanical Adviser to Government, and Mr. Mallet held the post throughout the year.

The administrative control of the Public Health Engineering Establishment was transferred from the Public Works Department, Buildings and Roads and Railway Branches to that of the Municipal Department, with effect from October, 1, 1927.

Six Assistant Engineers, nine subordinates, four computers, six clerks, and six draftsmen have been made permanent on non-pensionable posts, with effect from July 1, 1927.

G. McC. HOEY, M.INST.C.E.,  
*Superintending Engineer,*  
*Public Health Department,*  
*United Provinces.*

... of ... ..

Mr. W. Bates continued as Executive Engineer, I Division, Public Health Department during the year.

Mr. K. C. ... .. of the II Division, Public Health Department, ... .. from March 25, 1921 to November 16, 1921, and Mr. Y. ... .. from November 17, 1921 to March 21, 1922, when he proceeded on leave to England. Mr. B. ... .. then acted as Executive Engineer, I Division, which he held till the close of the year.

Mr. D. ... .. of the Well Being Operations, ... .. throughout the year.

In addition to the above, one Assistant Executive Engineer, Public Health Department, ... .. and the ... .. number of ... .. and ... .. were employed during the year.

The services of Mr. M. ... .. Assistant Executive Engineer, Public Health Department, ... .. for the year of 1921-22, were terminated on April 22, 1922, on account of his resignation.

The post occupied by Mr. V. J. ... .. was declared vacant on ... .. and Mr. ... .. was appointed to the post on ... ..

The administrative control of the Public Health Department was transferred from the Public Works Department to the ... .. and ... .. on ... ..

By ... .. and ... .. on ... .. and ... .. have been made permanent on ... .. with effect from July 1, 1921.

... ..  
... ..  
Public Health Department,  
Central Division.

... ..  
... ..  
... ..  
... ..  
... ..

Statement of expenditure of the year

Sl. No.	Particulars	1931-32	1932-33	1933-34	1934-35
1	Salaries and allowances of staff	1,00,000	1,10,000	1,20,000	1,30,000
2	Grants-in-aid	50,000	55,000	60,000	65,000
3	Interest on loans	10,000	12,000	15,000	18,000
4	Depreciation	5,000	6,000	7,000	8,000
5	Contingencies	15,000	18,000	20,000	22,000
6	Other miscellaneous	20,000	25,000	30,000	35,000
	<b>Total</b>	<b>1,50,000</b>	<b>1,66,000</b>	<b>1,82,000</b>	<b>1,98,000</b>

# APPENDICES.

(a) Includes staff salaries and allowances.  
 (b) Includes grants-in-aid.  
 (c) Includes interest on loans.  
 (d) Includes depreciation.  
 (e) Includes contingencies.  
 (f) Includes other miscellaneous.  
 (g) Includes grants-in-aid.  
 (h) Includes interest on loans.  
 (i) Includes depreciation.  
 (j) Includes contingencies.  
 (k) Includes other miscellaneous.  
 (l) Includes grants-in-aid.  
 (m) Includes interest on loans.  
 (n) Includes depreciation.  
 (o) Includes contingencies.  
 (p) Includes other miscellaneous.  
 (q) Includes grants-in-aid.  
 (r) Includes interest on loans.  
 (s) Includes depreciation.  
 (t) Includes contingencies.  
 (u) Includes other miscellaneous.  
 (v) Includes grants-in-aid.  
 (w) Includes interest on loans.  
 (x) Includes depreciation.  
 (y) Includes contingencies.  
 (z) Includes other miscellaneous.

## Statement of operations of various water-works

Particulars.	Agra.	Allahabad.	Benares.	Cawnpore.	Lucknow.	Meerut.
<i>Population.</i>						
1. By census of 1921 in municipality.	163,902	145,658	195,373	195,081	217,167	77,711
2. By census of 1921 in cantonments.	22,044	11,567	3,074	21,351	23,391	44,898
3. Inhabitants drawing their supply from mains.	187,946	157,227	198,447	216,436	201,334	77,711
<i>Consumption of water.</i>						
4. Metered supplies—						
(a) Cantonments, gallons	157,683,900	91,590,000	1,080,100	8,844,000	86,300,000	Nil
(b) Trade „	58,050,400	20,187,000	1,074,300	269,815,800	39,214,400	12,288,000
(c) Domestic (bungalows, etc.), gallons.	47,722,500	58,908,700	8,800,400	326,647,300	161,972,600	198,000
(d) Buildings, gallons ..	2,407,000	5,208,300	16,292,700	12,879,700	10,225,800	1,283,000
Total metered supplies, gallons.	265,868,800	175,894,000	27,247,500	618,187,700	297,712,800	13,769,000
5. Unmetered supplies—						
(a) Domestic (assessment or ferrule), gallons.	1,107,482,500	429,951,000	1,244,188,400	1,483,403,300	870,000,000	192,062,000
(b) Municipal purposes (road watering, irrigation and flushing etc.), gallons.	175,950,500	522,567,000	706,353,300	194,846,000	298,588,700	3,447,000
(c) Stand posts, gallons ..	243,116,200	266,654,000	376,721,800	167,608,000	337,323,300	199,723,000
(d) Buildings, „ ..	5,029,000	Nil	Nil	744,000	16,000,200	Nil
Total unmetered supplies, gallons.	1,531,578,200	1,219,172,000	2,327,263,500	1,846,601,300	1,521,917,200	395,237,000
6. Total quantity pumped during the year (items 4 and 5), gallons.	1,797,442,000	(a) 1,395,066,000	2,354,511,000	2,464,789,000	1,819,630,000	409,006,000
7. Daily average supply, gallons.	4,911,044	3,811,656	6,433,090	6,734,396	4,971,667	1,117,500
8. Maximum daily average in any month, gallons.	5,318,900	4,284,265	7,224,418	8,662,375	5,834,194	1,326,500

(a) Includes Mayo Hall Tube Well pumping 59,346,000 gallons.

(b) Includes gravitation supply 4,730,400 gallons.

(c) Includes gravitation supply 14,683,300 gallons.

(d) Water Works handed over to municipal board in June, 1927, and record maintained from July 16, 1927.

I.

the United Provinces for the year 1927-28.

Mussoorie.	Naini Tal.	Dehra Dun.	Jhansi.	Mirzapur.	Muttra.	Fyzabad.	Hardwar.	Unao.
12,948	16,517	34,092	54,385	54,994	42,615	51,842	9,024	11,147
2,346	802	Nil	12,069	Nil	10,235	5,278	Nil	Nil
15,289	17,319	34,092	25,000	33,400	42,615	30,000	9,024	9,000
6,82,700	2,247,400	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Nil	121,400	16,700	1,160,000	6,666,100	1,439,200	Nil	132,400	Nil
28,005,600	15,184,800	3,548,100	1,950,000	76,200	2,421,500	7,951,000	913,100	Nil
Nil	293,700	Nil	Nil	Nil	Nil	265,000	Nil	Nil
28,688,300	17,847,300	3,564,800	3,110,000	6,742,300	3,860,700	8,216,000	1,045,500	Nil
10,669,300	16,307,400	106,435,200	1,296,000	160,580,100	154,235,800	72,517,900	5,516,500	13,732,000
14,225,700	51,900		19,343,800	140,647,900	44,720,000	21,755,400	*9,766,700	
42,677,200	18,336,200		25,038,200	52,937,700	87,600,000	43,510,800	17,420,300	
3,556,500	72,200		Nil	Nil	3,115,500	7,251,900	72,000	
71,128,700	34,767,700	106,435,200	45,678,000	354,215,700	239,671,300	145,036,000	32,775,500	13,732,000
(b) 99,767,000	(c) 52,615,000	110,000,000	48,788,000	360,958,000	293,532,000	153,252,000	33,821,000	(d) 13,732,000
272,587	143,757	300,546	133,300	986,224	802,000	418,721	92,407	52,815
341,857	220,033	450,000	151,383	1,046,875	989,516	544,963	273,525	58,355

\* Includes 7,002,400 gallons wastage.



## Statement of operations of various water-works

Particulars.	Agra.	Allahabad.	Benares.	Cawnpore.	Lucknow.	Meerut.
9. Consumption per head per day for trade alone, gallons.	·85	·35	·02	3·41	·53	·43
10. Consumption per head per day for municipal purposes and buildings, gallons.	2·70	9·17	9·95	2·63	4·41	·17
11. Consumption per head per day for domestic purposes, gallons.	22·86	14·72	22·45	25·08	19·75	13·78
12. Total consumption per head per day (items 9, 10 and 11), gallons.	26·41	24·24	32·42	31·12	24·69	14·38
13. Hours of daily supply ..	10·00	11·95	10·38	16·83	16·00	16·00
<i>Lift of pumps.</i>						
14. From river to settling tanks, feet.	47·00	116·98	82·68	108·23	98·41	15·16
15. From filtered water pumps to town distribution, feet.	143·00	78·38	102·75	78·87	66·32	122·42
16. Total lift .. Feet	190·00	195·36	185·43	187·16	164·73	137·58
<i>Supply connexions assessment.</i>						
17. Number of connexions made during 1927-28.	205	257	149	273	623	73
18. Total number of connexions.	4,612	5,634*	12,634*	7,994*	8,323	1,695
<i>Metered.</i>						
19. Number of house connexions made during 1927-28.	Nil	2	33	165	13	3
20. Total number of house connexions.	124	270*	86	932*	369	13
21. Number of trade connexions made during 1927-28.	Nil	Nil	2	4	15	Nil
22. Total number of trade connexions.	87	36*	31	129	53	21
<i>Annual charges and cost of water supplied.</i>						
23. Maintenance charges. Rupees	1,66,569	1,79,331	1,96,504	2,53,604	2,04,716	43,724
24. Interest and sinking fund charges. Rupees.	50,460	1,15,369	1,03,109	34,522	2,46,231	Nil
25. Total charges.. ..	2,17,029	2,94,700	3,02,613	2,88,126	4,50,947	43,724

\* Revised figures supplied by Chairman, Municipal Board.

I.

the United Provinces for the year 1927-28—(continued).

Assoree.	Naini Tal.	Dehra Dun.	Jhansi.	Mirzapur.	Muttra.	Fyzabad.	Hardwar.	Unao.
Nil	·02	·0018	·13	·47	·09	Nil	·04	Nil
3·18	·07	Nil	2·11	10·01	3·07	2·67	2·98	} 5·87
14·65	8·21	8·8144	3·09	15·20	15·66	11·29	7·22	
17·82	8·30	8·8157	5·33	25·63	18·82	13·96	10·24	5·87
9·66	7·55	24·00	7·90	24·00	8·50	9·58	11·00	11·00
Cray 1,800·00	H. L. 1,143·60	} Gravity Supply	..	} Gravity Supply	13·00	11·78	..	47·00
okinon 640·00	L. L. 451·60		190·00		124·00	121·97	197·60	83·00
Alaru 1,300·00	L. L. 252·60		..		137·00	133·75	197·60	130·00
Av. 1,267·59	Av. 422·75	..	190·00	..	137·00	133·75	197·60	130·00
3	Nil	Nil	8	147	9	85	78	94
702*	5*	4	49*	2,393*	1,389	841	96*	94
10	8	8	Nil	3	1	7	4	Nil
471*	290*	36	8*	70*	2	39	4*	Nil
Nil	5	Nil	Nil	11	10	Nil	Nil	Nil
Nil	23*	1	2	136	18	Nil	Nil	Nil
57,192	40,615	10,054	13,491	14,657	40,223	24,186	18,575	4,513
28,833	25,589	19,871	Nil	22,991	10,966	11,426	11,424	Nil
86,025	66,204	29,925	13,491	37,648	51,189	35,612	29,999	4,513

## Statement of operations of various Water-Works

Particulars.	Agra.	Allahabad.	Benares.	Cawnpore.	Lucknow.	Meerut..
26. Cost per 1,000 gallons per 100 feet lift. Annas	·78	1·05	·72	·88	1·09	1·24
27. Cost per 1,000 gallons maintenance charges. "	1·48	2·06	1·34	1·65	1·80	1·71
28. Cost per 1,000 gallons interest and sinking fund. "	·45	1·32	·72	·22	2·16	Nil
29. Total charges per 1,000 gallons (items 27 and 23). "	1·93	3·38	2·06	1·87	3·96	1·71
<i>Incomes from water-works.</i>						
30. Water-rate recovered (assessment). Rupees	1,75,679	2,86,684	2,13,430	3,90,443	3,14,988	23,389
31. Sale of water by meter. "	1,06,531	74,932	11,025	1,23,065	1,19,935	4,090
32. Other receipts. "	2,475	4,281	14,075	4,061	37,385	443
33. Total income (items 30, 31 and 32). "	2,84,685	3,65,947	2,38,530	5,17,569	4,72,255	28,372
<i>Incomes and working charges.</i>						
34. Receipts per 1,000 gallons supplied through meter. Annas	6·41	6·82	6·47	3·18	6·44	4·75
35. Receipts per 1,000 gallons supplied through assessment rating. "	1·86	3·82	1·56	3·42	3·70	·98
36. Receipts per 1,000 gallons supplied on total consumption. "	2·53	4·20	1·62	3·36	4·15	1·11
37. Loss per 1,000 gallons supplied (items 29-36). "	Profit ·60	Profit ·82	·44	Profit 1·49	Profit ·19	·60
38. Deficit on year's working. Rupees	67,656	71,147	64,083	2,29,443	21,303	15,352
Meter rent included in item 31. "	1,520	3,701	602	10,532	5,852	97

I.

The United Provinces for the year 1927-28—(concluded).

Almora.	Naini Tal.	Dehra Dun.	Jhansi.	Mirzapur.	Muttra.	Fyzabad.	Hardwar.	Unao.
1.72	2.92	Nil	2.83	Nil	1.60	1.89	4.45	4.05
9.17	12.35	1.46	4.42	.65	2.19	2.53	8.79	5.26
4.62	7.78	2.89	Nil	1.02	.60	1.19	5.40	Nil
13.79	20.13	4.35	4.42	1.67	2.79	3.72	14.19	5.26
7,843	45,330	234	13,270	22,327	55,224	36,279	2,033	685
48,497	30,488	7,588	1,446	4,225	1,355	5,551	618	Nil
1,280	2,676	1,447	242	744	2,262	548	234	332
57,620	78,494	9,269	14,958	27,796	58,841	42,378	2,980	1,517
27.09	27.33	34.05	7.44	10.03	5.61	10.81	9.38	Nil
2.05	22.09	.25	4.73	1.06	3.18	4.06	1.16	1.77
9.24	23.87	1.35	4.90	1.23	3.21	4.42	1.41	1.77
4.55	Profit 3.74	3.00	Profit .48	.44	Profit .42	Profit .70	12.78	3.49
28,405	„ 12,290	20,656	„ 1,467	9,852	„ 7,652	„ 6,766	27,019	2,996
2,144	2,394	5	107	276	126	188	82	Nil

## Annual maintenance accounts of

Particulars.	Agra.	Allahabad.	Benares.	Cawnpore.	Lucknow.	Meerut.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<b>I.—Establishment—</b>						
(a) Pumping .. ..	17,922	} 45,464	39,057	31,500	} 71,956	9,857
(b) Workshops .. ..	4,570		15,510	14,836		..
(c) Settling tanks and filters ..	491	} 7,85	698	11,176	..	462
(d) Inlet chambers, well and grounds etc.	..	} 2,618	..	800	..	..
(e) Distribution .. ..	10,284	12,604	12,864	15,700	..	4,136
(f) Clerical staff .. ..	1,483	} Included in (a).	4,676	3,864	}	1,589
(g) Menial staff .. ..	3,091		1,445	828		..
(h) Office contingencies ..	2,087	} 3,809	1,270	318	915	1,064
(i) Rent .. ..	410		836	675	600	60
<b>II.—Fuel lubricants and stores—</b>						
(a) Fuel (coal, fuel oil electric energy)	(1)59,585	(2)60,033	(3)77,759	(4)98,950	(5)89,528	(6)988
(b) Lubricating oil .. ..	6,069	} 6,848	3,300	6,282	3,035	274
(c) Waste .. ..	1,021		1,800	..	..	150
(d) Packing .. ..	475	..	445	3,050	..	280
(e) Petty stores .. ..	6,787	*11,229	11,022	6,572	2,356	1,272
<b>III.—Intake—</b>						
(a) Training river .. ..	8,859	..	20	32	Nil.	..
(b) Cleaning channels and wells ..	5,189	..	10	..	35	80
<b>IV.—Settling tanks and filters—</b>						
(a) Cleaning settling tanks and wells	3,699	..	1,132	145	19,646	100
(b) Cleaning and renewing filter-beds.	7,841	..	2,797	89	4,234	1,649
(c) Purchase of sand .. ..	14,525	} 6,366	725	2,852	24	620
(d) Purchase of alumino ferric ..	..		4,935	10,191	Nil.	2,765
<b>V.—Distribution—</b>						
(a) Pipes and fittings .. ..	466	4,325	1,460	5,016	2,056	1,142
(b) Meters .. ..	..	..	43	8,271	855	..
(c) Standposts or hydrants ..	20	..	..	..	Nil.	..
<b>VI.—Repairs—</b>						
(a) To tanks .. ..	430	..	80	..	Nil.	54
(b) To buildings and grounds ..	8,240	2,091	3,390	1,401	693	616
(c) To machinery .. ..	1,438	7,581	7,602	3,401	6,483	3,880
(d) To rising main .. ..	..	†7,708	992	..	..	..
(e) To tools and plant .. ..	..	..	..	6,120	..	..
VII.—Water analysis .. ..	587	1,005	2,556	995	2,300	1,082
VIII.—Cost of water.						
Canal department dues .. ..	1,000	:	..	20,500	..	5,844
<b>Total .. ..</b>	<b>1,66,569</b>	<b>1,79,331</b>	<b>1,96,504</b>	<b>2,53,604</b>	<b>2,04,716</b>	<b>43,724</b>
Interest and sinking fund charges ..	50,460	1,15,369	1,06,109	34,522	2,46,281	..
<b>GRAND TOTAL .. ..</b>	<b>2,17,029</b>	<b>2,94,700</b>	<b>3,02,613</b>	<b>2,88,126</b>	<b>4,50,947</b>	<b>43,724</b>

\*Includes repairs to pumping machinery of tube wells.

†For construction of new rising main in connexion with semi permanent scheme.

(1) Rs. 1,190 less on consumption. Electrical charges for Maithanj and Chili Int Rs. 349. Cost of fuel oil Rs. 15,097.

(2) Rs. 4,354 less on consumption. Electrical charges for Mayo Hall Rs. 4,388. Cost of fuel oil Daraganj Rs. 1,553.

(3) Includes Rs. 810 in excess of consumption.

(4) Includes Rs. 5,996 in excess of consumption.

## . II.

ter-works during the year 1927-28.

Assourie.	Naini Tal.	Dehra Dun.	Jhansi.	Mirzapur.	Muttra.	Fyzabad.	Hardwar.	Unao.	
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
6,960	7,032	..	2,272	..	10,920	5,166	1,700	1,064	
..		..	..	..	1,200	1,591	..	..	
..		..	..	..	4,860	..	..	1,020	..
..		..	..	..	..	..	..	2,523	..
1,613		..	..	..	..	4,620	1,649	1,080	329
1,631		..	1,897	..	360	480	709	300	..
1,335		..	4,264	..	1,697	498	1,364	150	181
1,246	..	139	579	478	92	586	..	191	
..	..	..	..	..	83	..	..	5	
38,893	(7)26,275	..	(8)4,784	..	(9)14,107	(10)6,840	(11)9,772	(12)1,183	
..	225	..	64	..	3,300	3,446	60	649	
1,668	..	..	29	..	60	48	30	78	
..	47	..	179	..	..	814	20	..	
..	..	..	290	..	773	3	90	108	
..	..	..	47	..	..	..	..	..	
..	..	..	657	..	..	..	..	..	
..	..	..	..	..	264	..	..	7	
..	..	..	..	..	..	..	..	..	
..	..	..	..	..	..	..	..	..	
1,200	2,859	3,248	196	2,512	..	97	447	..	
1,841	599	..	..		..	..	..	..	
..	..	..	..		..	71	..	..	
612	21	..	..	1,262	..	79	..	..	
852	238	..	58		..	391	206	100	389
3,101	2,579	..	296		..	1,990	1,223	617	108
..	..	..	34	..	586	40	..	..	
..	15	..	76	..	219	1,445	110	221	
1,240	725	506	..	2,683	..	144	666	..	
..	..	..	3,950	..	..	..	..	..	
57,192	40,615	10,054	13,491	14,657	40,223	24,186	18,575	4,513	
28,833	25,539	19,871	..	22,991	10,966	11,426	11,424	..	
86,025	66,204	29,925	13,491	37,648	51,189	35,612	29,999	4,513	

(5) Includes Rs. 5,555 in excess of consumption.

(6) Includes Rs. 550 in excess of consumption.

(7) Electrical charges.

(8) Rs. 1,773 less on consumption.

(9) Includes Rs. 337 in excess of consumption. Also includes Rs. 3,359 electrical charges not paid by the board.

(10) Rs. 2,097 less on consumption.

(11) Electrical charges.

(12) Includes Rs. 283 in excess of consumption.

## APPENDIX No. III.

Statement showing costs, initial of subsequent extensions and improvements, chargeable to capital on the various water-works in the United Provinces for the year ended March 31, 1928.

Water-works stations.	Initial capital cost.	Cost of subsequent extension, etc.	Expenditure during the year 1927-28.	Total of each line.
	Rs.	Rs.	Rs.	Rs.
Agra .. .. .	11,70,761	20,44,877	19,613	32,35,251
Allahabad .. .. .	16,24,061	16,07,738	4,90,651	37,22,450
Benares .. .. .	25,61,831	10,93,021	86,248	36,91,150
Cawnpore .. .. .	14,44,570	14,18,166	3,53,934	32,16,670
Lucknow .. .. .	15,15,736	41,70,505	12,971	56,99,212
Meerut .. .. .	7,51,710	64,316	1,189	8,17,215
Mussoorie .. .. .	4,79,754	6,56,127	4,099	11,39,980
Naini Tal .. .. .	2,47,000	7,92,599*	171	10,39,770
Dehra Dun .. .. .	97,241	2,85,135	36,906	4,19,282
Jhansi .. .. .	96,556	96,634	Nil	1,93,190
Mirzapur .. .. .	5,98,492	1,04,444	9,012	7,11,948
Muttra .. .. .	5,17,283	72,769	10,357	6,00,414
Fyzabad .. .. .	9,43,662	41,290	1,860	9,91,821
Hardwar .. .. .	1,96,919	2,77,690	2,845	4,77,454
Unao .. .. .	81,961	..	29,813	1,11,774
.....	..	..	..	..
.....	..	..	..	..
GRAND TOTAL ..	1,23,32,92	1,27,25,311	10,09,673	2,60,67,581

\*Revised figures supplied by Chairman, Municipal Board.

## APPENDIX No. IV.

Statement showing filter area out of operation, rate of filtration, and results of water analysis of the water-works in the United Provinces during the year 1927-28.

Water-works.	Sand filter area out of operation per million gallons pumped sq. feet.	Filtration rate in gallons per square foot per day of sand filter.			Water from supply mains.							
		Maximum.	Minimum.	Average.	Chemical analysis.			Bacteriological analysis.				
					Good.	Bad.	Total.	Number of samples tested.	Number of samples containing over 100 colonies.	Average number of microbes per c. c.	Percentage (on total) of samples over 100 per c. c.	
.. ..	3,216	34·00	24·00	31·82	2	2	4	251	12	3·94	4·78	
habad ..	16,070	50·00 *2,200	6·25 *685	8·89 *1,948·66	2	Nil	2	523	36	37·88	6·88	
ares ..	3,302	50·00	25·00	42·82	113	..	113	397	7	60·12	1·76	
ypore ..	285	57·00	12·00	43·93	Nil	Nil	Nil	406	1	17·19	·25	
know ..	21,092	56·20 *2,644	6·20 *988	23·37 *1,807	3	1	4	208	15	44·39	7·21	
erut ..	6,125	37·50	25·00	29·50	4	Nil	4	249	22	32·80	8·88	
soorie ..					..	..	..	51	14	41·81	27·45	
ni Tal ..		Water supply from deep springs and is not filtered.			1	1	2	17	11	151·23	64·70	
ara Dun ..					4	..	9	46	42	151·41	91·30	
nsi ..					Information not available.							
zapur ..		Gravitation supply.			..	..	..	6	Nil	14·83	Nil	
ttra ..					3	Nil	3	186	11	35·68	8·03	
zabad ..					Nil	2	2	121	5	35·96	4·13	
rdwar ..		Tube well supply.			2	Nil	2	78	9	41·46	11·53	
ao ..					Information not available.							

\* Paterson Filters.



## Details of pumps, filters, tanks, reservoirs, rising mains, etc.

Particulars.	Agra.	Allahabad.	Benares.	Cawnpore.	Lucknow.	Meerut.
1. Floor levels :—						
Unfiltered station, R.L.	505·00'	296·00'	254·00'	408·00'	367·50'	735·50'
Filtered station R.L.	505·00'	321·25'	263·00'	410·00'	395·50'	735·50'
2. Highest water level during the year, R.L.	494·60'	269·63'	231·00'	374·00'	355·50'	805·00'
3. Lowest water level during the year, R.L.	480·60'	238·31'	193·00'	356·50'	342·80'	771·00'
4. Particulars of plant :—						
Unfiltered station.	2 Diesel sets 2 L. D. Worthington. 2 Geared sets	1 Triple expansion rotary. 2 Beams ..	1 H. D. Worthington. 2 Geared sets	1 Triple expansion rotary. 2 Vertical L.D. Worthington pumps (dismantled).	2 Mather and Platt motors and centrifugal pumps.	2 Water power turbines. 1 Semi-portable engine.
Filtered station	2 Belliss and Morecom. 1 H. D. Worthington. 2 Motor driven Worthington Simpson centrifugal pumps at Maithan and Chili-Int.	2 Beams ..	2 Pairs of coupled beams.	1 H. D. Worthington. 2 L. D. Worthington.	1 H. D. Worthington. 2 L. D. Worthington. 4 Belliss-Morecom engines direct connected to alternators. 3 Mather and Platt motor driven centrifugal pumps.	2 Water power turbines.
5. Capacity of pumps :—						
Unfiltered station.	G.P.M. Diesel 3,000 each. L.D.W. 1,700 each. Geared 1,300 each.	Triple 2,700.. Beams 2,100 each.	H. D. W. 8,333 Geared 4,200 each.	Triple 3,625..	Centrifugal 7,500.	1,200 each..
Filtered station.	" Beams 3,000 each. Belliss 2,500 each. H. D. W. 2,300 each. Worthington pump 500 each.	Beams 3,100 each.	Beams 7,500 each.	H. D. W. 4,719 L. D. W. 3,125 each.	H. D. W. 3,125 L. D. W. 3,125 each. 3 centrifugal 1— 6,000 2— 4,000	1,100 each..

o. V.

in the water-works of the United Provinces for 1927-28.

Mussoorie.	Naini Tal.	Dehra Dun.	Jhansi.	Mirzapur.	Muttra.	Fyzabad.	Hardwar.	Unao.
Murray spring. 5,494 ft.	..	..	749'50'	..	..	..	..	..
Bhilaru spring. 5,700 ft.	..	..	..	..	580'00'	328'57'	941'80'	411'34'
Mackinon spring. 6,000 ft.	..	..	767'90'	460'00'	..	..	..	..
..	..	..	748'35'	453'00'	..	..	..	..
..	..	..	2 Compound Worthington pumps.	..	..	..	..	..
Murray spring:— Sets electrically driven geared, three ram pumps single reduction gearing. Bhilaru spring:— Sets as above. Mackinon spring:— Pumps as above but with double reduction gearing, semi-diesel oil engine.	Lake station steam pumps. Main station 3 L. D. Worthington. 4 Mather and Platt motor driven pumps. 2 Triple ram gear pumps.	..	..	..	2 Two cylinder Mirrless Diesel engines D. C. generators and motor driven Mather and Platt centrifugal pumps. One set converted to A. C. motor taking energy from the Electric Supply Company.	2 Two cylinder Mirrless Diesel engines and motor driven Mather and Platt centrifugal pumps.	3 Motor driven Mather and Platt centrifugal pumps.	One 20 B. H. P. Tangye oil engine. Two air lift pump in tubewell and 6' Worthington centrifugal pump.
..	..	..	209'5 each.	..	..	..	..	..
Murray spring 183. Bhilaru spring 196. Mackinon spring 85.	Lake 289 Main—one pump 218 two pumps 86 each. 2 H. Z. 125 each. 2 I. Z. 176 each. 2 L. Z. 310 each.	..	..	..	1,000 each	900 each	250 each	220

## Details of pumps, filters, tanks, reservoirs, mains, etc., in the

Particulars.	Agra.	Allahabad.	Benares.	Cawnpore.	Lucknow.	Meerut.
6. Number of rising mains.	Two .. Filtered pumps to service tanks.	Two .. Unfiltered pumps to settling tanks.	Two .. Unfiltered pumps to settling tanks.	Two .. Unfiltered pumps to settling tanks.	Two .. Unfiltered pumps to settling tanks.	One .. Filtered pump to tanks.
7. Length and size of rising mains.	2.5 miles—28". 1.75 miles—18".	1.84 miles—20" each.	Old .89 mile New .77 mile each 24".	1.39 miles—20" each.	Old 3.5 miles—20". New 3 miles—27".	7.25 miles—15". 1.61 miles—13".
8. Number of settling tanks.	Five ..	Three ..	Three ..	Three ..	Three ..	Three ..
9. Size of settling tanks.	266'×151'×16' each.	345'×230'×16.75' each.	403.5'×252.5'×15' each.	343.5'×243.5'×15' each.	240'×290'×13.5' each.	100'×60.5'×11' each.
10. Capacity of settling tanks Gallons.	2,200,000 each	1 & 3—4,400,620. 2—4,45,626	1 & 3—6,436,120. 2—6,508,927	7,840,460 each	5,972,600 each	528,000 each.
11. Number of filters.	Seven slow sand. One mechanical.	Six—slow sand Five—Pater-son.	Eight—slow sand. ..	Seven—slow sand. Ten—Peuch-chabal.	Seven slow sand. Five Pater-son.	Four slow sand. ..
12. Size of filters	Sand—200'×100' each.	Sand—200'×100' each. Paterson. 23'×19' each.	Sand—200'×100' each.	Sand—200'×100' each. Peuch-chabal—156'×23' each.	Sand 200'×100'×7' each. Paterson 23'×18'×10' each.	Sand—150'×100' each.
13. Number of clear water reservoirs.	Three ..	Two ..	Two ..	Three ..	Two ..	One ..
14. Size of clear water reservoirs.	105'×103'×10' each.	163'×104'×12' each.	178½'×148½'×12' each.	2 Old. 135'×106½'×12' each. 1 New. 135'×200'×12'.	107'×105'×12' each.	52½'×48'×7'
15. Capacity of clear water reservoirs Gallons.	676,000 each.	1,248,000 each	1,354,068 each	2,953,300 each. 1 (New) 2,025,000.	793,500 each	110,600 each.

## No. V—(continued).

water-works of the United Provinces for 1927-28—(continued).

Musoorie.	Naini Tal.	Dehra Lun.	Jhansi.	Mirzapur.	Muttra.	Fyz-abad.	Har-dwar.	Unao.
Three	Six	Four	Five	One	One	One	One	One
Pumping station to elevated reservoirs.	Pumping station to elevated reservoirs.	Gravitation supply.	Pumping station to service tanks.	Gravitation main.	Pumping station to balancing tanks.	Pumping station to balancing tanks.	Pumping station to balancing tanks.	Pumping station to balancing tanks.
1. 1.09 miles -5".	.93 mile 5"	1. Baldi spring.	3.65 miles 9" 1.71 miles 6"	.73 miles 12".	.91 miles 12'	1.3 miles 14".	.52 mile 577'×8" 5'3"×10" 986'×12" 690'×15"	.27 mile 6" .021 mile 5".
2. .599 mile -4".	.66 " 4" .63 " 3½"	1.39 miles 6".	.86 mile 6" 1.41 miles 4"					
3. .274 mile -3½".	.34 " 5" .49 " 5" .25 " 6"	3.30 miles 5". 2. Kolu-khet.						
..	..	3 miles 3" 4 " 2½" 3.5 miles 3".	..	..	..	..	..	..
..	..	3. Nala pani. 2.5 miles 2".	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..
..	One chlorine plant.	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..
Six	One	..	..	..	..	..	..	One
2—40'×25'×8'. 1—80'×20'×8'. 1—80'×24'×6'. 1—79.3'×38'×11'. 1—45'×53.5'×11'. ..	45'×40'×6' .. 67,500	..	..	..	..	..	..	11.5' dia. ×6' deep. ..

## APPENDIX

*Details of pumps, filters, tanks, reservoirs, mains, etc., in the*

Particulars.	Agra.	Allahabad.	Benares.	Cawnpore.	Lucknow.	Meerut.
16. Number of service reservoirs.	Four ..	Two ..	One ..	Two ..	One ..	Two ..
17. Size of service reservoirs.	H. Z. (1) 66' dia 11½' deep. L. Z. (2) 25' × 16' × 8' (1) 60' × 16' × 8'	116·8' × 181·8' × 12' each.	60' dia. × 15' deep.	50·5' × 36' (at Parade). 50·5' × 40' (at water works).	60' × 60' × 12'	25' × 34' each
18. Capacity of service reservoirs. Gallons.	H. Z. 275,000 L. Z. (2) 22,400 (1) 48,000	1,168,700 each	265,000 each	At Parade 321,396. At Water Works 396,785.	250,000	100,000 each
19. Number of public standposts.	One tap .. 246 Two taps 73 Four taps 68 W. N. cocks 47 Bibcocks 14 Pushcocks 46 Wall fountains .. 2 Other type 7	One tap .. 169 Two taps 60 Four taps 82 W. N. cocks 40 Bibcocks 170 Pushcocks. nil Other type 15	One tap .. 98 Two taps .. 60 Four taps .. 70 W. N. cocks 6 Bibcocks .. 1 Wall fountains .. 34 Other type 2 Service tanks 2	One tap .. 47 Two taps .. 52 Four taps .. 84 W. N. cocks 101 Pushcocks Wall fountains .. 3	One tap .. 254 Two taps .. 180	One tap 37 Two taps 28 W. N. cocks 68 Bibcocks 4
20. Number of fire hydrants.	148	184	87	151	360	92
21. Number of road watering posts or standpipes.	46	127	162	16	91	Swan neck 8 Cocks 84
22. Number of cattle troughs.	49	31	18	25	36	17

## No. V.—(concluded.)

## water-works of the United Provinces for 1927-28.—(concluded.)

Mussoorie.	Naini Tal.	Dehra Dun.	Jhansi.	Mirzapur.	Muttra.	Fyzabad.	Hardwar.	Unao.
Fifteen.	Eighty-eight	Fifty-nine	Nine	One.	Two.	One.	Two.	One pressed steel tank.
1—10'×10'×4'. 10—8'×4'×4'. 4—4'×4'×4'	Small 82 Large 6 <i>Small.</i> 32—3'×8' each. 29—2'6'×3' each. 1—4'×3' 3—4'×5' each. 17—6'×8'×4' each. <i>Large.</i> 1—36'×15'×9'5'. 1—29'5'×15'×9'5'. 1—20'×10' 1—18'×10' 2—22'×12'3' each.	36 Masonry. 21 Iron,	1—40'×15'×8'. 3—4'×4'×4' each.	200'×75'×14'.	32'×20' each	39'—7½" dia. 15'—6" deep.	62'—8"×60'×12'.	20'×20'×8'.
30,000 (Upper.) 250,000 (Lower.)	228,070	Masonry 1,000 to 15,000 Iron 75 to 800 Total capacity 223,550	1—30,000 8—400 each.	1,310,000	100,000 each.	120,000	250,000 each.	20,000
One tap .. 1 Two taps 34 W. N. cocks 5 Bibcocks .. 4 Push cocks 1	One tap .. 72 Two taps Nil Bibcocks 106 Other type 33	One tap 33 Two taps 44 Three taps 6 Four taps 4 W. N. cocks 55 Bibcocks 50 Push cocks 50	One tap Nil Two taps 6 Three taps 4 Four taps 4 Bibcocks 37 Push cocks 61 Other type 31	One tap 34 Two taps 27 Four taps 9 W. N. cocks 35 Bibcocks 45 Push cocks 19	One tap 60 One tap Stand pipe 139 Two taps 20 Two taps Stand pipe 8	One tap 4 Two taps 42 W. N. cocks 9	Two taps 6 W. N. cocks 30 Other type 1	One tap 22 Two taps 15 Bibcocks 9
Nil.	14	..	..	121	8	48	9	17
18	Nil.	4	2	1	7	17	4	..
7	5	8	5	14	18 Flushing tanks 5 Flushing pipes 15 Urinal connections 2 Water flushing latrine 1 Pail dépôts connections 3	5	..	..

## APPENDIX No. VI.

*Detailed statement of the expenditure incurred on health works executed under the supervision of the Superintending Engineer, Public Health department, during the year 1927-28.*

Serial number.	Name of place.	Water-works original and special repairs.	Water-works maintenance.	Drainage works.	Other works.	Total.
		Rs.	Rs.	Rs.	Rs.	Rs.
1	Agra .. ..	19,618	1,66,569	17,640	..	2,03,822
2	Aligarh .. ..	..	..	1,496	711	2,207
3	Allahabad .. ..	4,90,651	1,79,381	29,525	..	6,99,507
4	Badaun .. ..	..	..	1,501	..	1,501
5	Bahraich .. ..	..	..	..	2,644	2,644
6	Bareilly .. ..	..	..	1,489	2,830	4,369
7	Benares .. ..	36,248	1,96,504	77,723	..	3,10,475
8	Bijnor .. ..	..	..	101	4,677	4,778
9	Brindaban .. ..	..	..	6,665	444	7,109
10	Cawnpore .. ..	3,53,934	2,53,604	82,584	..	6,90,372
11	Dehra Dun .. ..	36,906	10,054	3,963	..	50,923
12	Etah .. ..	..	..	1,437	..	1,437
13	Etawah .. ..	..	..	463	1,015	1,478
14	Fyzabad .. ..	1,869	24,186	4,362	2,446	32,863
15	Gonda .. ..	..	..	4,270	409	4,679
16	Gorakhpur .. ..	..	..	3,695	..	3,695
17	Hapur .. ..	..	..	1,910	948	2,858
18	Hardwar .. ..	2,845	18,575	..	..	21,420
19	Hathras .. ..	6,177	..	2,560	..	8,737
20	Jaunpur .. ..	588	..	..	..	588
21	Jhansi .. ..	Nil	13,491	2,121	507	16,119
22	Kanauj .. ..	2,007	..	8,171	..	10,178
23	Kasganj .. ..	..	..	8,170	1,450	9,620
24	Khurja .. ..	..	..	2,678	..	2,678
25	Lakhimpur .. ..	..	..	911	444	1,355
26	Lucknow .. ..	12,971	2,04,716	66,927	..	2,84,614
27	Meerut .. ..	1,189	43,734	..	..	44,913
28	Mirzapur .. ..	9,012	14,657	..	..	23,669
29	Mussoorie .. ..	4,099	57,192	..	1,997	63,233
30	Muttra .. ..	10,357	40,223	14,686	..	65,266
31	Naini Tal .. ..	171	40,615	..	..	40,786
32	Najibabad .. ..	..	..	1,333	843	2,181
33	Nawabganj .. ..	..	..	269	1,885	2,154
34	Orai .. ..	..	..	123	990	1,113
35	Roorkee .. ..	..	..	143	1,610	1,753
36	Saharanpur .. ..	..	..	2,423	..	2,423
37	Sahaswan .. ..	..	..	233	733	1,021
38	Sultanpur .. ..	..	..	741	382	1,074
39	Unao .. ..	29,813	4,513	197	2,379	36,902
	Total .. ..	10,18,400	12,67,954	3,50,320	29,350	26,66,524

APPENDIX No. VII.

Comparative statement of fuel consumption, working expenses and receipts of various water-works in the United Provinces during the year 1927-28.

Number.	Name of water-works.	Class of work gravitation or pumping.	Fuel consumed, tons.	Fuel consumption per 1,000 foot gallons, lbs.	Price of fuel per ton	Total (average) lift, feet.	Percentage of charges for—						Per 1,000 Gallons.			Per head of total population per annum			Remarks.
							Establishment.	Fuel.	Oil and waste	Repairs to machinery.	Other charges.	Total working cost.	Total receipts.	Total working cost.	Total receipts.	Total working cost.	Total receipts.	Total working cost.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
1	Agra	Pumping ..	(1) 3,149.69	.02065	19.29	190.00	24.22	35.78	4.25	.86	34.89	1.93	2.53	18.67	24.49	5.82	Profit.		
2	Allahabad	Ditto ..	(2) 4,799.77	.08944	18.41	195.36	40.19	38.48	3.82	4.23	18.28	3.88	4.20	29.99	37.23	7.24	"		
3	Benares	Ditto ..	(3) 6,235.09	.03199	12.84	185.43	38.88	39.57	2.59	3.87	15.09	2.06	1.62	24.39	19.28	5.16	Profit.		
4	Cawnpore	Ditto ..	(4) 7,233.48	.03537	12.76	187.16	31.42	39.02	2.44	1.88	25.74	1.87	3.36	21.29	38.26	16.97	"		
5	Lucknow	Ditto ..	(5) 7,572.91	.05659	11.09	164.73	35.89	43.73	1.48	3.17	15.73	3.96	4.15	29.99	31.41	1.42	Profit.		
6	Meerut	Turbines worked by water power.	(6) 18.05	.01457	21.51	137.58	42.37	2.15	.97	20.31	34.20	1.71	1.11	5.70	3.70	2.00	"		
7	Mussoorie	Pumping and gravitation.	..	..	..	AV 1267.59	22.36	59.26	*	5.42	12.96	13.79	9.24	90.02	60.29	29.73	Profit.		
8	Naini Tal	Ditto ..	+	..	..	AV 422.75	17.32	64.63	.55	6.55	11.09	20.13	23.87	61.16	72.51	11.35	Profit.		
9	Dehra Dun	Gravitation	..	..	..	..	62.66	..	..	..	37.34	4.35	1.35	14.04	4.35	9.69	Profit.		
10	Jhansi	Pumping ..	(7) 439.60	.10622	14.92	190.00	21.13	35.47	.69	2.19	40.52	4.42	4.90	3.24	3.60	.86	Profit.		
11	Mirzapur	Gravitation	..	..	..	..	50.46	..	..	..	49.54	1.67	1.23	10.95	8.08	2.87	Profit.		
12	Muttra	Pumping ..	(8) 101.74	.00563	134.89	187.00	44.43	35.07	8.36	4.95	7.14	2.79	3.21	15.49	17.81	2.82	Profit.		
13	Fyzabad	Ditto ..	(9) 51.08	.00553	174.96	133.75	45.75	28.29	14.44	5.05	6.47	3.72	4.42	10.06	11.97	1.91	"		
14	Hardwar	Ditto ..	..	..	..	197.60	36.4	52.61	.49	3.32	7.12	14.19	1.41	53.18	5.28	47.90	Profit.		
15	Unao	Ditto ..	(10) 5.66	.00710	159.01	130.00	39.22	26.22	13.11	2.39	16.06	5.26	1.77	6.47	2.17	4.30	"		

(1) Coal and fuel oil combined. Oil fuel 123.90 tons. Electrical charges Rs. 349 for Maithan and Chilli-Int converted to coal and oil fuel (18.09 tons).  
 (2) Coal and fuel oil combined. Oil fuel 8.50 tons for Daraganj Pumping. Electrical charges Rs. 4,388 for Mayo Hall converted to coal and oil fuel (327.22 tons). Coal consumption includes 44.47 tons for municipal purposes.  
 (3) Includes 94.89 tons of coal for municipal purposes.  
 (4) Includes 812.2 tons of coal for municipal purposes. Electrical charges Rs. 20,953 converted to coal (1642.43 tons).  
 (5) Includes 213.26 tons shortage and 12.01 tons used for municipal purposes.  
 \* Figures for oil and waste not supplied by municipal board separately. Included in other charges.  
 † 9.13 tons, coal and wood combined (coal 1.50 tons and wood 7.63 tons) used for distribution system and testing boilers.

(6) No coal was used during the year. Wood consumption for pumping 2,016,500 gallons only (steam power during canal closure). Includes 5.75 tons for municipal purposes.  
 (7) Coal consumption includes 9.85 tons for municipal purposes.  
 (8) Fuel oil consumption includes .99 tons shortage and .28 tons for municipal purposes. Electrical charges Rs. 3,359 converted to oil fuel (24.93 tons).  
 (9) Fuel oil consumption includes .21 tons shortage during transit.  
 (10) Fuel oil consumption for 8½ months only.



## APPENDIX No. VIII.

Statement showing initial capital cost, details of income and expenditure for water-works in the United Provinces for the year 1927-28.

Serial no.	Particulars.	Agra.	Allaha- bad.	Bena- res.	Cawn- pore	Luck- now.	Meerut.	Mus- soorie.	Naini Tal.	Dehra Dun.	Jhansi.	Mirza- pur.	Muttra.	Fyza- bad.	Hard- war.	Unao.
1	Description of plant ..	Oil engine and steam-power.	Steam-power, oil and electric.	Steam-power.	Steam-power and electric city.	Steam-power and steam-power.	Water and steam-power.	Hydro-electric and oil power.	Steam-power, electric city and gravity.	Gravitation.	Ste- am- power.	Gravi- tation.	Oil engine and electric city.	Oil engine and electric city.	Eles- tri- city.	Oil Engi- ne.
2	Initial capital cost Rs.	11.71	16.24	25.62	14.45	15.16	7.52	4.80	2.47	.97	.97	5.98	5.17	9.49	1.97	.82
3	Total cost of works in lakhs.	32.35	37.22	36.91	32.17	56.99	8.17	11.40	10.40	4.19	1.93	7.12	6.00	9.92	4.77	1.12
4	Number of inhabitants drawing their supply from mains.	185,946	157,220	198,447	216,436	201,334	77,711	15,289	17,319	34,092	25,000	33,400	42,615	30,000	9,024	9,000
5	Hours of supply daily.	10.00	11.95	10.38	16.88	16.00	16.00	9.66	7.55	24.00	7.90	24.00	8.50	9.58	11.00	11.00
6	Quantity supplied during year in million gallons.	1,797.44	1,395.07	2,354.51	2,464.79	1,819.63	409.01	99.77	52.62	110.00	48.79	360.96	293.53	153.25	33.82	19.73
7	Maximum daily average during any one month in thousand.	5,319	4,284	7,224	8,662	5,834	1,326	342	220	450	151	1,047	390	545	279	53
8	Average daily supply for the year in thousand.	4,911	3,812	5,433	6,734	4,972	1,118	273	144	301	133	936	802	419	92	53
9	Maximum supply per head per day.	28.60	27.25	36.40	40.02	23.98	17.06	22.36	12.71	13.20	6.06	27.26	23.22	18.16	30.36	6.48
10	Average supply per head per day.	26.41	24.24	32.42	31.12	24.69	14.33	17.83	8.80	8.82	5.33	25.63	18.32	13.96	10.24	5.87
11	Total lift (average) Feet.	190.00	195.36	185.43	187.16	164.73	137.58	1,267.59	422.75	Graviti- supply.	190.00	Graviti- supply.	137.00	183.75	197.60	130.00
12	Quantity supplied during year in million foot gal- lons.	341,514	272,548	435,597	461,310	299,748	56,271	126,463	22,243	..	9,270	..	40,214	20,497	6,683	1,735
13	Fuel consumed .. Tons.	(a) 3,149.69	(b) 4,799.77	6,235.09	(c) 7,253.48	7,572.91	(d) 18.05	..	..	..	(e) 483.60	..	(f) 101.74	(g) 51.08	..	(h) 5.66
14	Fuel consumption per million foot gallons.	20.65	39.44	31.99	35.37	56.59	14.57	..	..	..	106.22	..	5.63	5.58	..	7.10
15	Cost of fuel per ton Rs.	19.29	13.41	12.34	12.76	11.09	21.51	..	..	..	14.92	..	134.89	174.96	..	159.01



APPENDIX No. IX.  
HYDRO-ELECTRIC SUPPLY.  
1927-28.

Particulars.	Mussoorie.	Naini Tal.
1. Total units generated .. .. .	3,459,350	851,326
2. Maximum units for any one day .. .. .	11,150	3,677
3. Average load, K. W. .. .. .	383	89·9
4. Power Factor—		
Maximum .. .. .	·95	·98
Minimum .. .. .	·75	·40
5. Load Factor—		
Maximum (monthly) .. .. .	} 0·52	0·67
Average .. .. .		
Minimum (monthly) .. .. .		
6. Generating Volts—		
Maximum .. .. .	7,000	3,500
Minimum .. .. .	6,600	3,500
7. Total hours of running .. .. .	8,767	8,763·42
8. Total cubic feet of water used .. .. .	207,561,000	32,544,960
9. Maximum quantity used in any month, cubic feet ..	18,633,000	3,192,480
10. Minimum quantity used in any month, cubic feet ..	16,266,000	2,348,480
11. Average rate of discharge, cubic feet per diem.. ..	567,106	89,128
12. Maximum rate of discharge of pipe line—		
No. 1 cubic feet per second .. .. .	8·3	} Both the lines worked together.
No. 2 „ „ „ .. .. .	8·3	
13. Minimum rate of discharge of pipe line .. .. .		
No. 1 cubic feet per second .. .. .	7·3	
No. 2 „ „ „ .. .. .	7·3	
14. Average intake level .. .. .	} *3,492	9·84
15. Maximum „ „ .. .. .		
16. Minimum „ „ .. .. .		5·90
17. Total rainfall for the year, inches .. .. .	111·1	145·95
18. Total cubic feet overflow intake weir (million cubic feet) (Naini Tal only) .. .. .	..	253·47
19. Maximum recorded rainfall for 24 hours, inches ..	7·2	15·70

\* Constant.

## APPENDIX No. X.

Statement showing current consumed, rate charged and revenue derived.

1927-28.

	Mursoorie.			Naini Tal.					
	Units.	Rate.	Rs.	Units.	Rate.	Rs.			
1. For municipal purposes—									
Public lighting ..	{ 159,282 †46,885	Two annas Contract rate.	{ *19,910 17,582	} 130,564	Lump sum	21,000			
W. S. Pumping ..	542,291	One anna	*33,898				119,485	Three annas a unit.	22,404
Other purposes ..	315,387	..	..				77,260	..	..
2. Sold by meter—									
Lighting ..	{ 188,789 †313,942	Six annas Six annas	{ 70,796 117,728	} 181,924	Eight annas a unit.	70,076			
Heating ..	97,600	One anna	6,100				24,648	Two annas a unit.	2,592
Power.. ..	†234,595	One anna	14,662				5,068	Four annas a unit.	958
3. Recoveries on rated premises.	{ 18,861 †32,000	Contract rate.	{ 7,078 12,000	} 53,586	Four annas per lamp.	9,136			
4. Other receipts ..	..	..	{ 3,589 †3,010				1,410	..	5,477
5. Meter rent and miscellaneous.	..	..	{ 5,775 †9,057	..	..	10,257			
6. Total, units sold and receipts.	(a) 1,634,245	..	(b) 3,21,125	\$516,685	..	1,41,900			

† For Dehra Dun.  
\* Credit.  
‡ For Dehra.

§ Does not include  
77,260 units for  
other purposes.

(a) Does not include 315,387 units for other purposes.  
(b) Cash receipts Rs. 2,35,191 for 888,189 units sold.

## APPENDIX No. XI.

Statement showing number of connexions.

1927-28.

	Mussoorie.		Naini Tal.	
	Number.	K. W.	Number.	K. W.
1. Private connexions at close of preceding year.	(a)3,789	..	1,091	..
2. Connexions made during the year ..	(b)311	..	136	..
3. Metered connexions existing on March 31, 1928.	(c)1,967	..	628	..
4. Municipal lamps existing on March 31, 1928.	(d)1,551	..	714	..
5. Heating points connected on March 31, 1928.	§(e)374	..	91	..
6. Total K. W. connected on March 31, 1928.	..	4,280	..	1,257.45
7. Peak load for the year .. ..	..	750	..	230
8. Diversity factor per cent. .. ..	..	45%	..	18.29%

Connections for Dehra Dun included (a), 1,966, (b) 298, (c), 1,150, (d) 841, (e) 97, § power points.

## APPENDIX No. XII.

## HYDRO-ELECTRIC SUPPLY.

*Annual maintenance account.*

1927-28.

Particulars of charges.	Mussoorie.	Naini Tal.
<i>I.—Staff charges—</i>	Rs.	Rs.
(a) Direction .. .. .	29,566	5,200
(b) Office establishment .. .. .	13,611	8,909
(c) Power station staff .. .. .	6,798	2,964
(d) Sub-station staff .. .. .	4,925	928
(e) Pipe line staff .. .. .	1,978	1,243
(f) Overhead line staff .. .. .	6,589	4,325
(g) Auxiliary pump .. .. .	..	217
(h) Contingencies .. .. .	8,129	3,803
<i>II.—Materials—</i>		
(a) Oils .. .. .	} 4,504	} 3,909
(b) Lubricants .. .. .		
(c) Waste.. .. .		
(d) Buildings .. .. .		
<i>III.—Repairs—</i>		
(a) Machinery .. .. .	4,088	1,980
(b) Pipe line .. .. .	1,400	376
(c) Overhead line .. .. .	24,705	5,739
(d) Buildings .. .. .	146	530
IV.—Rents .. .. .	2,580	1,513
V.—Printing .. .. .	1,254	162
VI.—Stationery .. .. .	475	460
VII.—Insurance .. .. .	903	137
VIII.—Total maintenance charges .. .. .	1,12,246	42,390
IX.—Interest and sinking fund charges .. .. .	1,90,815	1,44,337
X.—Total annual charges .. .. .	3,03,061	1,86,727
XI.—Total units generated .. .. .	3,459,350	851,326
XII.—Total units sold .. .. .	1,634,245	516,685
XIII.—Cost per unit generated. Annas .. .. .	1.40	3.51
XIV.—Cost per unit sold. Annas.. .. .	2.97	5.78

## APPENDIX No. XIII.

## A.—List of projects finally sanctioned during the year 1927-28.

	Amount of estimate.
	Rs.
1. Agra : Sewerage and sewage disposal (revised estimate) .. ..	49,56,000
2. Aligarh : District Jail Drainage Improvements (forecast) .. ..	17,679
3. Allahabad : Construction of a tube well at Daraganj for Magh Mela water-supply .. ..	47,716
4. Allahabad : Magh Mela water-supply 1927-28 .. ..	12,768
5. Allahabad : Magh Mela water-supply maintenance .. ..	1,034
6. Ballia : District Jail tube well .. ..	10,004
7. Bareilly : Anti-malarial scheme (part sanctioned) .. ..	42,757
8. Bareilly : District Jail water-supply .. ..	6,081
9. Dehra Dun : Drainage western portion (forecast) .. ..	2,97,000
10. Etawah : District Jail tube well .. ..	5,831
11. Fatehpur Sikri : Estimate of a tube well .. ..	12,000
12. Fyzabad ; Water supply extension .. ..	50,096
13. Gokul : Drainage (forecast) .. ..	66,000
14. Hardwar : Water supply—rendering the stoinings of well water tight ..	12,452
15. Hathras : 12' strainerless tube well no. 2 for water supply .. ..	23,242
16. Jaunpore : Water-supply trial tube well .. ..	20,000
17. Khurja : Electric supply (preliminary proposal) .. ..	1,86,945
18. Kosi : Water supply .. ..	1,02,132
19. Lucknow : Central Jail water-supply .. ..	7,342
20. Lucknow : Gas water supply, sanitary fittings, and drainage to the Provincial Hygiene Institute .. ..	63,270
21. Lucknow : Water works re-organisation—estimate of land acquisition for raised reservoir .. ..	7,846
22. Meerut : Eclectric supply (preliminary proposal).. ..	2,98,761
23. Meerut : Filling a pond behind the police station at Garhmukhteshwar	2,335
24. Muttra : Additional pumping sets for sewage disposal .. ..	32,697
25. Muttra : Draining hollows behind the police lines .. ..	8,139
26. Muttra : Draining hollows behind the police lines (revised estimate) ..	9,401
27. Muttra : Twenty seated water flushed latrine near Bharatpurwali Dharamshala .. ..	7,869
28. Muttra : Water-supply—alteration to the existing pumping plant (revised estimate) .. ..	13,016
29. Muttra : Water-supply from proposed new tube well and pumping plant .. ..	55,311
30. Roorkee : Electric supply (revised estimate) .. ..	55,602
Total .. ..	64,30,921



C.—List of schemes under preparation with the approximate estimated amount.

	Approximate amount. Rs.
1. Agra : Revision of Drainage project .. ..	8,00,000
2. Aligarh : Revision of water-supply scheme .. ..	7,49,643
3. Almora : Water-supply .. ..	1,50,000
4. Budaun : Drainage .. ..	1,30,000
5. Bareilly : Anti-malarial Part I and II .. ..	75,000
6. Bareilly : Central Jail water-supply .. ..	60,000
7. Brindaban : Water-supply .. ..	Not known.
8. Brindaban : Water supply—Construction of two surface percolation wells including pipe duct and test pumping .. ..	10,140
9. Benares : Drainage and paving scheme (forecast) .. ..	8,00,000
10. Cawnpore : Agricultural College Drainage and water-supply .. ..	1,15,000
11. Gorakhpur : Drainage (preliminary proposal) .. ..	1,50,000
12. Jhansi : Government Intermediate College drainage .. ..	75,000
13. Jhansi : Revision of water-supply scheme .. ..	23,00,000
14. Kanauj : Police station tube well .. ..	3,148
15. Khurja : Electric supply .. ..	1,90,000
16. Khurja : Water-supply .. ..	2,00,000
17. Meerut : Drainage .. ..	8,00,000
18. Meerut : Drainage of storm water near Nauchandi ground (forecast) .. ..	22,000
19. Meerut : Drainage of Kaisarganj grain market (forecast) .. ..	60,000
20. Meerut : Pirankaliar mela water supply (forecast) .. ..	Not known.
21. Muzaffarnagar : Khatauli drainage (forecast) .. ..	Not known.
22. Rae Bareli : Water supply (Preliminary proposal) .. ..	1,76,000
23. Saharanpur : Revision of drainage project .. ..	1,75,000
Total .. ..	70,40,931

## APPENDIX NO. XIV.

## Revenue derived from Sewage Farm during 1927-28.

	Agra.	Allahabad.	Dehra Dun.	Lucknow.	Muttra.
1. Area under cultivation in acres.	106.25	249	4.19	523	Cultivation not started yet.
2. Total rent realized from cultivators Rs.	12,500	18,668	Nil.	8,870	Income of 623 was obtained by letting the land for grazing.
3. Average rent per acre per annum Rs.	118	75	Nil.	16.9	..
4. Quantity of sewage treated in million gallons per annum.	1,077	816.57	Nil.	..	..
5. Average quantity of sewage consumed per acre per diem in gallons.	27,771	8,984	Nil.	..	..
6. Expenditure incurred on the maintenance of the farms Rs.	83	39,891	Nil.	6,445	112
7. Revenue derived .. ..	19,578	25,214	Nil.	8,870	623
8. Profit .. ..	19,495	Nil.	Nil.	2,425	511
9. Loss .. ..	Nil.	14,677	Nil.	Nil.	Nil.



## APPENDIX No. XV.

Statement showing expenditure on construction works carried out by the Engineering Branch of the Public Health department during 1927-28.

Name of work.	Estimated cost.	Total expenditure upto end of March, 1927.	Expenditure incurred during the year.
	Rs.	Rs.	Rs.
1. Agra : Circuit House drainage extension ..	2,393	948	1,211
2. Do. Maithan and Chhilint water-supply	10,096	Nil	6,642
3. Ajodhya : water-supply construction of a trial tube well.	37,112	988	18
4. Aligarh : Cleaning and test pumping of the existing tube well.	11,246	Nil	8,851
5. Allahabad : Naini Central Jail water-supply for providing and erecting new pumps in wells nos. 1, 2 and 3.	14,280	9,279	4,672
6. Allahabad : Magh Mela water-supply maintenance, 1927.	237	Nil	233
7. Allahabad : Magh Mela water-supply, 1927-28	12,763	Nil	11,491
8. Do. Pumping plant tube well ..	47,716	Nil	42,236
9. Bareilly : Anti-malarial works revised estimate, Section I drains.	42,757	Nil	39,037
10. Bareilly : District Jail water-supply ..	6,081	Nil	5,372
11. Basti : Anti-malarial works revised estimate	11,878	Nil	406
12. Benares : Water-supply extension reorganization scheme.	5,12,255	Nil	7,688
13. Brindaban : Water-supply trial tube well ..	10,140	Nil	Nil
14. Dehra Dun : Baldi spring water-supply Part III.	2,45,179	2,08,770	26,701
15. Fatehpur Sikri : Water-supply from tube well.	12,000	Nil	3,320
16. Gola Gokarannath : Construction of raised reservoir.	7,155	188	6,489
17. Hardwar Union : Electric supply ..	1,85,479	1,41,515	23,366
18. Do. Water-supply .. ..	2,73,362	2,09,338	34,021
19. Do. Kumbh Mela water-supply extension.	40,927	8,404	14,053
20. Hathras : Water-supply tube well no. 1 ..	23,242	6,690	6,177
Ditto ditto no. 2 ..	23,242	Nil	3,127
21. Jaunpore : Civil Hospital tube well ..	7,262	5,675	1,385
22. Do. Water-supply trial tube well ..	20,000	Nil	538
23. Kaimganj : Drainage .. ..	60,415	Nil	9,905
24. Kanauj : Drainage .. ..	14,623	1,523	8,171
25. Lucknow : Remodelling tank sewer sewage pumping station.	47,502	Nil	41,133
26. Lucknow : Repairs to sewage pumping station.	9,300	6,312	18
27. Lucknow : Water works reorganization scheme.	47,64,045	23,67,198	2
28. Lucknow : Sewage pumping station and farm.	9,70,802	9,72,623	5
29. Lucknow : Unfiltered water supply extension to Government House.	14,802	Nil	13,975
30. Muttra : Banjatra route water-supply ..	27,728	Nil	10,920
31. Do. Draining hollows behind the police lines.	7,617	Nil	7,602
32. Muttra : Alteration to the existing pumping plant.	13,016	Nil	7,209
33. Muttra : Sewage disposal .. ..	1,83,301	1,27,175	9,472
34. Unao : Water-supply .. ..	1,21,877	76,935	29,316
Total ..	73,03,856	41,43,561	3,85,248

Annual Report of the Board of Health of the United Provinces  
for the year ending December 31, 1911.

The Director has the pleasure to acknowledge the receipt of the following reports from the various District Boards, Municipalities, and other local authorities, which have been submitted to him in accordance with the provisions of the Public Health Act, 1902, and the rules thereunder, for the year ending December 31, 1911.

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## APPENDICES

to the

### Report of the Director of Public Health, United Provinces.

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## APPENDIX A.

**Annual Report of the Board of Public Health, United Provinces,  
for the year ending December 31, 1927.**

DURING the year under report the office of the President was held by the following officers :—

Mr. R. L. H. Clarke, I.C.S., Member, of Revenue.	From January 1, 1927 to January 12, 1927.
Mr. A. W. McNair, C.S.I., O.B.E., I.C.S., Member, Board of Revenue.	From January 13, 1927 to the end of the year.

I worked as Secretary throughout the year in addition to the duties of the Head Assistant to the Director of Public Health.

The term of the following members having expired, they were re-appointed by Government for another term of two years.

(1) Hon'ble Mr. Justice Gokaran Nath Misra, M.A., LL.B., Lucknow.	} From March 14, 1927.
(2) Rai Bahadur Dr. B. N. Vyas, M.B., Lucknow	
(3) Major D. R. Ranjit Singh, O.B.E. I.M.S. (retired), Allahabad.	

A list of the outgoing and incoming members is appended :—

<i>Outgoing members.</i>	<i>Incoming members.</i>	
(1) Dr. Muhammad Naim Ansari, Lucknow.	(1) Mr. Zahur Ahmad, M.L.C., Bar.-at-Law, Allahabad.	} Appointed from February 21, 1927.
(2) Rai Sahib Chaudhri Sheoraj Singh, Sayana (district Bulandshahr).	(2) Babu Sampurnanand Sahib, M.L.C., Jalpa Devi, Benares.	
(3) Rai Bahadur Thakur Hanuman Singh, M.L.C., Kuri Sidhaulti (district Rae Bareli).	(3) Thakur Shiva Shanker Singh Sahib, M.L.C., P. O. Rampur (district Ghazipur). From March 14, 1927.	
(4) Thakur Rampal Singh Sahib, Chairman, District Board, Sitapur.	(4) Rai Sahib Raja Harnam Singh, Chairman, District Board, Bara Banki. From August 10, 1927.	
(5) Dr. Saiduz Zafar Khan, M.B., C.H.B., D.T.M.	(5) Lieut.-Col. C. A. Sprawson, I.M.S., C.I.E., M.D., F.R.C.P., Principal, King George's Medical College, Lucknow. From November 29, 1927.	

Five meetings of the Board were held during the year; three at Lucknow and two at Naini Tal.

The total amount at the disposal of the Board for expenditure on sanitary works during the year amounted to Rs. 12,74,350, and was made up as under:—

	Rs.
I.—(a) Unexpended balance on December 31, 1926 ...	2,57,832
(b) Rupees 3,000 allotted for the preparation of the project for the drainage of the Gangoh Town Area (district Saharanpur) taken back to the Board's reserve, as the money could not be drawn for expenditure in the financial year ...	3,000
(c) Refunded by the Superintending Engineer, Public Health Department, United Provinces, as savings out of the grant of Rs. 6,650 made for the strainerless well at Unao, and credited to the Board's reserve ...	6,415
(d) Refunded by the District Magistrate, Basti, and credited to the Board's reserve ...	124
(e) Resumed and credited to the Board's reserve as not drawn by the Deputy Commissioner, Par-tabgarh ...	1,597
Total ...	<u>2,68,968</u>

II.—Allotments sanctioned in the Budget for 1927-28—

	Rs.
(a) Recurring grant for special assistance to pilgrim centres ...	1,25,000
(b) Grant for urban sanitation ...	6,90,382
(c) Recurring grant for rural sanitation and minor sanitary works ...	1,90,000
Total ...	<u>10,05,382</u>
TOTAL OF I AND II ...	<u>12,74,350</u>

The allotments sanctioned by the Board of Public Health during the year under report were—

**A.—Out of I, i.e., the unexpended balance and refunds amounting to Rs. 2,68,968.**

	Rs.
(i) <i>Water-supply.</i>	
Kanauj municipality ... For sinking three sweet water wells ...	3,000
Jaunpur municipality ... Towards the cost of constructing and test-pumping a trial tube-well ...	20,000
Fatehpur Sikri notified area ... Towards the water-supply scheme ...	12,000
Allahabad municipal board ... Towards the water-works reorganization scheme ...	75,000
Total ...	<u>1,10,000</u>

<i>(ii) Drainage and sewerage works.</i>			Rs.
Lucknow municipality	...	Towards remodelling the tank sewer at the sewage pumping station	14,996
Allahabad municipality	...	For diverting the emergency outlet at the Jumna pumping station	2,651
Total			17,647
<i>(iii) General.</i>			Rs.
Moradabad municipality	...	Towards asphaltting the station road	3,700
Sitapur district	...	For constructing four model houses for cultivators	760
Unao district	...	For sanitary improvements to be carried out through the agency of village panchayats	853
Fatehpur district	...	Ditto	1,085
Jalaun district	...	Ditto	799
Lucknow	...	To the anti-tuberculosis league	88
For taking cinema films for exhibition purposes at fairs, etc.	...		2,000
Muttra district	...	For carrying out sanitary works in the towns of Gobardhan, Radha Kund, and Mahaban	8,000
Brindaban	...	For the Kumbh Mela	25,000
Basti	...	For part compensation on the acquisition of land required for a new road as a town improvement	5,532
Basti	...	Ditto	1,468
Nauthanwan town area (district Gorakhpur).	...	For general sanitary improvements	1,532
Total			50,817
<i>(iv) Anti-malarial works.</i>			Rs.
Bahraich district	...	For anti-malarial works in rural areas	5,100
Moradabad district	...	Ditto	8,202
Gorakhpur district	...	Ditto	2,568
Partabgarh district	...	Ditto	4,589
Ballia district	...	Ditto	4,000
Jalaun district	...	Ditto	300
Total			24,759
TOTAL OF A.—(i), (ii), (iii) AND (iv)			2,03,223
Lapsed to Government	...	...	*65,745
Total			2,68,968

\* NOTE.—By experience it was not found useful to spend money on small anti-malarial works in rural areas, and other proposals were under consideration. Further allotments could not, therefore, be made.

**B.—Out of the amounts provided in the budget for 1927-28,  
viz., Rs. 10,05,382.**

(a) <i>Special assistance to pilgrim centres.</i>		Rs.
Garhwal ... ..	Towards the Sadabart Fund ...	55,500
Brindaban (district Muttra)	Towards the cost of a trial bore	12,270
Piran Kaliar (district Saba- ranpur).	For improving water-supply ...	3,000
For taking cinema films for exhibition purposes at fairs and religious gatherings ... ..	...	10,000
Transferred to sub-head "Travelling allowance" to non-official members and Secretary and his establishment ... ..	...	1,000
<b>Total</b> ...		<b>81,770</b>
(b) <i>Urban sanitation.</i>		Rs.
(i) <i>Water-supply.</i>		
Benares municipality ...	For water-works project ...	2,00,000
Allahabad municipality ...	Ditto ..	25,000
Kosi notified area (district Muttra) ... ..	Ditto ...	67,000
<b>Total</b> ...		<b>2,92,000</b>
(ii) <i>Drainage and sewerage works.</i>		Rs.
Muttra municipality ...	For draining the hollows and depressions behind the Police Lines ... ..	9,401
Chandpur municipality (dis- trict Bijnor).	Towards the cost of clearing the Salara drain ... ..	1,000
Lucknow municipality ...	For the emergency byepass for the eastern main sewer from Wingfield Park to Ghazi ud- din Hyder Canal ...	11,382
Etah municipality ...	For cleaning the Mayne cut ...	1,000
Lucknow municipality ...	For improvement to sewers ...	56,000
<b>Total</b> ...		<b>78,783</b>
(iii) <i>General.</i>		Rs.
Bahraich municipality ...	Towards the construction of a meat market ...	4,000
Allahabad municipality ...	Towards bituminous surfacing of the Johnstonganj road ...	39,510
Naini Tal municipality ...	For general sanitary purposes ...	1,619
Bareilly municipality ...	Towards bituminous surfacing of the Kucherry road ...	8,805
Lucknow municipality ...	For improvement of the Ghazi- ud-din Hyder Canal ...	16,762
<b>Total</b> ...		<b>70,693</b>
<b>TOTAL OF (b) (i), (ii) AND (iii)</b> ...		<b>4,41,476</b>

## (c) Rural sanitation and minor sanitary works.

## (i) For general purposes.

		Rs.
Basti town area	... For carrying out part A of the anti-malarial scheme	11,878
Nauthanwan town area (district Gorakhpur).	For general sanitary improvements	1,468
Partabgarh district	... For sanitary improvements in certain town areas	772
Lucknow district	... Towards sanitary improvements in rural areas	7,325
Utraula notified area (district Gonda).	Towards the construction of a meat market	1,500
Garhmukhtesar (district Meerut).	For filling up a pond behind the police station	1,500
Gorakhpur district	... For experiments with cinchonization	240
Moradabad district	... Ditto	240
Muzaffarnagar district	.. For sanitary improvements through village panchayats	940
	Total	25,863

## (ii) For water-supply.

		Rs.
Dhaurehara town (district Kheri).	For the construction of wells	125
Bara Banki district	... Towards the installation of pumps in wells	3,870
Barari (district Muttra)	... For the construction of a well	230
	Total	4,225

TOTAL OF (c) (i) AND (ii) ... 30,088

TOTAL OF (a), (b) AND (c) ... 5,53,334

Unexpended balance of allotment on December 31, 1927 ... 4,52,048

GRAND TOTAL ... 10,05,382

In addition to the above allotments a grant of Rs. 38,047 was made by Government out of the balance of grants sanctioned by the Government of India and the Indian Research Fund Association in 1913, and placed at the disposal of the Superintending Engineer, Public Health Department, United Provinces, for certain anti-malarial works included in part I of the anti-malarial scheme for the Bareilly municipality.

In addition to the allotments mentioned above the undermentioned loans were sanctioned by Government for sanitary projects during the year under review :—

		Rs.
Hardwar	... Towards the expenses of the Kumbh Mela	2,00,000
Mussoorie municipality	... For the Landour Cantonment water-supply	1,31,135

			Rs.
Allahabad municipality	...	Towards the Katra-Colonelganj drainage scheme	46,200
Ditto	...	For water-works reorganization scheme	1,90,000
Lucknow municipality	...	For bituminous surfacing of certain roads	2,00,000
Ditto	...	For relaying the eastern and western intercepting sewers	50,000
Bareilly municipality	...	Towards the construction of a slaughter-house	36,000
Rurki municipality	...	For electric-supply scheme	45,000
Agra municipality	...	For improvements to water-works	2,33,000
Dehra Dun municipality	...	For tar macadamising of roads	1,00,000
Total			12,31,335

Of the schemes discussed by the Board during the year, projects for the works noted below, the estimated cost of which aggregated Rs. 21,73,318 were sanctioned. In addition to these, forecasts for certain works were also approved:—

(a) *Water-supply.*

			Rs.
Fyzabad municipality	..	For the extension of the pipe line to Ajodhia	37,112
Allahabad municipality	...	For semi-permanent arrangement in connexion with the breakdown of Karelabagh pumping station	30,055
Lucknow municipality	...	Projects for the Lucknow water-supply reorganization scheme	9,90,140
Kosi notified area (district Muttra).		Project for water-supply scheme	1,02,132
Muttra municipality	...	Project for the construction of a tube-well	26,984
Ditto	...	Ditto	55,311
Muttra	...	Project for the Banjatra route water-supply	27,728
Agra municipality	...	Project for the extension of raw water pumping plant at the Agra water-works	90,557
Total			13,60,019

(b) *Drainage and sewerage works.*

Lucknow municipality	...	Project for the emergency bypass for the eastern main sewer from Wingfield Park to Ghazi-ud-din Hyder Canal	11,382
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			Rs.
Jhansi municipality	...	Project for drainage scheme	21,548
Muttra municipality	...	Sewage disposal scheme	32,697
Ditto	...	Revised project for draining hollows behind the Police Lines	9,401
Muzaffarnagar municipality	...	Project for the drainage of New Mandi	4,63,447
Total			5,38,475

## (c) General.

			Rs.
Rurki	...	Project for electric-supply scheme	55,602
Lucknow	...	Project for the improvement of the old Ghazi-ud-din Hyder Canal	33,524
Mahoba notified area (district Hamirpur).	...	Construction of a sarai	5,300
Bareilly municipality	...	Project for the construction of a slaughter-house at Hajiapur	89,500
Basti	...	Part A of the scheme for anti-malarial works	11,878
Allahabad municipality	...	Project for bituminous surfacing of the Johustonganj road	79,020
Total			2,74,824
TOTAL OF (a), (b) AND (c)			21,73,318

The preliminary proposal for the Almora water-supply estimated to cost Rs. 1,38,888 was approved, and the Superintending Engineer, Public Health Department, was asked to prepare the fair project. The water and electric-supply scheme for the Bhowali notified area (forecast Rs. 1,72,822) was also approved by the Board, and the papers forwarded to Government for allotment of funds. Papers relating to the Cawnpore Sewage Farm scheme, estimated to cost Rs. 5,07,000, and provision of funds for same were forwarded to Government for orders.

The cinema films to illustrate certain diseases and how to prevent or cure them, prepared by the Public Health Department under the supervision of the Assistant Director of Public Health (Provincial Hygiene Institute), having proved a very popular form of public health propaganda, especially at fairs and religious gatherings, further grants were made for the purpose.

In many rural areas large tanks and hollows have been filled up as anti-malarial measures, but fresh excavations made by villagers spoil the utility of them. The Board of Public Health advised Government to ask district boards where money had been spent to see if they could frame by-laws to prohibit fresh excavations by villagers.

The report of the sub-committee, appointed to consider the report on the metering of municipal piped water-supplies in the Punjab, was approved and forwarded to Government.

Further observations on the maintenance of municipal water-works by the Mechanical Adviser to Government were considered, and his views were accepted by the Board and recommended to Government for adoption.

As usual, the reports of the Mechanical Adviser to Government on the various water-works in the United Provinces were considered, and the local bodies concerned were asked to rectify the defects reported.

The municipal board of Allahabad came in for sharp criticism on account of the bad state of affairs at their water-works, and the matter was brought to the notice of the Commissioner. The Superintending Engineer, Public Health Department, drew the attention of the Board to the great loss which was being sustained by the Benares municipal board owing to their neglect to control the distribution of water, etc. The fact was reported to Government.

In Jhansi the municipal board ignored the recommendations of the Mechanical Adviser to a large extent, with the result that the plant deteriorated. The municipal board, Mussoorie, delayed unduly the completion of the new power house at Dehra Dun. Consequently considerable time was lost in the erection of the new plant. In Agra large amounts of arrears of water tax were reported to be outstanding. Complaint was also made as to the Board's reluctance to provide requisite funds for proper maintenance of the supply.

The sanitation of the towns of Ballia and Meerut having been reported upon very unfavourably by the Public Health Department, the Board of Public Health had to report the matter for the serious consideration of Government.

The report of the Assistant Director of Public Health, I Range, who specially inspected and reported upon the sanitation of the Shahjahanpur municipality, was considered, and it was decided that as some improvement had been made one year more be granted to the municipal board in which to see whether substantial progress has been effected.

The annual reports of the Director of Public Health for the calendar years 1925 and 1926 and of the Superintending Engineer, Public Health Department, for the financial years 1925-26 and 1926-27 were considered and recorded with an expression of satisfaction at the work done by the two branches of the Public Health Department. The annual report on the working of the Board of Public Health, for the year ending December 31, 1926, prepared by the Secretary, was passed and published in the *Government Gazette*, and copies supplied to all the members of the Legislative Council. A copy was also forwarded to the Director of Public Health, for incorporation in his annual report as usual.

The report drawn up by the Secretary on the working of the Village Sanitation Act in the United Provinces for the year 1926-27 was recorded, and a copy was submitted to Government with recommendation that the report be published in the *Government Gazette*.

The question of the improvement of the Ghazi-ud-din Hyder Canal (Lucknow) was considered, and funds were allotted for carrying out the lining and dressing of a portion as an anti-malarial measure with a view to completing the whole length by instalments.

Numerous demands for funds are received by the Board for the improvement of roads in municipal towns. As the funds at their disposal are limited, and as the Chief Engineer, Public Works Department, Buildings and Boads Branch, asked the Board to decide their policy in the matter, the Board resolved that a grant can be given only once to each municipality for demonstration of road improvement by one of the modern methods for a length of road not exceeding one mile.

The wells in the city of Jaunpur are generally brackish. The municipal board has been considering a water-supply scheme for a long time, but it has been hanging fire owing to financial considerations. The rough estimate prepared in 1922 was reported to be liable to be reduced due to a fall in prices. The Superintending Engineer, Public Health Department, was, therefore, asked to prepare a detailed project, and funds were allotted for the first preliminaries.

The municipal board of Gorakhpur are desirous of undertaking a water-supply scheme which is estimated to cost Rs. 3 lakhs. In view of financial considerations the municipal board were asked to re-examine the scheme in the light of the Local Self-Government Secretary's report, the Superintending Engineer, Public Health Department, submitting a report on the possibility of reduction in cost.

The orders of Government, that a definite portion (about 30 per cent.) of the amount of grants for sanitary purposes should be set apart for those villages where no panchayats have been established, and that the districts where the district health services were in force should get more than their proportionate share of the grant, were noted.

As the procedure of making certain fixed grants annually to Commissioners of divisions for petty sanitary works in notified and town areas, was considered unsatisfactory it was decided that, in future, Commissioners be asked to call for and submit *definite* projects (in a prescribed form) for sanitary improvements in notified and town areas, villages where Village Sanitation or Village Panchayats Acts were in force as well as villages where these Acts were not in force. With this view the Director of Public Health issued instructions to the District Medical Officers of Health, where the district health scheme had been in force for some time, to carry out careful inspections of all the notified and town areas and villages under the Village Sanitation Act and select certain suitable areas for improvement in the way of drainage and water-supplies. The areas selected were to be compact villages in which the whole population lived, more or less, in one *abadi* which formed the centre of trade for the surrounding area, and in which there was usually a fixed weekly or bi-weekly market to which the villagers came to obtain supplies and sell their goods. On receipt, these projects were required to be examined by the Superintending Engineer, Public Health Department, before funds for carrying out the works were allotted. This measure is certainly a considerable improvement over the previous procedure.

On the recommendation of the Director of Public Health, small grants were made for experiments with cinchonization in a few selected villages in certain districts where the district health scheme is in force to ascertain the effect on the incidence of malaria.

MOHI-UD-DIN, KHAN SAHIB,

*Secretary, Board of Public Health,  
United Provinces.*

LUCKNOW :

*February 18, 1928.*

## APPENDIX B.

Statement showing grants made by the Board of Public Health, United Provinces, for the improvement of rural sanitation for 1927.

Number.	Division.	District.	Grants made in 1927.	Balance in hand on December 31, 1926.	Total.	Expenditure in 1927.	Balance in hand on December 31, 1927.	
			Rs.	Rs.	Rs.	Rs.	Rs.	
1	Meerut.	AGRA.						
2		Dehra Dun ..	..	854	854	510	344	
3		Saharanpur ..	..	..	2,461	2,461	..	
4		Muzaffarnagar ..	..	..	600	600	600	
5		Meerut ..	..	..	..	..	..	
6		Bulandshahr ..	..	..	..	..	..	
7	Agra.	Aligarh ..	..	205	205	200	5	
8		Muttra ..	..	(a)20,631	20,631	3,921	16,710	
9		Agra ..	..	..	..	..	..	
10	Rohilkhand.	Mainpuri ..	..	..	..	..	..	
11		Etah ..	..	..	..	..	..	
12		Bareilly ..	..	..	4,688	4,688	4,056	632
13		Bijnor ..	..	..	264	264	264	..
14		Budaun ..	..	..	7,189	7,189	624	6,565
15		Moradabad ..	..	..	..	..	..	..
16		Shahjahanpur ..	..	..	..	..	..	..
17		Pilibhit ..	..	..	5,955	5,955	4,003	1,952
18		Farrukhabad ..	..	..	(b)5,610	5,610	(c)5,610	..
19		Etawah ..	..	..	..	..	..	..
20	Allahabad.	Cawnpore ..	..	..	..	..	..	
21		Fatehpur ..	..	..	..	..	..	
22		Allahabad ..	..	..	4,250	4,250	60	4,190
23		Jhansi ..	..	..	281	281	(d) 281	Nil.
24		Jalaun ..	..	..	..	..	..	..
25		Hamirpur ..	..	..	..	..	..	..
26		Banda ..	..	..	..	..	..	..
27		Benares ..	..	..	33,037	33,037	7,452	25,585
28		Mirzapur ..	..	..	..	..	..	..
29		Jaunpur ..	..	..	..	..	..	..
30	Ku-Gorakh- maun. pur.	Ghazipur ..	..	..	..	..	..	
31		Ballia ..	..	..	..	..	..	
32		Gorakhpur ..	..	..	25,979	25,979	3,963	22,016
33		Basti ..	..	..	10,000	10,000	..	10,000
34		Azamgarh ..	..	..	..	..	..	..
35		Naini Tal ..	..	..	103	103	..	103
36		Almora ..	..	..	..	..	..	..
37		Garhwal ..	..	..	..	..	..	..
38		Lucknow ..	..	..	..	..	..	..
39		Unao ..	..	..	..	..	..	..
40	Lucknow.	Rae Bareilly ..	..	..	..	..	..	
41		Sitapur ..	..	..	808	808	373	435
42		Hardoi ..	..	..	..	..	..	..
43		Kheri ..	..	..	423	423	..	423
44		Fyzabad ..	..	..	15,715	15,715	2,401	13,314
45		Gonda ..	..	..	7,655	7,655	55	7,600
46	Fyzabad	Bahraich ..	..	..	..	..	..	
47		Sultanpur ..	..	..	..	..	..	
48		Partabgarh ..	..	..	..	..	..	
		Bara Banki ..	..	3,870	3,169	2,646	4,393	
		Total ..	..	3,870	1,49,877	1,53,747	38,380	1,14,867

(a) Includes Rs. 6,590, the unspent balance of the money shown under expenditure during 1925.

(b) Includes Rs. 1,904, the unspent balance of the money shown under expenditure in the previous year.

(c) In addition to this the Board spent Rs. 713 from their own funds.

(d) In addition to this the Board spent Rs. 21 from their own funds.

## APPENDIX C.

Statement showing the protective effects of anti-plague inoculations  
in the United Provinces during the year 1927.

Name of village or town.	Popula- tion.	Number of inoculated persons.	Number of uninocula- ted per- sons.	Deaths among inoculated persons.	Deaths among uninoc- ulated per- sons.
SAHARANPUR.					
Behat .. ..	4,238	258	3,980	..	127
MUZAFFARNAGAR.					
Thana Bhawan .. ..	6,786	495	6,291	..	16
Harar .. ..	1,645	15	1,630	..	95
Umarpur .. ..	2,014	4	2,010	..	..
Shamli Town .. ..	8,425	179	8,246	..	..
Gogwan .. ..	1,275	6	1,269	..	9
Pindaora .. ..	2,500	851	1,649	..	46
Lilon .. ..	1,887	332	1,555	..	23
Balwa .. ..	2,138	34	2,104	..	25
MEERUT.					
Dauralla .. ..	3,774	135	3,639	..	13
BULANDSHAHR.					
Jahangirabad (Town area) ..	10,279	303	9,976	..	46
MUTTRA.					
Gokul (Town area) .. ..	2,471	43	2,423	..	14
Baldeo ( do. ) .. ..	2,642	18	2,624	..	1
Surir village .. ..	4,432	74	4,358	..	3
Shall .. ..	920	73	847	..	11
Bandi .. ..	1,173	41	1,132	..	15
AGRA.					
Jataura .. ..	200	91	109	..	5
Karehra .. ..	1,511	253	1,258	..	13
Sarauli .. ..	261	12	249	..	2
BAREILLY..					
Bareilly municipality .. ..	119,175	17,330	101,845	6	367
Aonla (notified area) .. ..	13,132	3,089	10,043	5	238
Kasumra .. ..	1,030	102	978	1	44
Usaita .. ..	426	14	412	..	11
Manauna .. ..	2,639	155	2,534	..	10
Majhwa .. ..	344	22	322	..	1
Tah .. ..	170	2	168	..	9
Aspur .. ..	590	5	585	..	2
Mau Chandpur .. ..	662	45	617	..	3
Champatpur .. ..	591	5	586	..	..
Nawabganj .. ..	3,810	430	3,380	..	33
Senthal .. ..	4,187	180	4,007	..	46
Mohanpur .. ..	2,444	150	2,294	..	15
Thiria .. ..	1,809	150	1,659	..	35
BIJNOR.					
Sehara .. ..	9,434	704	8,730	..	19
BUDAUN.					
Kumargaon .. ..	3,000	454	2,546	..	105

## APPENDIX C.

*Statement showing the protective effects of anti-plague inoculations in the United Provinces during the year 1927—(continued).*

Name of village or town.	Popula- tion.	Number of inoculated persons.	Number of uninocula- ted per- sons.	Deaths among inoculated persons.	Deaths among uninoc- ulated per- sons.
MORADABAD.					
Fatehpur Visnoi .. ..	1,343	341	1,002	2	33
Thakurdwara .. ..	6,113	762	5,351	..	87
SHAHJAHANPUR.					
Powayan .. ..	5,984	73	5,911	..	38
Baragaon .. ..	1,600	211	1,389	..	39
CAWNPORE.					
Pokhrayan.. ..	3,000	24	2,976	..	7
FATEHPUR.					
Dhata Karikan and Dhakindhate	3,979	245	3,734	1	39
Ghathipur (Hamlet Madhopur) ..	104	12	92	..	6
Bhedpur .. ..	90	10	80	..	5
ALLAHABAD.					
Kora Muridan .. ..	532	15	517	..	14
BENARES.					
Bankat .. ..	552	100	452	..	6
Chhitampore .. ..	266	73	193	..	7
Babatpore .. ..	426	46	380	..	7
MIRZAPUR.					
Khajurwal.. ..	260	78	182	..	10
Adalhat .. ..	500	24	476	..	12
Rasulpur .. ..	148	14	134	..	7
Tehra .. ..	37	11	26	..	..
Barion .. ..	452	104	348	..	2
Garaundi .. ..	788	54	734	..	6
JAUNPUR.					
Mongra Badshahpur .. ..	5,088	223	4,865	..	22
Ramnagar .. ..	712	76	636	..	9
GHAZIPUR.					
Selaich .. ..	600	48	552	..	15
Andharipur .. ..	500	47	453	..	23
Udhranpur.. ..	200	87	113	..	20
Sona .. ..	100	42	58	..	8
Dadhichpur .. ..	30	12	18	..	3
Sahjla .. ..	100	25	75	1	3
BALLIA.					
Jam .. ..	1,895	884	1,011	..	44
Rampur .. ..	750	110	640	1	3
Salempur .. ..	764	600	164	5	63
Chhibi .. ..	1,009	600	409	1	30
GORAKHPUR.					
Deoria N. A. .. ..	5,579	399	5,180	..	19

## APPENDIX C.

Statement showing the protective effects of anti-plague inoculations  
in the United Provinces during the year 1927—(continued).

Name of village or town.	Popula- tion.	Number of inoculated persons.	Number of uninocula- ted per- sons.	Deaths among inoculated persons.	Deaths among uninoc- ulated per- sons.
BASTI.					
Bhadawal .. ..	425	172	253	..	5
Kuchela .. ..	200	125	75	..	10
Gobhia .. ..	150	116	34	..	3
Samorha .. ..	120	72	48	..	5
Agauna .. ..	326	93	233	..	6
Sewapur .. ..	300	77	223	..	1
Utrawal .. ..	1,000	64	936	..	45
AZAMGARH.					
Anwak .. ..	910	522	388	..	20
Mahrajanj .. ..	517	110	407	..	4
Captanganj .. ..	937	118	819	..	6
Bazar Goshain .. ..	318	145	173	..	4
Mara .. ..	375	231	144	..	..
Para .. ..	132	47	85	..	4
Barnapur .. ..	513	355	158	..	5
Rasulpur .. ..	132	54	78	..	14
Jahanaganj .. ..	1,230	80	1,150	..	34
Bhadeer .. ..	1,171	115	1,056	..	25
Saraunda .. ..	931	37	894	..	3
Kcelsa .. ..	333	163	220	..	2
Pooni .. ..	225	43	182	..	1
Atraulia .. ..	1,328	157	1,671	..	..
Bharauli .. ..	1,402	140	1,262	..	3
Araith .. ..	1,757	58	1,699	..	19
Lohra .. ..	2,326	52	2,274	..	..
Shamsabad .. ..	1,179	31	1,098	..	2
Ahraula .. ..	283	198	90	..	2
Paithi .. ..	356	24	332	..	3
Marna .. ..	369	142	227	..	6
Hisamuddinpur .. ..	687	80	607	..	2
Ranipur .. ..	390	21	369	..	..
NAINI TAL.					
Haldwani N. A. .. ..	7,387	3,921	3,466	..	121
Kashipur municipality .. ..	10,576	1,203	9,373	..	27
Jaspur Town .. ..	6,683	475	6,218	..	1
Ramnagar N. A. .. ..	5,051	92	4,959	..	..
ALMORA.					
Almora municipality .. ..	7,051	10	7,041	..	1
LUCKNOW.					
Mohanlalaganj and Mau .. ..	3,111	907	2,204	..	114
UNAO.					
Katehrco .. ..	364	45	319	..	8
Barella .. ..	159	14	145	..	5
Saraijoga .. ..	497	14	483	..	..



## APPENDIX C.

Statement showing the protective effects of anti-plague inoculations  
in the United Provinces during the year 1927—(concluded).

Name of village or town.	Popula- tion.	Number of inoculated persons.	Number of uninocula- ted per- sons.	Deaths among inoculated persons.	Deaths among uninoc- ulated per- sons.
RAE BARELLI.					
Bardar .. ..	1,570	166	1,404	..	6
Bhitargaon .. ..	4,065	61	4,004	..	15
Kunsa .. ..	5,522	43	5,479	..	3
SITAPUR.					
Nimsar .. ..	2,788	216	2,572	..	24
Nabinagar .. ..	2,672	409	2,263	..	24
Pirterfrom .. ..	45	32	13	..	..
Bihat Biram .. ..	1,166	26	1,140	..	9
Macharata .. ..	2,301	156	2,145	..	3
Laharpur .. ..	11,185	211	10,974	..	2
Lachman Nagar .. ..	523	33	490	..	1
Chandra and Fatehpur .. ..	500	152	348	..	6
HARDOI.					
Haryawan and Lokanpur .. ..	1,587	289	1,248	..	36
Jetli .. ..	320	33	287	..	2
Shahabad .. ..	18,696	447	18,249	..	23
KHERI.					
Lakhimpur Town .. ..	12,396	4,015	8,381	1	56
FYZABAD.					
Bharatpur .. ..	750	449	301	..	8
Parsampur .. ..	400	241	159	..	4
Deoria Babu .. ..	200	104	96	..	1
GONDA.					
Ekdanga .. ..	400	4	396	..	14
Dharamdespur .. ..	250	5	245	..	3
Tirkha Buzurg .. ..	450	2	448	..	2
SULTANPUR.					
Tirsundi .. ..	1,079	225	854	..	3
Kurebhar .. ..	430	337	93	..	11
BARA BANKI.					
Daryabad .. ..	4,973	986	3,987	9	98
Total .. ..	401,594	50,424	351,170	33	2,913

## APPENDIX D.

**Medical and Sanitary Report on the Kumbh Mela at Hardwar, 1927.**

## I.—PRELIMINARY MEASURES.

As in all fairs and festivals in the United Provinces, both the medical and sanitary arrangements were made by the Public Health Department. In previous Kumbh melas it has been the custom of my predecessors to assume executive medical and sanitary charge of the fair as well as carrying out the administrative duties necessary at the fair and in the whole Province. This year I altered this system and put the Assistant Director in the I Range, in which Hardwar is situated, in executive charge, while I reserved to myself the co-ordinative and administrative duties necessary in Hardwar and all over the Province. I was thus able to devote most of my attention to the supply of adequate personnel, obtaining the necessary co-operation of other departments and local bodies and the protection of Hardwar at a distance by the rigorous railway inspection of all pilgrims entering the United Provinces and the stamping out of all outbreaks of cholera. This was specially necessary owing to there being another Kumbh fair at Brindaban in March. I visited Hardwar myself from time to time and remained there from April 10 to 14, 1927. I consider that this policy has been justified by the results.

2. The Dikhauti mela at Hardwar always takes place in April and in former years the numbers of pilgrims visiting this fair annually usually amounted to between one and two lakhs, while every sixth and twelfth year much larger numbers of pilgrims visited the fair. Laterly, however, the numbers of pilgrims attending the ordinary Dikhauti fairs have gradually decreased, while a largely increased number of pilgrims go to Hardwar all the year round. Even at the Adh Kumbh fair in 1921 the attendance fell far below the expected numbers, only about one and a half lakhs of people attending the fair.

At Kumbh fairs, however, the numbers of pilgrims have tended to increase possibly owing to better railway facilities, permitting larger numbers from a distance to attend this fair, which is probably considered the most important fair in all India. Taking these facts into consideration and after going into the estimated numbers attending previous Kumbh fairs, it was estimated that the numbers likely to be present on the Kumbh day on April 13, 1927, would be very nearly 1,000,000.

From previous experience it was also estimated that the number of pilgrims coming to Hardwar would begin to increase above the normal from February 1, that half a lakh would be present by March 2, the first important bathing day, one lakh by March 17, the Gurukul Silver Jubilee, five lakhs by the *Amawas* on April 2, and ten lakhs by the Kumbh day on April 13, 1927.

It was also estimated that anything up to 10,000,000 people would visit Hardwar between February 1 and April 30, 1927.

These forecasts were more or less justified, as over half a lakh were present by March 2, and larger numbers came and went during March. Four and a half lakhs bathed on April 2 and nine lakhs are estimated to have been present on April 13, 1927.

The calculation of the numbers of pilgrims coming into Hardwar is usually based on the numbers taking tickets at the railway stations for Hardwar. This number is taken and doubled and then doubled again, as it is calculated that three times as many people come in by road as by rail. Many come by rail to stations outside the 30-mile area and then walk to Hardwar. I hold no belief for this method of computing the attendance. In Appendix I is given the numbers arriving and departing by rail during March and April this year as supplied by the railway company.

3. In 1911, when myself in executive medical and sanitary charge of the Dikhauti fair, I pointed out the fact that the usual annual temporary arrangements for the fair, which was gradually getting smaller, should be given up and that permanent sanitary arrangements adequate for all the year round, thus obviating the necessity for these expensive temporary arrangements, should be provided. My proposals were not accepted at the time but when I was appointed Sanitary Commissioner in 1919, I again brought forward these proposals and as the result of the experience gained at the Adh Kumbh fair in 1921, which I personally supervised, my proposals were accepted and the provision of extensive permanent arrangements were commenced. About this time the pilgrim tax, which I strongly advocated, was brought into force and the policy proposed that half the pilgrim tax should be used to finance permanent improvements and half saved to meet the special requirements of a Kumbh fair. This policy has resulted in the provision of a pure water-supply from deep tube-wells adequate for every fair but a Kumbh fair, the introduction of electric light, and the provision of an increased number of permanent latrines, thus saving the annual expenses of temporary arrangements. A comprehensive drainage and sewerage scheme has also been prepared and it is hoped that it will be ready before the next Adh Kumbh fair.

Many permanent improvements have also been carried out at Bhimgoda, Har-ki Pairi, and on the Esplanade.

In addition to the above improvements, the permanent General Diseases Hospital in Hardwar was improved and enlarged and a permanent well-equipped Infectious Diseases Hospital was constructed with a fully equipped Bacteriological Laboratory which was all ready in time for the Kumbh mela.

4. For the Kumbh fair the permanent sanitary and medical arrangements had of course to be greatly supplemented and this will always have to be the case. From June, 1926, I therefore commenced the organization for the Kumbh fair. I informed Dr. Chaudhri, Assistant Director of Public Health, I Range, that he would be in executive medical and sanitary charge and indicated the broad lines on which I proposed to deal with the Kumbh fair. He was deputed by me to work out the details of these arrangements and to bring them up for approval. After having arrived at our requirements in personnel and material and having worked out the organization, Dr. Chaudhri was deputed by me to attend the various conferences held in preparation for the fair. He therefore attended a conference held by the Commissioner, Meerut division, at Rurki on August 10, and put my proposals before the conference. These were discussed and passed. He also attended railway conferences at Delhi, Saharanpur, and Hardwar where our

requirements were put forward and accepted. He also attended a number of conferences convened by the Officer in charge at Hardwar and discussed the medical and sanitary arrangements. All the medical and sanitary arrangements proposed by us were accepted and gradually brought into being.

These arrangements are given in detail in the appropriate parts of this report.

## II.—PROTECTIVE ARRANGEMENTS OUTSIDE HARDWAR.

In view of the fact that a disastrous epidemic of cholera causing over 60,000 deaths was started in 1924 by cholera cases coming into Benares in February, I proposed to the Government that some sort of medical inspection of pilgrims entering the United Provinces during the season of the spring pilgrimages to the Magh mela, Benares, Fyzabad-Ajodhiya, Muttra and Hardwar should be started at certain railway stations on the borders of the United Provinces from January 15 to April 15 in order to do as much as possible to prevent the importation of cholera. My proposals eventually were agreed to by the Government of India and on January 15, 1927, inspections and temporary infectious diseases hospitals were instituted at these stations. The result was that this year the following cases of cholera were intercepted. The return of cases of other diseases detected such as small-pox, plague, diarrhoea and suspicious cases of cholera have not yet been received :—

Railway stations.	No. of cases.	Remarks.
1. Moghalsarai .. .. .	1	
2. Ballia .. .. .	1	
3. Jhansi .. .. .	..	
4. Manikpur .. .. .	..	
5. Captainganj .. .. .	..	
6. Bhatni .. .. .	..	} No true case of cholera detected.
7. Saharanpur .. .. .	..	
8. Ghaziabad .. .. .	7	} From the Brindaban fair.
9. Muttra .. .. .	12	

Four cases of cholera got through our inspection post at Manikpur on the Great Indian Peninsula Railway. These were pilgrims from Bijapur in the Bombay Presidency where a virulent epidemic of cholera was raging and they must have been cases in the incubation stage. They left the train at Shahganj station in the Jaunpur district and at that station were found suffering from cholera. They caused a small epidemic in the Shahganj tahsil which is now under complete control.

In addition to these inspection posts and hospitals, which will be organized every spring, special inspection posts and hospitals were arranged at Brindaban for the Kumbh mela there, at Khan Alampur, which is the change station between the North-Western and the East Indian Railways two and a half miles south-east of Saharanpur at Lhaksar, Landhaura, Aithol, Jwalapur and Hardwar.

At Hardwar station ten medical officers, three sanitary inspectors, one assistant superintendent of vaccination, five compounders, and four vaccinators were on inspection duty until April 13, while five medical officers

and two compounders were added to deal with the outgoing passengers. This was in addition to the medical officers, sanitary inspectors, etc., supplied by the East Indian Railway. Captain D. Clyde, I.M.S., Assistant Director of Public Health, was in charge of this work from April 14. The result of this rigorous inspection on the platforms, in the pilgrim pens and in the large waiting areas was that in this year not one single case was found in trains as compared with many found in previous years and only one case was detected at any station, viz. one at Lhaksar. Only 23 cases in the incubation or carrier stage reached the Punjab against 2,017 in the 1915 Kumbh mela. This may be considered very satisfactory as it is estimated that 80 per cent. of the pilgrims came from the Punjab. At the time of writing, the Director of Public Health, Punjab, reports no epidemic in the Punjab, the small sporadic outbreaks resulting from importations being under complete control.

A statement containing the cases found at railway stations after leaving Hardwar is given in Part III, paragraph (10) of this report.

2. In addition to the conferences attended by Dr. Chaudhri, I made special arrangements with the East Indian Railway by which the Agent and the Chief Medical Officer supplied all the staff suggested by me at various railway stations and at Hardwar. The railway also employed extra trained sanitary personnel supplied by me. They provided also all the latrines and conservancy material proposed and finally in order to have no division of authority, put the whole of their medical and sanitary personnel under my orders. The District Medical Officer, Dr. Kent, was at Hardwar during the big days of the fair, and the Chief Medical Officer visited the fair on April 11, and gave strict orders that all our instructions were to be faithfully complied with. The staff supplied by the East Indian Railway is given in Appendix II. In the East Indian Railway, the sanitary arrangements are normally under the Divisional Superintendents, not under the District Medical Officers, and Major Budden, R.E., the Divisional Superintendent, Moradabad, supplied all the sanitary requirements asked for in all cases.

In the pilgrim pens, sufficient latrines of the kadamcha pattern and a number of temporary urinals were constructed and in the enclosures and waiting areas, where there was a tremendous rush of outgoing pilgrims. From the 13th evening till the 21st morning about 30,000 people remained for more than 12 hours at a time in the waiting areas. The platforms and pucca enclosures were disinfected with izal twice a day. A pucca First Aid station was built on the main platform and later on, from April 13, another First Aid station was erected in the waiting area. The staff employed by them worked hard and to my entire satisfaction. Dr. L. N. Goel, M.B., B.S., was very much overworked and was on an average for more than 16 hours on duty from April 13 to 20. Mr. Mushtaq Ahmad, Sanitary Inspector, was in charge of the sanitary arrangements. He organized his charge well and worked very hard. His services deserve due recognition at the hands of the East Indian Railway officials.

The disinfection of carriages was done by the Loco. and Wagon Department under the supervision of Mr. Mushtaq Ahmad, Sanitary Inspector. All terminus trains were swept and disinfected with izal lotion and the infected carriages were sidetracked and disinfected thoroughly.

At Rikhikesh road station, Rikhikesh, and Lhaksar the sanitary and medical arrangements were also made by them. At Rikhikesh road station the sanitary and medical arrangements were placed under the Public Health Department. At Raiwala, latrines and urinals were constructed by the mela authorities at the cost of the East Indian Railway. The construction of Rikhikesh railway station and the railway from Rikhikesh road station to Rikhikesh was completed on April 1 and the train service was started from April 2. The sanitary arrangements at the new Rikhikesh station took time to complete and were not ready until April 11. The medical officer in charge of the mela hospital there and a sanitary inspector from the Public Health Department were deputed to look after the sanitary and medical arrangements at this railway station.

I thank Major Budden, Divisional Superintendent, East Indian Railway, for the excellent sanitary and medical arrangements he made at Hardwar and for his close personal supervision.

The North-Western Railway made the arrangements at Khan Alam-pur, which was used as a change station for the pilgrims to Hardwar from North-Western Railway trains to East Indian Railway trains and one infectious diseases and one general diseases hospital were erected at the station. Both the hospitals were stocked with drugs and medicines by Lieut. Colonel H. R. Nutt, I.M.S., Civil Surgeon and Railway Medical Officer at Saharanpur.

The list of the staff engaged by the railway is appended to this report (Appendix III). The terminus trains were thoroughly disinfected and both incoming and outgoing passengers were inspected by the medical officers posted there by the Public Health Department. Shallow tubewells were sunk for drinking water and sufficient latrines and temporary urinals for males and females were erected.

Twenty police constables on sanitary duty were posted there from March 15 to April 25.

A chord line was constructed from Landhaura to Aithol so that the special trains coming from the Punjab did not touch Lhaksar, but were diverted from Landhaura to Jwalapur.

The arrangements made by the North-Western Railway authorities were most satisfactory and they carried out the instructions of the Public Health Department to the letter. Colonel Burn, the Divisional Superintendent, was very keen on the sanitary and medical arrangements of the place. I thank him for all the help he gave us.

3. Road inspection posts and hospitals were also organized at (1) Rupchandwala, (2) Bahadurabad, (3) Bhagwanpur, (4) Rurki, (5) Imlikhera, (6) Jeorasi, (7) Gagaltheri on the main roads leading to Hardwar, vide map (Appendix IV). Medical officers were also placed on inspection duty at Chandi bridge, the main road to the Bijnor district at Jwalapur and at Bhopatwala, where also infectious and general diseases hospitals were provided. Dispensaries were also situated on the roadside. The officers at all these places also inspected the outgoing pilgrims.

Appendix V gives a list of these hospitals on the main roads; qualified medical officers were in charge of each.

### III. PROTECTIVE ARRANGEMENTS IN HARDWAR AND THE FAIR AREA.

From Pebruary 1, Dr. Chaudhri remained in Hardwar permanently and on arrival, the cleaning of the town and the hills adjoining the town, the forest on the Lalji-wala camping-grounds, East Indian Railway yard, the camping-grounds and the surrounding fields which had been fouled to a very great extent was started. The digging of trenches for the trenching of night-soil was started at Jwalapur and Lalta Rao.

Sweepings and night-soil from the whole city were carted to the large Jwalapur road trenching-ground where the former were burnt and the latter trenched in trenches, two feet deep. The trenches when half full were filled in with earth and well rammed. Each time a cart was emptied it was washed with water and then disinfected with phenyle solution and afterwards tarred inside and outside. All this was done at the trenching grounds. The space between the double seal on the top of the cart was filled with earth. This effectively destroyed the smell and there was not a single complaint of their giving a smell when passing on the roads. The same measures were enforced at the other trenching grounds and there were no complaints regarding any of the twelve trenching grounds that were in use during the time of the mela. No fly maggots were found in any of these trenches.

The preliminary cleansing of the mela area in February, was most essential, as in the month of March a large number of pilgrims were constantly present and had the area not been constantly kept clean during these months there would possibly have been outbreaks of epidemic disease and, when the pilgrims began to assemble in larger numbers from March 10, they would have found all the soil and encamping sites fouled, but for this preliminary cleaning.

2. The mela area was divided into eight circles, each circle being under the charge of a Medical Officer of Health. A sub-division of the area into sanitary circles. statement showing the sanitary and medical staff attached to each circle is given in Appendix VI.

Each circle was a complete unit with its separate medical officers, sub-assistant surgeons, compounders, chief sanitary inspectors, sanitary inspectors, vaccinators, jamadars, sweepers, disinfecting gangs, hospitals, trenching-grounds, latrines, urinals, tools, plant, sullage carts, night-soil carts, rubbish carts, dust-bins, and water-supply. Hospitals, both for infectious diseases and general diseases, were opened in each circle.

Statements also showing the circles into which the mela area was divided, the duties of circle officers, the number of hospitals provided in the mela area, and the duties of officers in charge of hospitals are given in Appendices VII, VIII, IX and X.

The police camps were pitched close to the sanitary and medical camps of the circle.

Telephone connexions were provided in the chief sanitary circles. The sanitary and medical staff lived in the circles to which they were attached.

Two of these circle hospitals were taken over by the Red Cross Society and Marwari Relief Committee. The former was run by the Public Health department and a contribution of Rs. 5,000 was made

by the Society towards the mela fund, while the latter was staffed with qualified personnel and fully equipped by the Marwari Relief Committee.

3. The camping-grounds were laid down in most areas on the lines prescribed in the Manual of Government Orders for fairs, i.e., with main roads, cross roads, and conservancy lanes. Latrines and urinals were provided in adequate numbers and "flagged areas" for defaecation to supplement the latrines. Tube-wells with hand-pumps were also supplied in large number, this being the first time at Hardwar that a bacteriologically pure water-supply has been supplied in the whole area. A special staff was employed to keep these pumps in repair.

In Rori island, provision was made for a main bazar and plots were let to better class pilgrims. In Belwala island the plots were reserved for the poorer classes, while on the stony and sandy area at the lower end of Belwala were placed the Bairagi Akharas. Over one lakh were camped on Rori and Belwala and 20,000 in the Bairagi area. In Bhopatwala, there were large private camps and also in Bhimgoda. In these a large number of sadhus and sanyasis were supported and fed by philanthropic men. The numbers camped in the Bhopatwala circle were far in excess of the usual, over two lakhs being there on April 12 and 13. In Mayapur were the camps of the officer in charge and the headquarters of the police, the Public Health department, the railway camp, and the Seva Samiti headquarters, etc. In all these areas, hospitals, latrines, water supply, electric light, etc., were fully supplied.

At Chandi in the Bijnor district, a camping ground for pilgrims coming by road was arranged from April 1 and similar arrangements were made. The rush of pilgrims was so great on April 12 and 13 that a "flagged area" for defaecation in addition to the latrines had also to be arranged. A hospital was also maintained in this area as in others.

4. The akharas, of which there are seven, have all got their private enclosed permanent camping-grounds except the bairagis mentioned above. Three are in Kankhal and three in Hardwar.

The mahants in every case carried out our instructions and laid out these camps according to our plans, built their latrines according to our orders, and supplied themselves with adequate conservancy carts and other material. The wells in all the akhara camps were permanganated daily except in that of the Naga Akhara, where the mahant objected. He had, however, no objection to disinfection with lime and this was done daily. Police on sanitary duty were posted to all the akhara camps and prevented the commission of nuisances. In the akhara areas in Kankhal and Hardwar, the lodging house-keepers maintained their latrines and urinals in a sanitary condition under our supervision and all night soil was removed to the mela trenching grounds. There was no over-crowding in any of the lodging houses.

In the Bairagi Akhara camping grounds above mentioned latrines were provided, but as bairagis are mostly averse to using latrines large flagged areas were provided. From these areas all the night-soil was collected by sweepers and disposed of in large pits as, owing to the stony nature of the ground, ordinary trenches were not possible.



5. Rubbish was removed from all the areas daily, most of which was burnt at the latrines or at the trenching grounds. Disposal of refuse. 15 large carts were provided and 200 rubbish bins were erected in various parts of the area. Horse litter was trenched and great care was taken to closely supervise this operation, owing to the necessity for preventing the breeding of flies which breed largely in horse litter and night-soil. I can say here that these operations were so successful that many people remarked the almost total absence of flies.

6. There are in Hardwar 30 permanent latrines with 199 seats. Disposal of urine and night-soil. These were supplemented by a large number of temporary latrines, either of the gamla pattern or the trench pattern as considered most suitable for the area.

In Bhopatwala two flagged areas had to be provided to supplement the latrines and another at Sat Sarowar for the sanyasis who would not use the latrines at Bhimgoda. Three sets of latrines were provided but owing to the rush of pilgrims a "flagged area" had to be added on April 7. For the Bairagis six "flagged areas" and one screened area for females were provided.

At Belwala and Rori islands a long line of male and female latrines over a mile long were provided towards the Nildhara side, but owing to the rush "flagged areas" had to be added from April 10 to 14. These areas were constantly cleaned by sweepers, who worked extraordinarily well and, as a rule, removed the night-soil almost immediately after it was voided. On April 13 and 14 such large quantities had to be dealt with that the whole of the areas were not declared clean until 4 p. m. on the 14th. All night-soil trenched was covered well with earth and rammed hard while lime was used to cover the night-soil. The result was no breeding of flies whatever.

Urinals over absorption pits were erected in large numbers all over the area and these worked very satisfactorily. They were disinfected hourly with bleaching powder and their sites changed as required.

Up till April 7, all night-soil except on the islands was carted to the trenching grounds provided for the area, but after April 7, no wheeled traffic in the fair area was possible and each area was made self-contained for the disposal of excreta. For this purpose trenching grounds had been prepared in each area, which were not used until between April 7 and 14.

All sullage was disposed of in sullage carts and trenched. Details of conservancy appliances used are given in Appendix XI. The list of trenching grounds is given in Appendix XII.

7. The permanent water-supply from deep tube wells and distributed in pipes was completed in January and was in regular use. Water-supply. An extension of this supply was made in February to Bhimgoda, while extensions were also made to the permanent hospital and the infectious diseases hospital at Lalta Rao. The East Indian Railway station was also connected. The number of public taps supplied thus in the area commanded was 107. This supply was supplemented by the installation of 171 shallow tube wells with hand pumps all over the camping grounds and in Kankhal.

There were 126 in the islands, 23 in Bhopatwala, and 22 in Kankhal. This ensured an adequate supply of pure drinking water all over the area. In addition there are 620 open wells which had to be looked after. One hundred and sixty were provided with parapets and improved, 300 were cleaned of silt, 160 were provided with pulleys, and six were roofed over. Five were closed altogether. These wells were permanganated daily. Fifty-eight *piaos* were set up by the Marwari Relief Committee, the Prem Sewak Sabha of Amritsar and the Seva Samiti of Allahabad at important places.

Near the shallow tube wells absorption pits were provided to prevent the leaking of water on the surface, in positions where they would not pollute the water-supply by the flow of the sub-soil water. All water-supplies were systematically examined in the bacteriological laboratory from January by the Medical Officer of Health, Hardwar, and from February onwards by the Cholera Research Officer. The results obtained will be dealt with under cholera. The extension of the permanent piped water-supply to Bhopatwala, Kankhal, and Jwalapur is urgently necessary.

8. All articles of food exposed for sale were daily inspected in all the centres by the medical and sanitary staff and all Food supply. sweetmeats, poories, etc., were kept under wire-gauze covers or glass almirahs. Permanganate of potash was supplied to all food shops free for the washing of utensils and was freely used.

Eighty-four samples of ghee, 34 of milk, 17 of wheat flour, etc., were seized in February and March under the Prevention of Adulteration Act. As a result 51 persons were prosecuted and Rs. 431 imposed as fines. Seventeen cases are still pending. All food found unfit for human consumption was promptly destroyed.

The volunteers of the Prem Sewak Sabha of Amritsar were trained in this work and gave valuable assistance.

9. The early detection of illness in the fair area is one of the most important and difficult duties of the medical and sanitary officers, so it was organised very carefully. Detection of illness in the lodging houses and camps. The organisation was as follows:—

*First agency.*—In each circle the Medical Officer of Health sub-divided his area into smaller areas with a staff consisting of a sub-assistant surgeon, a sanitary inspector, vaccinators, and jamadars. These visited every house and camp daily and endeavoured personally to see each occupant.

*Second Agency.*—The volunteers were specially instructed in this work, a number of whom were attached to each circle.

*Third agency.*—Police on sanitary duty at the big akharas whose chief duty was to detect people who went frequently to the latrines.

*Fourth agency.*—The latrine sweepers, who reported cases of diarrhoea to the circle establishment. This organisation resulted in every single case of diarrhoea and vomiting from any cause being promptly detected and removed to the circle infectious diseases hospital from where, if suspicious of cholera, the cases were at once sent to the main infectious diseases hospital. Two lady doctors were employed on the duty also to enter the purdah parts of the houses and camps.

All the above staff were instructed in carrying out the immediate disinfection of all stools, vomits and other infectious material.

The results were excellent and we not once had reports of people dying of cholera before they were detected and only very few had even reached the second or collapse stage of the disease.

10.—Cholera cases from all the circles were sent to the main infectious diseases hospital, where the cholera research staff examined stools of every case brought there; 168 cases of diarrhoea or vomiting or both were admitted into the infectious diseases hospital, out of which 58 were reported to be cases of cholera, 32 were cured and discharged when they no longer acted as cholera carriers and 26 died in the hospital.

The disinfection of infected clothes, fomites, and dejecta is such a difficult task and the danger of flies sitting on the infected articles so great that it would not have been possible to supervise all the infectious diseases hospitals if the cases were to be admitted to and kept in the infectious diseases hospitals of the eight circles. In the main infectious diseases hospital water was kept boiling day and night in front of the cholera wards and a separate staff was detailed for this work.

The fomites and soiled clothes were promptly removed by means of tongs and boiled, bed-pans were emptied into the boiling water in a tin and the pans washed with boiling water. Hycol lotion was kept in big nands in each room and verandah and its liberal use was insisted on.

Of the 58 cholera cases, six were imported and 52 infected locally and in almost all these cases, the history of having drunk Ganges water in exceptionally large quantities was given by the patients. The Ganges water on bacteriological examination showed presence of non-agglutinating vibrios at various times.

To the main infectious diseases hospital, four sets for the patients, compounders' quarters, and six other rooms were added this year.

The doors, windows, and ventilators were fitted with fly-proof gauze and chicks were provided in the temporary huts where accommodation for 50 beds was provided. One incinerator and one masonry disinfector besides the Naini Pattern disinfectors were constructed. The newly constructed disinfector proved to be most economical and efficient. This cost Rs. 160 only. Over 30 blankets can be put into the chamber and thoroughly disinfected in a couple of hours.

Underground drainage was provided in the hospital. Piped water-supply was also extended to the infectious diseases hospital and electric light supplied to the wards, laboratory, and dispensary.

The hospital was in charge of one assistant surgeon. He was assisted by two sub-assistant surgeons, four compounders, and one lady sub-assistant surgeon. Ten kahars and two cooks were kept there who nursed the patients day and night. Ten sweepers looked after the boiling of excreta of the patients and general conservancy of the place.

There were two imported cases of plague from the Punjab; both were detected early and admitted into the infectious diseases hospital and both died after four days' illness.

Seventy-four imported cases of small-pox were admitted into the infectious diseases hospital; of these, 14 died and 60 were cured and discharged. Small-pox cases were housed in the temporary huts, in the main infectious diseases hospital and also in the circle hospitals.

Sporadic cases of cholera continued to occur from April 1 to April 10, on an average of one a day up to the 16th when there were four cases after which there were four or five cases a day up till the 23rd, with the exception of the 18th when there were eight. After this date there was an appreciable reduction in the number of cases until at the time of writing no more cases are being reported.

The first case, named Bimla Devi, came from Burdwan and visited the pilgrim centres of Gaya, Benares, Ajodhya and Nimsar. She was taken ill on March 1, and died of general debility on March 11. Her stools showed absence of cholera vibrios on March 9.

The second case (a girl) occurred on March 22. She gave a history of having suffered from cholera three years ago. She had lived for 22 days in Hardwar prior to her falling ill. The first ten days she spent in Rikhikesh.

The third case came on March 30, from Benares and was removed direct from the train to the infectious diseases hospital where he died the same day.

The fourth case was from Gaya. He arrived on March 31, and was removed to the infectious diseases hospital on April 1, 1927, where he died on April 2, 1927.

Numbers 1, 3, and 4 were purely imported cases but no. 2, who had suffered from cholera three years ago might have been a carrier. How she fell ill is not known. The Cholera Research Officer reports that probably she got the infection from the Ganges. She lived in the Nirmala Akhara, the wells of which were thoroughly disinfected thrice a week and the examination of the well water showed the absence of vibrios.

The fifth case was again from the Nirmala Akhara which occurred on April 2 ten days after the second case. Again, on April 8, 1927, one Gujar Singh, who lived in the Nirmala Akhara, fell ill of cholera in the train while returning from Rikhikesh. The cholera Research Officer states that all the Nirmala Akhara cases took water in large quantities from the Ganges. There was another case from the Nirmala Akhara on April 17, 1927, but none after that date. The sanitation of this camp was far better than that of other akharas and the samples of water from the wells showed complete absence of vibrios.

The seventh case, named Ramapati Chatterji, came from Burdwan and fell ill in the train and the eighth case came from Dehra Dun who also fell ill the same day.

From the histories of the Punjab cases, it appears that there was no cholera in the districts they came from, but the cases nos. 1, 3, 4, and 8 who belonged to other provinces were certainly imported ones.

Every case suffering from diarrhoea or simple vomiting or both, that came to our notice was sent to the infectious diseases hospital for observation from February 1 to April 22. As stated above, these cases numbered 168. The stools of 85 cases were examined, of which 58 were declared to be true cholera cases by the Cholera Research Officer.

Chlorination of the Har-ki-pairi pool was undertaken by hanging four bags containing bleaching powder under the Jammughat bridge. To these bags heavy stones were tied which kept them immersed about

6" below the surface of the water. On the big bathing days, the quantity of bleaching powder was doubled and the outgoing water was also chlorinated by placing bags containing bleaching powder under the ferro-concrete bridge and in the manhole of the conduit carrying away water from the pool to the main canal. All this was done at the dead of night. Subsequent examination of water showed absence of vibrios until April 14, the day following the chief bathing day. A sample of water taken on April 17, showed presence of true cholera vibrios. The number of cases from that date onward increased to eight on the 18th and four to five a day up to 22nd and one to two a day from 22nd to 24th.

We had to employ a much larger staff for detection of illness in the lodging houses and camps during these anxious days. The pool was watched day and night to stop people from polluting the water and the bathers were warned against washing their dhoties in the pool. No vibrios were found in Har-ki-pairi pool from April 2 to 13, when the water level was lower by 1 foot than it was from the night of April 13 to 25. There can be only one explanation to this that chlorination was effective when the amount of water in the pool was smaller up to April 13.

The remedy lies in making the stream more rapid than what it is, as we have found by experience during the Kumbh mela that no vibrios have so far been found present wherever the flow of water was very rapid. In Hardwar the stream of water is very rapid between Har-ki-pairi and the Naisota drain and between the Nisota drain and Gaoghat and no vibrios have been shown to be present in the stream of water referred to above.

The cases that occurred after the 13th were undoubtedly due to the contamination of the water at Har-ki-pairi.

*Cholera research work.*—Dr. Saranjam Khan, Cholera Research Officer, assisted by his Assistant, Dr. Hadi examined 323 samples of the Ganges water, out of which 33 samples showed non-agglutinating vibrios; 686 samples of well water were examined. Of these, 20 showed the presence of vibrios of a non-agglutinating type. All the wells were permanganated every alternate day at first, but daily after April 5. The Ramratto well in Bhingoda showed the presence of vibrios and this well was regularly disinfected, but in spite of this, vibrios were still found and eventually it had to be closed. One tube-well on the main road in Bhopatwala circle also showed the presence of vibrios and the hand-pump from this well was removed immediately.

Three hundred and fifty-six samples of stools of healthy pilgrims were examined, out of which 17 showed the presence of agglutinating vibrios after April 13. In the indigenous population only one sample out of 50 showed the presence of vibrios.

Dr. Saranjam Khan managed his branch in an efficient manner. He was most helpful in supervising the medical arrangements at the infectious diseases hospital. It was certainly a great advantage in having early reports of the examination of stools of cases admitted into the hospital.

Dr. Saranjam Khan has submitted an interim report on his research merely for my information and for use in writing this report. A full

report will be submitted to Government later and to the Indian Research Fund Association. The gist of his report is that Hardwar is not by any means an endemic centre of cholera, that when there have been no importations, there is no cholera, that no water-supplies such as wells are ever found infected unless after cases have occurred, that apart from the imported cases, every single case showed a history of drinking large quantities of Ganges water at places where cholera vibrios had been isolated from the river water and which were liable to great pollution owing to either much bathing or much washing of clothes and that the chief source of infection is the highly polluted Har-ki-pairi pool in spite of chlorination to the extent carried out.

He further states that the Bhimgoda pool, which is very small and constantly packed with bathers and in which the flow of water is very slow, but which is suitable for chlorination and was chlorinated for 49 days, only showed vibrios on one day only. The water was found to be otherwise very highly polluted.

Two very instructive sketches are attached as Appendices XIII and XIV, showing the places from which samples of Ganges water were constantly examined and the places at which the cholera cases were found to have been infected. It damns the Har-ki-pairi pool and unless proper chlorination of this pool can also be carried out, there will always be outbreaks of cholera traceable to this pool.

The following figures comparing the incidence of cholera before, at, and after, the Kumbh fair of 1928 with the Kumbh fairs of 1915, 1903, and 1891 are very instructive :—

Years.	January to March.	At the Kumbh fair.	April to December.
1891 .. .. .	3,910	3	165,103
1903 .. .. .	353	11	46,806
1915 .. .. .	515	302	89,993
1927 .. .. .	98	26	

In 1891, 3,910 deaths from cholera had occurred in the United Provinces before the fair, but at the fair only three cases of cholera were reported. It is obvious that a very much larger number of causes must have occurred and that the organisation for finding these cases, isolating them in an infectious diseases hospital and dealing with contacts must have been very defective; one cannot believe that with such a large amount of cholera before the fair, only three cases occurred during the fair. The number of deaths that occurred in the succeeding nine months, namely, 165,103 shows the presence in that year of a most disastrous epidemic.

In 1903 only 11 cases are reported as having occurred at the fair. It is just possible this figure may be correct, as only 353 deaths from cholera had occurred in the United Provinces before the fair, but when

46,806 deaths occurred after the fair, it seems to me that the figures are unacceptable, as one would assume that the large number of deaths after the fair were due to some extent to the dispersal of pilgrims from the fair. In 1914, 551 seizures and 302 deaths are reported as having occurred and although I myself was absent on military duty during this fair, Dr. D. D. Pandya, Assistant Director of Public Health, was present at the fair and tells me that he thinks that most of the cases which occurred were found and treated. In spite of this 89,993 deaths occurred in the United Provinces after the fair, so that a virulent epidemic was set up as the result of the fair. Dr. Pandya informs me that the arrangements for the 1915 fair were nothing like so complete as in this year, especially as regards railway inspections. It must be remembered, however, that in 1915, not only was the Public Health department a very small one, but that owing to the war, the medical and public health services of the United Provinces were depleted far below the necessary minimum to deal with a Kumbh fair at Hardwar, although possibly sufficient for the minimum routine needs of the province.

In 1927, the Public Health department had been very largely increased owing to the recent policy of Government and although the Public Health organization is still far from adequate, I was nevertheless in a far stronger position to deal with special emergencies like the Kumbh fair than any of my predecessors. In making comparisons, therefore, with previous Kumbh fairs, this fact must always be taken into consideration.

In the nine months succeeding the Kumbh fair of 1903, 14,459 deaths occurred in the Punjab and 12,306 after the Kumbh fair of 1915. Up to date in this fair between 20 and 30 cases of cholera have occurred in the Punjab, due to importations from Hardwar and the Director of Public Health in the Punjab has informed me that these small outbreaks are under complete control. I, therefore, may assume that the number of deaths in the Punjab will this year be far below to those of the previous two Kumbh fairs.

The following is an interesting statement showing improvement in the medical inspection of trains leaving Hardwar station as compared with the 1915 Kumbh mela :—

Statement showing the number of cholera cases removed from trains at the following railway stations during the outgoing rush :—

Railway station.	In 1915 Kumbh.	In 1927 Kumbh.
1. Moradabad .. .. .	24	Nil
2. Saharanpur .. .. .	26	Nil.
3. Lhaksar .. .. .	1	1
4. Dehra Dun .. .. .	2	Nil.

The following cases were taken out of trains at the stations noted below :—

Railway station.				In 1915 Kumbh.	In 1927 Kumbh.
1.	Ghaziabad	..	..	2	Nil.
2.	Kasganj	..	..	1	Nil.
3.	Muttra	..	..	1	Nil.
4.	Cawnpore	..	..	1	Nil.
5.	Moghal Sarai	..	..	2	Nil.
6.	Agra	..	..	1	Nil.
7.	Pilibhit	..	..	7	Nil.
8.	Todarpur	..	..	1	Nil.
9.	Nagina	..	..	2	Nil.
10.	Benares	..	..	1	Nil.
11.	Lucknow	..	..	2	Nil.
12.	Bareilly	..	..	2	Nil.
13.	Harrawala	..	..	1	Nil.
14.	Rikhikesh road station	..	..	5	Nil.

The following cases were taken out of trains at stations in the Punjab :—

Railway station.				In 1915 Kumbh.	In 1927 Kumbh.
1.	Ambala Cantonment	..	..	5	Nil.
2.	Rajpura	..	..	2	Nil.
3.	Ludhiana	..	..	2	Nil.
4.	Phillaur	..	..	1	Nil.

The spread of cholera by road is seen by the attacks at—

Railway station.				In 1915 Kumbh.	In 1927 Kumbh.
1.	Sat Narain	..	..	10	Nil.
2.	Rikhikesh	..	..	80	1

The Civil Surgeon, Garhwal, reported that cholera was directly imported from Hardwar, causing 2,115 deaths in the Kumbh of 1915 against nil of 1927 reported so far.

This statement shows that 82 cases were removed from trains at stations in the United Provinces outside Hardwar when the Kumbh fair of 1915 was dispersing, while this year only one such case was found.

In 1915, 13 cases were removed from the train in the Punjab, while none were found in 1927.

The control of the inspection of pilgrims leaving by road for the pilgrim route is also shown by the fact that this year only one case got as far as Rikhikesh, while in 1915 ten cases occurred at Sat Narain and 80 at Rikhikesh.

I consider that the above figures show that everything within our present power to prevent an epidemic at Hardwar and an epidemic in the United Provinces and the Punjab has been done this year. Cholera is a disease with a varying incubation period of a few hours up to six days, so



that it is quite possible for cases incubating cholera to escape detection in Hardwar and to leave Hardwar without showing any signs of the disease. In addition to persons incubating cholera, there are the carrier cases, i.e., cases who after having recovered from an attack of cholera, which continues to be infective for 14 to 21 days and carrier cases of another type, who although they show no symptoms of cholera themselves have become carriers through being exposed to the infection. These carrier cases are naturally immune themselves, but can spread the disease to others. They can also go through a typical attack of cholera themselves if their natural resistance is lowered by an attack of some other disease, such as, dysentery, diarrhoea, etc. These cases are fortunately few, but it was one of these cases which started the outbreak of cholera at Hardwar this year; in fact seven or eight of such cases were caught in Hardwar during or before the fair and they infected others. The only hope, therefore, of preventing cholera being brought into Hardwar by such cases is that all pilgrims coming from infected areas should either be quarantined for one month before being allowed into the fair or that they should be inoculated against cholera.

It is calculated that in this year's Kumbh fair, between 70 or 80 per cent. of the pilgrims came from the Punjab where there was no cholera this year previous to the fair. There was very little cholera in the United Provinces before the fair, only 98 cases having been reported from the whole province during January, February, and March. Of these 98 cases, 60 occurred at the Kumbh fair at Brindaban and Muttra, but not one single outbreak in either the Punjab or the United Provinces was due to importation from this fair and no case at Hardwar was imported from Brindaban and Muttra where a similar organization, on a small scale, to that in Hardwar, was in force. The other 38 cases reported from the United Provinces before the fair were in the eastern districts and were small sporadic outbreaks due to importations from Bengal, which were kept under complete control and no pilgrim from these places infected Hardwar. The outbreak at Hardwar was due altogether to importations from Bengal and Bihar and Orissa, where virulent cholera epidemics have been in progress for some considerable time. The quarantining, therefore, of Bengalis at Mughalsarai or Lhaksar would have prevented any outbreak at Hardwar.

The quarantining of travellers from infected areas is an accepted principle between nations and is regularly carried out in the pilgrimages from India to Mecca, but I do not know of this measure having been applied in any nation between provinces under the same Government. In India, however, there is one such quarantine camp for all Indian labour going from India to Ceylon, all such immigrants being quarantined by the Ceylon Government for one week before being permitted to enter Ceylon. It is, therefore, a question which should be considered by Government as to whether the quarantining of pilgrims from infected areas in other provinces going to fairs in the United Provinces is a practicable measure.

11. Inoculation was first started at the headquarters of the Public Health department where 3,000 inoculations were done in the month of February. With the rush of pilgrims, inoculation work was done in ten other centres, vide appendix XV.

Anti-cholera inoculation.

Arrangements were made to inoculate every pilgrim wishing to protect himself in his own district but very few availed themselves of this protection. All the police and sanitary staff of the fair were inoculated either in Hardwar or in their districts and no cholera occurred among the staff.

12. Temporary mela hospitals consisted of—

Permanent and temporary mela hospitals.

1. A hut, 15 feet  $\times$  12 feet, for dispensary.
2. A common store room, 15 feet  $\times$  12 feet, for stores.
3. Tent for Medical Officers.
4. Tent for Assistant Medical Officers.
5. Chouldaries for compounders and kahars.
6. Chouldaries for sweepers.
7. Five huts, each measuring 15 feet  $\times$  12 feet for 20 beds for general diseases.
8. Five huts, each 15 feet  $\times$  12 feet, for 20 beds for infectious diseases patients.
9. A common cook-house, measuring 15 feet  $\times$  12 feet.
10. Latrines for convalescent cases of general diseases hospital.
11. Disinfectant,

The doors and windows of the infectious diseases hospital were fitted with fly-proof chinks.

The equipment of the hospitals consisted of articles as shown in the appended list. The list of medicines supplied to each hospital was according to the usual scale.

Stock mixtures and other drugs and medicines were supplied from time to time, either from the main infectious diseases hospital or from the municipal general diseases hospital. A few things were locally purchased.

Doolies and kahars were stationed at every hospital. Disinfecting gangs always accompanied the doolies when infectious cases of cholera were removed to the hospital.

Accommodation for 50 extra beds was also provided in the municipal general diseases hospital. There was a great rush of patients to this hospital, with the result that patients had to be sent to other mela hospitals in the circles.

Dr. Rajendra Prasad, medical officer in-charge of the Municipal General Diseases hospital, managed his hospital efficiently. A list of medical staff, permanent as well as temporary, is appended to this report. (See appendix VI.)

The total number of patients treated in the general hospitals of the mela was 2,704 in-patients and 20,136 out-patients. The minimum number treated on any one day was—

25 in-patients on March 16, 1927, 131 out-patients on March 18, 1927, the maximum being—

125 in-patients on April 17, 1927, 1,090 out-patients on April 12, 1927.

The more important diseases for which patients came in were—

1. Dysentery.
2. Diarrhoea.
3. Malaria.
4. Influenza.
5. Pneumonia.

*Injuries.*—Indoor 49. Outdoor 250. Of the former, the unfortunate accident on April 13, 1927, was responsible for 18 in-patients. These were given first-aid at the Red Cross Aid station on the Esplanade. The cases were then transferred to the Red Cross Rori Hospital. Thirty-six dead bodies were removed from the Jwalapur road near the ekka stand, the scene of accident.

The chief causes of deaths in the general diseases hospital were—

Pneumonia	..	..	..	..	..	35
Phthisis	..	..	..	..	..	8
Diarrhoea	..	..	..	..	..	2
Dysentery	..	..	..	..	..	7
Injuries	..	..	..	..	..	9

Three ambulance cars were engaged for transferring cases from Sat Narain, Moti Chur, and Jwalapur to the Hardwar mela hospitals. Fortunately, these were little used, as there were not many cases of illness or injuries on these roads.

13. All lepers found (nine in all) among the pilgrims were taken to a leper asylum constructed at Bagh Rao. This consisted of two segregation huts provided with a separate water-supply and separate sanitary accommodation. Food was supplied by the municipal board and the police provided a guard.

14. The hygiene publicity work carried out during the mela was on the following lines:—

Hygiene publicity.

- (1) The distribution of pamphlets, etc., over 15,000 leaflets, and pamphlets of the hygiene publicity bureau and the Red Cross were distributed and large numbers of leaflets on "How to avoid cholera" were issued by the Secretary, Sewa Samiti.
- (2) *Lectures.*—Over 30 magic lantern lectures on epidemic diseases were given by various medical officers. Most of these lectures were delivered in the various Akharas and at Rikhikesh.

Cinematograph films were shown nightly in an open space in the centre of Hardwar. The average nightly attendance at these was about 250, and the films shown included subjects such as "Why die of Cholera," "Mosquitoes," "Flies," "Fleas," "Syphilis" and latterly "The Kumbh Fair." This is a new film which we have been taking during the mela for propaganda work.

The Red Cross Hospital at Rori island was decorated with posters, and lectures in Hygiene, Tuberculosis, etc., were given here every day. In all ten sets of 40 different posters were used during the mela here and in addition some 1,000 posters were placed in prominent places in the various circles.

(3) A large amount of publicity work was of course performed by all medical officers, etc., in the ordinary course of duty, which involved

explaining points of elementary hygiene, prevention of disease, etc., to lodging-house-keepers, pilgrims in Akharas, etc., so as to obtain co-operation.

15. Lectures and demonstrations on the various problems connected with the care and feeding of infants and children, the health of expectant mothers, etc., were given by Dr. S. H. Commissariat between April 6 and 13. Maternity and Child Welfare Work. Models were exhibited during these demonstrations.

16. Cremation of corpses was discontinued at the recognised burning ghats in Hardwar since these were above various places in which pilgrims bathed. Temporary burning ghats were erected (1) at Laljiwala, (2) on the bank of the Nildhara on Rori island, (3) below Daksh Ghat, Kankhal, and (4) in the Bairagi circle on the right bank of the Nildhara. The arrangements were satisfactory and the total number of corpses cremated up to April 20 was 325. Burning Ghats.

17. Appendices XVI and XVII give the distribution of officers and men of the police on sanitary work and their duties, respectively. These duties they efficiently and quietly carried out, and so facilitated all public health work enormously. Sanitary Police. Special mention may be made of the way the police made the Bairagis vacate the conservancy lanes when they had occupied these to the obstruction of conservancy work in the Bairagi area.

18. As mentioned elsewhere, the Marwari Relief Committee, the Prem Sewak Sabha of Amritsar, and the Sewa Samiti of Allahabad were of great assistance. Voluntary agencies.

The former agency spent a great deal of money in properly equipping the main hospital on the Rori island, which was handed over to them, and in providing first-aid posts at several other centres. The Prem Sewak Sabha of Amritsar put their volunteers whole-heartedly at the disposal of our circle inspectors for the detection of disease, while the assistance of the Sewa Samiti was invaluable in many respects, such as, detection of illness, soil pollution, and other contraventions of the public health laws and the inspection of food. I am also aware that this latter organisation gave an enormous amount of assistance to Mr. Christie, the officer-in-charge, in the regulation of traffic and bathing.

As stated elsewhere, the Red Cross Society paid for one of the largest hospitals on Rori island and, in addition, put up the first aid post on the Esplanade and it was this Red Cross centre and the Sewa Samiti volunteers who rendered first assistance to those injured in the regrettable accident which occurred owing to the breaking of a barrier at 6 a. m. on April 13. I personally saw Mr. Kunzru of the Sewa Samiti and expressed my thanks to him for the aid given.

In addition to these, large bodies giving voluntary aid, a number of private hospitals were opened in Hardwar in connexion with the mela and I am personally cognizant of the fact that these institutions did very good work. A list of these hospitals is given in Appendix XVIII.

19. At Gurukul no sanitary arrangements had been made by the Gurukul. Committee, though they expected 50,000 pilgrims from all parts of India. A large crowd of pilgrims were present here from March 15 to 21. Two medical officers of health, three sanitary inspectors, four jamadars, and 60 sweepers were detailed to

clean up the area which was insanitary and to organise and control the sanitary arrangements. Three "flagged areas" were selected, as the governing body failed to provide latrines. An adequate water-supply was arranged for and protected, and no case of infectious disease occurred among these pilgrims. The Governor of the Institution expressed his appreciation of the services rendered by the Public Health department

20. His Excellency the Governor was present at the fair for a few hours on the 13th and saw the arrangements made for the bathing of the Akharas. It was impossible for him to inspect any of the public health arrangements with the exception of one of the tube wells on Rori island owing to the difficulty of getting about in the enormous crowds.

The Hon'ble Minister for Education and Public Health inspected the sanitary and medical arrangements of seven circles in Hardwar in my company and in the company of Dr. Chaudhri. He remained at Hardwar for four days and also visited Rikhikesh Road Station, Sat Narain, Raiwala, and Rikhikesh. I think that we were able to show him most of the arrangements made for the protection of the pilgrims.

Major-General T. H. Symons, C.S.I., O.B.E., I.M.S., Director-General, Indian Medical Service, and Lieut.-Colonel J. D. Graham, C.I.E., I.M.S., Public Health Commissioner with the Government of India, closely inspected the whole of the circles at Hardwar and Rikhikesh. I personally conducted Colonel Graham over the area and Dr. Chaudhri and Mr. Christie conducted Major-General Symons. They both expressed the opinion that everything possible within the powers at the disposal of the authorities to prevent epidemic disease had been done. Major-General Symons expressed the opinion that he had never seen a cleaner town in India. The Inspector-General of Civil Hospitals and the Civil Surgeon, Saharanpur, also inspected a portion of the sanitary and medical arrangements made by the Public Health department.

Mr. R. Oakden, I.C.S., the Commissioner of the Meerut division, inspected many portions of the mela area in my company and that of Dr. Chaudhri.

I personally inspected the fair area on several occasions and remained at Hardwar during the important bathing days. I gathered the impression that the general public were in every way satisfied with the arrangements made for their protection and their comfort.

#### IV.—PROTECTIVE ARRANGEMENTS DURING THE DISPERSAL OF THE FAIR.

After the evening of April 13, when the outgoing rush began, the medical and sanitary staff was considerably supplemented at the Hardwar Railway Station in order to ensure the thorough inspection of all pilgrims going out. This was necessary, as on the night of the 13th, thousands of people collected in the waiting areas at the station, waiting for trains, and thousands camped on the roadsides all night. There was, therefore, much fouling of the ground in the waiting areas, as none would give up their places, and also on the roadsides. The situation, however, was soon well in hand and the area was cleaned up.

At the Hardwar Railway Station.

Medical officers periodically went round the whole of these areas in order to detect illness. This state of affairs continued all day and night from the 14th till the 21st, after which the rush began to diminish and normal conditions gradually returned.

This was one of the greatest strains thrown on my officers, but the organisation of the inspections and the maintaining of these areas in a sanitary condition was well carried out and efficiently supervised by Captain D. Clyde, I.M.S., Assistant Director of Public Health, from the 14th till the rush was over. The figures showing the numbers who took tickets in these days are given in appendix I referred to in part I of this report. Many cases of illness were detected and returned to the infectious diseases hospital. As stated previously in part III, paragraph 10, of this report, only one case of cholera escaped detection at Hardwar and this case was detected at Lhaksar.

2. At all the other railway stations, the staff for the medical inspection of the incoming pilgrims was retained on duty until April 25, unless cases of cholera were in their hospitals, when the orders were for them to remain on duty till there were no cases left. The staff at Khan Alampur was supplemented, this being the chief inspection station for the incoming and outgoing Punjab pilgrims.

3. All the hospitals on roads were maintained till the end of the dispersal period and carried out their inspections at all hours of the day.

4. Before the Kumbh, improvements to the existing wells on the Hardwar-Rikhikesh route were carried out and these wells were regularly permanganated before, during, and after the mela. In addition, special arrangements were made at the following places: -

*Sat Narain.*—A temporary hospital was erected and a motor ambulance stationed here for emergency use. Inspection of pilgrims was performed by the medical officer. The pool of the temple at Sat Narain was chlorinated on one occasion. Adequate staff was posted under a sanitary inspector and three sets of trench pattern latrines and five urinals were constructed in the area.

*Rikhikesh Road Station.*—It was arranged that the sanitary inspector should supervise the sanitary arrangements of the civil area and railway compound, as well as the pilgrim arrangements so as to obtain uniformity of control. Gumla pattern latrines and temporary urinals were erected for pilgrims outside the station.

*Rikhikesh.*—The extremely insanitary state of this town area and the jungle edge surrounding it required the appointment of two medical officers of health, one chief sanitary inspector, three sanitary inspectors, and 100 sweepers, before the mela commenced. Extra staff was detailed for the detection of illness during the period when pilgrims were held up at Rikhikesh because of the heavy fall of snow on the pilgrim route.

Two temporary hospitals were erected and the conservancy arrangements consisted of 16 trench-pattern latrines, five gumla type latrines, and 30 urinals.

It is providential that pilgrims were held up at Rikhikesh since this permitted continued inspection for some days, with the result that a few cases of cholera were detected and sent to the infectious diseases hospital, Hardwar. I propose for the consideration of the Government that it would be a good thing in the future if all pilgrims were required to remain for one week in Rikhikesh before being permitted to go up the pilgrim route.

*Moni-ki-raiti.*—The sanitary arrangements here were made by the Tehri State and were generally considered satisfactory.

*Rikhikesh to Lachman Jhula Road.*—At selected places along this road and the road to Swarg Ashram, six sets of latrines and six urinals were constructed and staffed by sweepers.

*Lachman Jhula.*—One general diseases hospital and one infectious diseases hospital were constructed here and fitted up with drugs, etc. Two travelling dispensaries, one of which was on the Swarg Ashram side, were engaged chiefly on inspection and cholera inoculation work. Over 500 inoculations were performed here during March and April, 1927, and three cases of cholera among pilgrims were detected.

Above Lachman Jhula, the organisation of public health work presents peculiar difficulties owing to the inaccessibility and difficulty of transport. The organisation of the pilgrim route to Badri Nath and Kedar Nath is under the executive charge of the Deputy Commissioner, Garhwal, and the medical charge is held by the Civil Surgeon, Pauri, who every year tours over the whole route. Dr. P. Pant, the present Civil Surgeon, was at Hardwar for a considerable period as medical officer of health and understands the organisation and difficulties.

The usual organisation in the route consists of seven hospitals with one assistant surgeon, six sub-assistant surgeons, and five sanitary inspectors with the usual complement of compounders, jamadars, sweepers, etc. In addition, this year, six extra conservancy gangs, each consisting of a jamadar and six sweepers, are posted at Srinagar, Rudraprayag, Ukhinath, Karnprayag, Chamoli, and Joshimath, respectively and these may be moved about on the line as necessity demands.

Extra superior establishment from the Public Health department has been placed at the disposal of the District Magistrate and consists of three special health officers and six travelling dispensaries and one chief sanitary inspector. The special health officers are required to tour the portions of the line allotted to them. Of the travelling dispensaries two are posted at Umrosa and Deoprayag, respectively, while others are mobile and can be hurried to any area should an epidemic arise. One travelling dispensary at Lachman Jhula has been especially fitted out to act as a medical store for the supply of ordinary emergency drugs, etc., to officers and dispensaries along the line.

The District Magistrate, Garhwal, has made arrangements for the extra conservancy staff which can be called up if an emergency arises. I have informed him that he may use his own discretion in engaging extra personnel up to the limit considered necessary by the Civil Surgeon and that arrangements will subsequently be made to meet the extra expenditure involved.

V.—RECOMMENDATIONS FOR FUTURE FAIRS AND PERSONAL  
REMARKS.

A great many improvements have recently been made in Hardwar but I consider that Government should not be satisfied with the present state of affairs, but should continue to add to the sanitary amenities of Hardwar until the provisions for the protection of pilgrims are altogether above reproach:—

Recommendations for  
future fairs.

- (1) As stated elsewhere, an underground drainage and sewerage scheme has been prepared and I hope that it will shortly be brought into being.
- (2) The permanent pipe water-supply should be extended to cover the whole area.
- (3) Bye-laws preventing the sale of the few remaining open areas available for camping grounds for pilgrims should be enforced. Since the last Kumbh mela, a good deal of nazul land has been auctioned, thus restricting very much the land available for camping. This should be stopped. There is a big plot of land extending to about 30 acres between Bhimgoda pool and Baghrao. This should be acquired by the municipal board and kept for camping purposes.
- (4) The municipality should not allow the construction of houses on any camping grounds whatever nor should any houses be allowed to be built which cannot be connected with the proposed drainage and sewerage system.
- (5) Measures should be taken, in consultation with the Irrigation department, to ensure a more rapid flow of water in the Bhimgoda and Har-ki-pairi pools. This year Mr. Jwala Prasad, the Chief Engineer, Irrigation department, was of great assistance in meeting our requirements in increasing the flow of water in these pools by temporary arrangements.
- (6) In the Bhopatwala area a large number of houses have been constructed since the last Kumbh mela, but unfortunately many of these have been constructed without any regard to the principles of town planning. I consider that a town planning expert should draw up a lay-out of this area and indicate the lines on which building should be permitted. I consider this suggestion most important, as before the next Kumbh mela, there will be a large extension of Hardwar town between the Rikhikesh road and the river.
- (7) The esplanade and island platform are at present difficult of access and enormous congestion is caused owing to all bathers having to come down the narrow approaches to the Har-ki-pairi pool. I suggest, as I did in 1911, that if an esplanade of the same width as the present one were extended right up to Bhimgoda, it would not only relieve the congestion of traffic on the Rikhikesh road but would also facilitate the regulation of the Akhara bathing and at the same time



arrangements could be made in the same scheme for increasing the flow of water through Har-ki-pairi pool and chlorinating it accurately and automatically when required. The building of houses on this esplanade should be prohibited, as otherwise pollution of the Har-ki-pairi pool would occur. No house should be allowed above the pool which cannot be connected with the proposed sewerage and drainage system.

(8) A permanent increase in the conservancy staff is also needed and a trained sub-assistant surgeon should be placed in charge of the infectious diseases hospital and laboratory for routine work.

(9) Finally, I think that Government should treat Hardwar altogether differently from other municipalities in the way of financial assistance and in the improvement of the healthiness of the locality, as it cannot in any way be considered in the same category as other towns, which are not visited throughout the year by large numbers of pilgrims. Money spent on the improvement of Hardwar will be money saved in the prevention of outbreaks of cholera.

2. I wish to accord my sincere thanks to Dr. K. L. Chaudhri and the whole of the executive staff working under him for the most praiseworthy manner in which they have carried out their duties. They have worked day and night with the utmost energy and have never in any way endeavoured to evade the difficult and exhausting work which they had to carry out I consider that one and all are worthy of the highest recognition and I propose to submit in due course recommendations for special recognition to those of the staff who most deserve it.

I wish to express my thanks to Mr. Christie, I.C.S., Officer in charge of the fair, for his close co-operation with my department and for the unfailing assistance which he has given on every possible occasion. I also wish to thank Mr. P. H. J. Measures for his courtesy and assistance in connexion with the police work and finally I wish to express my appreciation of the excellent work done by Mr. M. L. Bhargava, the Secretary of the municipal board, Hardwar. I have seldom met a more capable, hard-working and efficient municipal Secretary. The Hardwar Union municipal board may congratulate themselves in having the services of such a capable official.

C. L. DUNN, C.I.E., D.P.H., LT.-COL., I.M.S.,

May 9, 1927.

*Director of Public Health, United Provinces.*

## APPENDIX I.

*Statement of pilgrims for the months of March and April, 1927,  
Kumbh mela, 1927.*

Month and date.	Incoming.	Outgoing.
March 1, 1927 .. .. .	1,491	731
March 2, 1927 .. .. .	1,371	1,053
March 3, 1927 .. .. .	1,589	2,516
March 4, 1927 .. .. .	1,239	1,379
March 5, 1927 .. .. .	1,281	945
March 6, 1927 .. .. .	1,331	833
March 7, 1927 .. .. .	1,476	1,037
March 8, 1927 .. .. .	1,034	337
March 9, 1927 .. .. .	1,470	970
March 10, 1927 .. .. .	1,655	860
March 11, 1927 .. .. .	1,782	1,020
March 12, 1927 .. .. .	2,052	1,132
March 13, 1927 .. .. .	2,140	966
March 14, 1927 .. .. .	3,193	1,524
March 15, 1927 .. .. .	3,782	1,190
March 16, 1927 .. .. .	5,406	1,387
March 17, 1927 .. .. .	6,072	1,465
March 18, 1927 .. .. .	4,847	2,816
March 19, 1927 .. .. .	3,800	3,507
March 20, 1927 .. .. .	2,726	4,539
March 21, 1927 .. .. .	4,290	5,554
March 22, 1927 .. .. .	3,310	3,985
March 23, 1927 .. .. .	4,390	2,650
March 24, 1927 .. .. .	4,489	2,499
March 25, 1927 .. .. .	4,837	2,432
March 26, 1927 .. .. .	6,129	2,288
March 27, 1927 .. .. .	5,877	2,327
March 28, 1927 .. .. .	6,271	2,233
March 29, 1927 .. .. .	7,607	4,056
March 30, 1927 .. .. .	9,403	2,556
March 31, 1927 .. .. .	15,334	2,523
April 1, 1927 .. .. .	14,770	2,245
April 2, 1927 .. .. .	11,475	6,205
April 3, 1927 .. .. .	5,466	11,024
April 4, 1927 .. .. .	6,273	9,615
April 5, 1927 .. .. .	6,980	4,861
April 6, 1927 .. .. .	6,729	5,244
April 7, 1927 .. .. .	12,344	4,464
April 8, 1927 .. .. .	17,341	3,576
April 9, 1927 .. .. .	17,642	3,862
April 10, 1927 .. .. .	24,119	3,888
April 11, 1927 .. .. .	41,435	3,845
April 12, 1927 .. .. .	38,165	4,421
April 13, 1927 .. .. .	15,754	18,674
April 14, 1927 .. .. .	1,629	34,433
April 15, 1927 .. .. .	3,240	36,600
April 16, 1927 .. .. .	4,993	34,568
April 17, 1927 .. .. .	2,501	31,664
April 18, 1927 .. .. .	1,420	26,803
April 19, 1927 .. .. .	1,702	18,580
April 20, 1927 .. .. .	1,425	10,825
April 21, 1927 .. .. .	1,100	8,645
April 22, 1927 .. .. .	1,082	..
April 23, 1927 .. .. .	789	..
April 24, 1927 .. .. .	1,017	..
April 25, 1927 .. .. .	1,197	..
April 26, 1927 .. .. .	1,156	..
April 27, 1927 .. .. .	1,354	..
April 28, 1927 .. .. .	1,266	..
Total .. .. .	244,364	284,042

## Gurukul fair.

March 12 to 22, 1927 .. .. .	41,570	28,065
Till April 21, 1927 .. .. .	347,176	315,728

APPENDIX II.

*Statement showing the Sanitary and Medical staff employed by the East Indian Railway in connexion with the Kumbh Mela, 1927.*

HARDWAR.

*Medical Staff.*

- 1 Assistant Surgeon.
- 3 Sub-Assistant Surgeons.
- 4 Compounders.

*Sanitary Staff.*

- 5 Sanitary Inspectors.
- 300 sweepers.

RIKHIKESH ROAD STATION.

- 20 sweepers.
- 2 jamadars.
- 4 kahars.

RAIWALA.

- 12 sweepers.
- 1 jamadar.

LHAKSAR.

- 22 sweepers.
- 2 jamadars.

*Medical Staff.*

- One Sub-Assistant Surgeon.

APPENDIX III.

*Statement showing the Sanitary and Medical staff employed by the North-Western Railway in connexion with the Kumbh fair, 1927.*

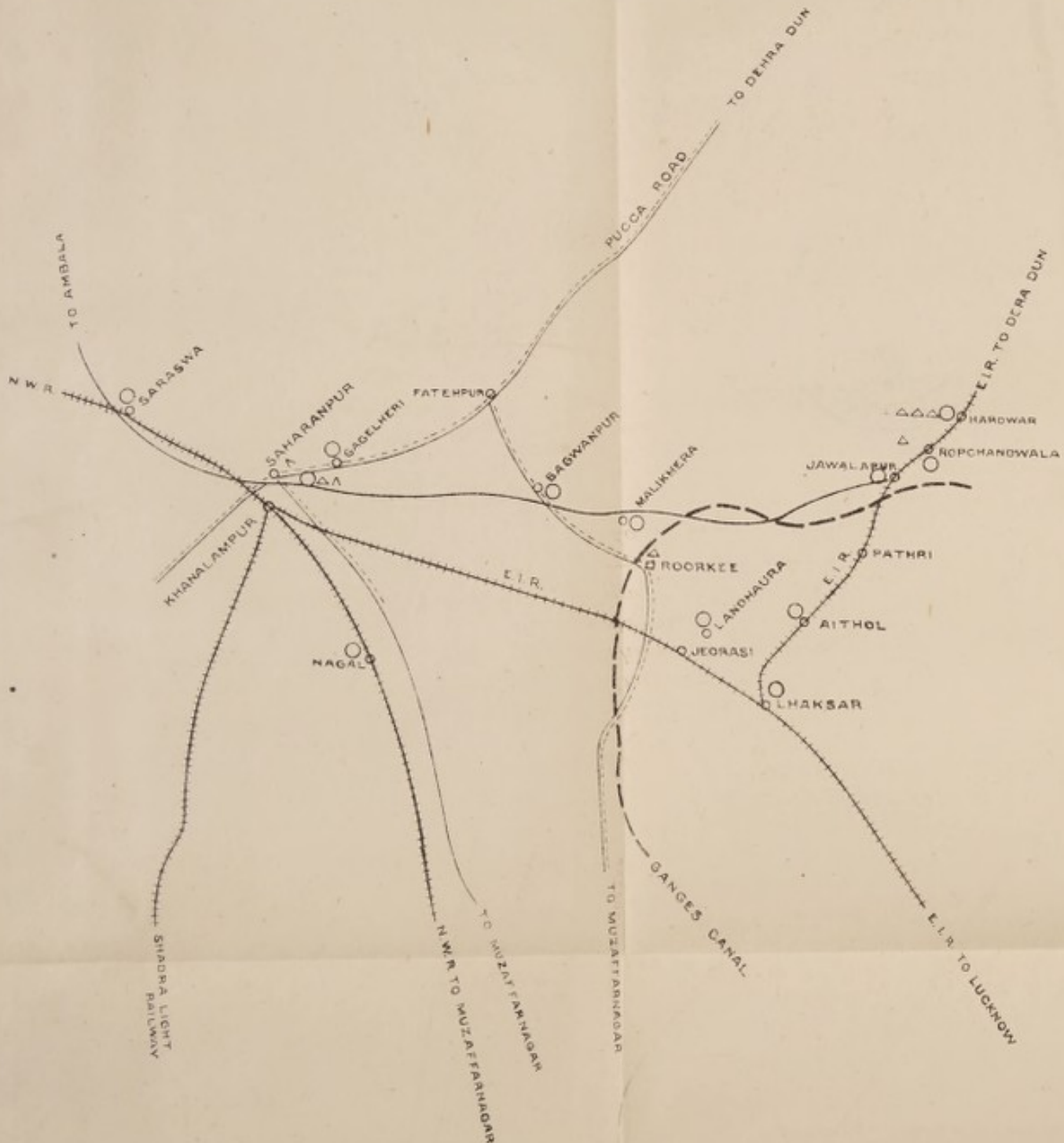
KHANALAMPUR.

- 1 Assistant Surgeon.
- 4 Sub-Assistant Surgeons.
- 2 Compounders.
- 3 Sanitary Inspectors.
- 4 Jamadars.
- 90 Sweepers.



## APPENDIX IV.

ROUGH SKETCH SHOWING KUMBH MELA HOSPITALS, PUBLIC HEALTH AND DISTRICT BOARD TRAVELLING DISPENSARIES IN THE SAHARANPUR DISTRICT, DURING THE KUMBH FAIR, HARDWAR.



D. B. T. D.	△
Canal	---
Pucca Road	~
Kucha "	~
Railway Line	++++
P. H. T. D.	△
P. S. M. S. Officers	+
K. M. Hospitals	○

Hardwar	10
Saharanpur	10
DehraDun	4
Bijnor	2
<hr/>	
Total	26



## APPENDIX V.

*Statement showing the names of places where temporary Kumbh Mela hospitals were opened in the Saharanpur district.*

1.	Jeorasi	...	...	...	One hospital.
2.	Bhagwanpur	...	...	...	" "
3.	Daultapur	...	...	...	" "
4.	Lhaksar	...	...	...	" "
5.	Sarsawa	...	...	...	" "
6.	Bahadurabad	...	...	...	" "
7.	Aithul	...	...	...	" "
8.	Imlikhera	...	...	...	" "
9.	Nagal	...	...	...	" "
10.	Gagulheri	...	...	...	" "



## APPENDIX VI.

*Sanitary and medical staff employed at the Kumbh Fair, Hardwar, 1927.*

1. Assistant Director of Public Health, I Range, in charge of the Sanitary and Medical arrangements of the fair.							
2. Medical Officers of Health .. .. .	..	..	..	..	..	..	8
3. Special Health Officers .. .. .	..	..	..	..	..	..	2
4. Assistant Surgeons .. .. .	..	..	..	..	..	..	6
5. Sub-Assistant Surgeons .. .. .	..	..	..	..	..	..	25*
6. Female Sub-Assistant Surgeons .. .. .	..	..	..	..	..	..	3
7. Travelling Dispensaries .. .. .	..	..	..	..	..	..	6
8. Compounders .. .. .	..	..	..	..	..	..	19
9. Chief Sanitary Inspectors .. .. .	..	..	..	..	..	..	4
10. Sanitary Inspectors .. .. .	..	..	..	..	..	..	41
11. Assistant Superintendents of Vaccination .. .. .	..	..	..	..	..	..	4
12. Vaccinators .. .. .	..	..	..	..	..	..	50
13. Jamadars .. .. .	..	..	..	..	..	..	44
14. Sweepers .. .. .	..	..	..	..	..	..	1,551
15. Bhishtis .. .. .	..	..	..	..	..	..	70
16. Kahars .. .. .	..	..	..	..	..	..	126
17. Cooks .. .. .	..	..	..	..	..	..	9
18. Mates .. .. .	..	..	..	..	..	..	107
19. Beldars .. .. .	..	..	..	..	..	..	80

*Extra staff on duty.*

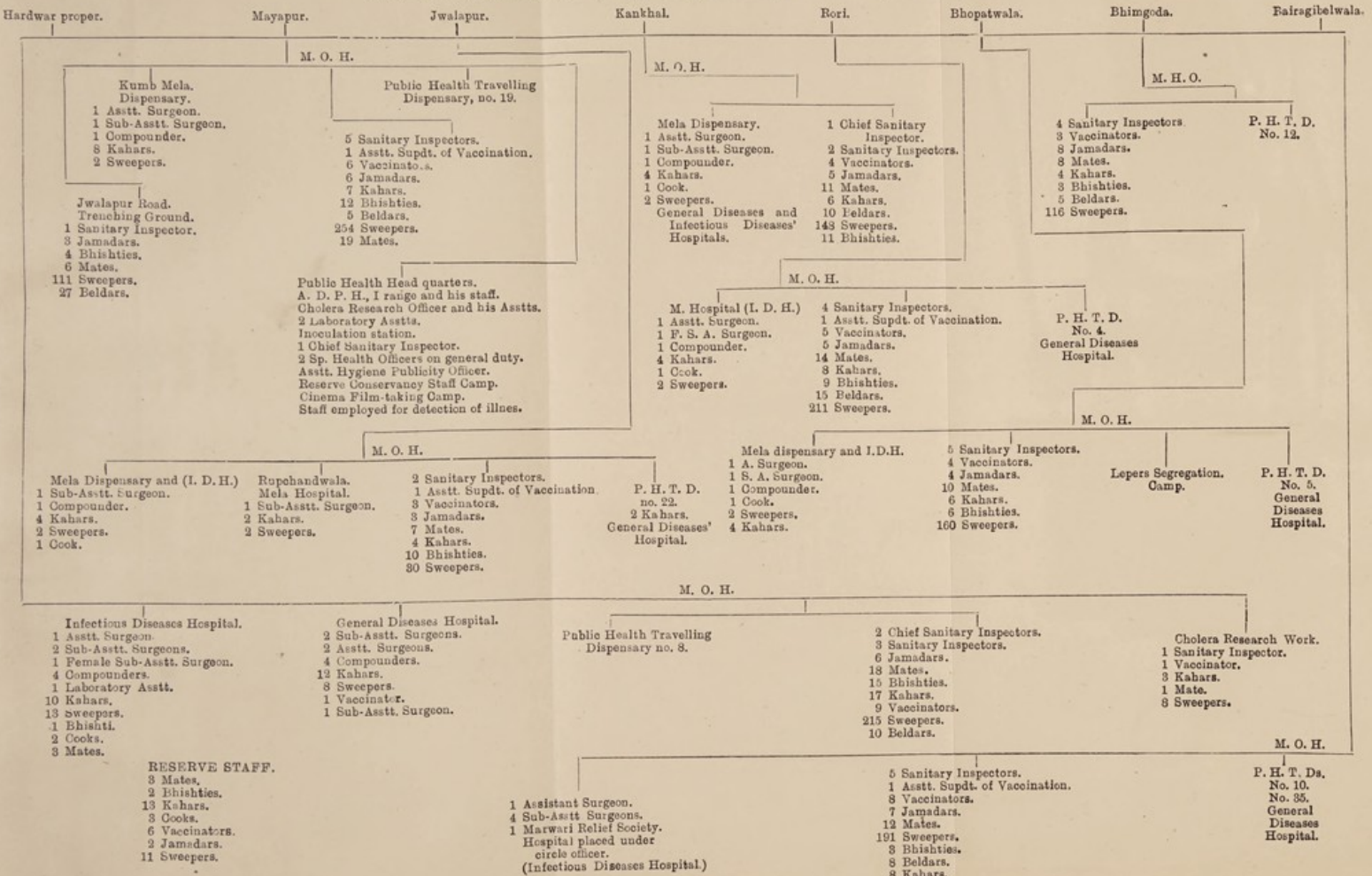
1. Captain D. CLYDE, D.P.H., I.M.S., Assistant Director of Public Health, II Range, United Provinces.
2. Dr. A. SOUSA, D.P.H., Assistant Director of Public Health, III Range, United Provinces.
3. Dr. K. P. MATHUR, D.P.H., Assistant Director of Public Health, IV Range, United Provinces.
4. Dr. (Miss) S. H. COMMISSARIAT, F.R.C.S.I., W.M.S., Superintendent, Medical Aid to Women.
5. Cholera Research Officer, his Assistant, and staff.
6. Assistant Hygiene Publicity Officer.
7. Cinema film-making staff.

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\* (Including Medical Officers detailed to hospitals in Dehra Dun, Saharanpur and Bijnor districts.)

## APPENDIX VI(a).

Chart showing distribution of staff in eight circles, Kumbh mela, Hardwar, 1927.



Date	Description	Amount
1880	...	...
1881	...	...
1882	...	...
1883	...	...
1884	...	...
1885	...	...
1886	...	...
1887	...	...
1888	...	...
1889	...	...
1890	...	...
1891	...	...
1892	...	...
1893	...	...
1894	...	...
1895	...	...
1896	...	...
1897	...	...
1898	...	...
1899	...	...
1900	...	...
1901	...	...
1902	...	...
1903	...	...
1904	...	...
1905	...	...
1906	...	...
1907	...	...
1908	...	...
1909	...	...
1910	...	...

APPENDIX VII.

*The Kumbh Mela is divided into the following eight circles:—*

1. Bhopatwala Baghrao.
2. Bhimgoda.
3. Hardwar proper.
4. Mayapur.
5. Kankhal.
6. Jwalapur.
7. Rori Island.
8. Belwala and Bairagi Area.

APPENDIX VIII.

*Duties of circle officers.*

1. They will keep their circles scrupulously clean.
2. There should be no night-soil seen in the latrines; excreta must be promptly removed and the latrines regularly disinfected.
3. In trench pattern latrines night-soil should be promptly covered with earth.
4. The drains after being cleaned and disinfected should be limed daily.
5. Urinals should be disinfected regularly and the urine removed in sullage carts.
6. Rubbish should be burnt, buried or promptly removed.
7. Rigorous action should be taken to prevent commission of nuisances under section 34, Police Act.
8. The wells in their circles should be permanganated regularly under their supervision.
9. Prompt detection of illness is the *most important work*. Careful watch must be kept over all pilgrims in their circle.
10. All occurrences of illness to be reported at once to the nearest hospital. All subordinates including sweepers should be carefully instructed in this matter.
11. Any case of diarrhoea, dysentery, or any intestinal disease should be removed at once to the circle infectious diseases hospital and contacts watched for three days.
12. Cholera and other infectious cases should be sent to the circle infectious diseases hospital. Contacts to be noted and visited thrice a day for three days.
13. Prompt disinfection immediately on removal of a case should be carried out in all cases of intestinal and infectious diseases.
14. Appointment of disinfecting gangs in the circle should be made and they should be provided with syringes, hycol, phenyle, baltis, lime, etc.
15. They will pay frequent visits daily to the I. D. H. of their circle and find out if any infectious case has been brought in, of which they had no notice.
16. Corpses must be promptly disposed off.
17. Similar action should be taken in the case of dead animals.
18. At the burning ghats they will please see that there is a plentiful supply of fuel and that corpses are satisfactorily cremated.
19. The Sanitary Inspectors will be held responsible if any person is found dead in their circle whose illness was not known unless the death was due to a sudden cause.
20. All circle officers will inspect articles of food-stuff in their respective circles.

21. Under-fried poories, rotten sweetmeats, etc., should not be allowed for sale. Action should be taken under section 244 of the Municipal Act.

22. They will also see that flies do not gain access to the sweetmeats placed under wire gauze covers or in glass almirahs.

23. Arrangements for piaos should be made in the circles.

24. History of the patients must in all cases be taken and source traced and proper steps taken.

25. They will instruct their staff to prevent waste of water from hydrants in their respective beats and also see that people do not bathe at the stand-posts and that rubbish or dirty water is not thrown into the river.

26. People should be prohibited from washing their clothes at the stand-posts or on the river ghats, as the case may be.

27. People should also be prevented from performing ablution after defecation on the river banks or at the stand-posts, as the case may be.

28. None should bathe or wash clothes at the wells.

29. The lodging-houses should be carefully inspected.

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APPENDIX IX.

*Hospitals opened in connexion with Kumbh Mela in Hardwar.*

1. Bhopatwala.
2. Belwala.
3. Rori Island.
4. Jwalapur.
5. Kankhal.
6. Infectious Diseases Hospital.
7. General Diseases Hospital.
8. Rupchandwala.
9. Mayapur Collecting Station and Dispensary.
10. Kankhal Chauk Dispensary.

## APPENDIX X.

*Duties of Medical Officers in charge of Hospitals.*

On receipt of the notice of occurrence of infectious case, they will immediately despatch a doly with kahars and the hospital disinfecting gang and will report the case to the medical officer in charge of the circle.

As soon as possible the case will be transferred to the Infectious Diseases Hospital :—

- (1) The medical officer will see that all evacuations are received in gumlas which are filled with cyllin or hycol 1—100 per cent. These evacuations will be emptied into a kerosine oil tin with an iron handle and will be immediately placed over fire and thoroughly boiled before being disposed of in a separate trench.
- (2) If the patient is found in the open, the ground polluted by the evacuations should be dug up to a depth of two inches and removed to the trenches (to be buried) containing hypochloride of lime. The whole of the area on which the patient is found is to be sprinkled with hyochloride of lime.
- (3) The medical officer will be responsible for the supply and adequate use of disinfectants in the latrines.
- (4) A statement showing the number of patients and diseases from which they are suffering, also a report of every death and cause of death must be sent to the Assistant Director of Public Health, I Range, United Provinces, daily.
- (5) Infected clothes should be boiled. Water must be kept boiling at all times of the day and night. Bedding of the patients to be disinfected in the Disinfector attached to the Infectious Diseases Hospital.
- (6) Tangle-foot-fly papers to be put in different places in the wards, kitchens, latrines, and residential quarters, etc.
- (7) Used *dhoties* and cots must be thoroughly disinfected or burnt.
- (8) The staff working in Infectious Diseases Hospital must be inoculated against cholera and every one should take a dose of essential oils daily as a prophylactic measure.
- (9) Permanganated water should in all cases be given to the patients.
- (10) Unslaked lime should be spread in the wards having kutcha floors.
- (11) There is a stock of disinfected rags which should be used by placing them in position by means of tongs in case the patients are too ill to pass motions in bed pan supplied to each hospital. These rags must in all cases be boiled and again disinfected in the disinfector and used again.

## APPENDIX XI.

*Sanitary appliances supplied for the Kumbh Fair, Hardwar, 1927.*

Planks 700 of 10 feet each for trench pattern latrines :—					
Nands	..	..	..	..	300
Gumlas	..	..	..	..	6,000
Bricks	..	..	..	..	10,000
Dauties	..	..	..	..	100
Rambas	..	..	..	..	100
Coloured flags	..	..	..	..	1,000
Large ones $\frac{1}{2}$ yard long	..	..	..	..	200
Small ones $\frac{1}{4}$ "	..	..	..	..	800
Latrine tickets 80 of male pattern.					
" " 80 of female "					
Mattings, baus, and bamboos in sufficient quantities :—					
Perforated tin Cannisters	..	..	..	800	For urinals.
Empty bottles	..	..	..	800	
Bhusa	..	..	..	200	maunds.
Ballast	..	..	..	3,000	c. ft. for urinals.
Urinal tickets with pictures of male and female					
				Males ..	100
				Females	50
Night-soil carts	..	..	..	30	One bullock or buffalo each.
Rubbish carts	..	..	..	15	Single bullock each.
Mules or donkeys	..	..	..	40	
Sullage carts	..	..	..	8	
Rubbish bins	..	..	..	100	With lids on top and detachable bottoms.
Brooms	..	..	..	2,000	
Phaoras for sweepers	..	..	..	2,000	
Baskets	..	..	..	2,000	
Night-soil receptacles	..	..	..	150	With lids and handles.
Phaoras (big)	..	..	..	200	
Buckets	..	..	..	200	
Masak for bhistis	..	..	..	70	
Tin Cannisters with handles	..	..	..	300	
Sprays	..	..	..	100	
Pick, axe	..	..	..	200	
Badges for jamadars	..	..	..	80	
" with numbers for sweepers	..	..	..	1,100	
" for mates	..	..	..	100	
Charpoys	..	..	..	350	For hospitals only.
Gharas	..	..	..	1,000	
Bath tubs	..	..	..	12	One each for hospitals and two for I. D. H.
Nalkas	..	..	..	30	
Ropes	..	..	..	30	
Lotas	..	..	..	15	
Dolies complete with bamboos	..	..	..	100	
Extra bamboos, large and small, for preparing dolie	..	..	..	40	
Disinfecting syringes	..	..	..	10	
Arms badges for sanitary police, chaukidars, and constables	..	..	..	400	
For head constables and sub-inspectors	..	..	..	30	
<i>Disinfectants.</i>					
Unslaked lime	..	..	..	1,800	maunds.
Phenyle	..	..	..	50	drums of five gallons each.
Hycol	..	..	..	150	gallons.
Perchloride of Hg.	..	..	..	30	lbs.
Pt. Permanganate	..	..	..	1,500	lbs.
Cyllin	..	..	..	20	gallons.



Kerosene oil ..	..	..	..	100	tins.
Coal tar ..	..	..	..	800	"
Hydrocarbons ..	..	..	..	170	gallons
Bleaching powder ..	..	..	..	20	cwts.
Kerosene oil emulsion ..	..	..	..	50	tins.
Methline blue ..	..	..	..	2	lbs.
Disinfectant powder ..	..	..	..	50	boxes.
Lamp-posts with street lamps for lanterns				80	

Kankhal, Jwalapur, and Hardwar.

Electric light was also supplied.

5,000 maunds of fuel was supplied for the burning ground at Rori and a few hundred maunds for the burning grounds of Baghrao, Daksh and Bairagi area.

Tats (soaking cloth bags)	..	..	..	1,500	
Dhoties ..	..	..	..	100	
Kurtas ..	..	..	..	100	
Hydrochloric acid (commercial) ..	..	..	..	2	drums.

Two carpenters were also engaged.

## APPENDIX XII.

### *List of trenching grounds.*

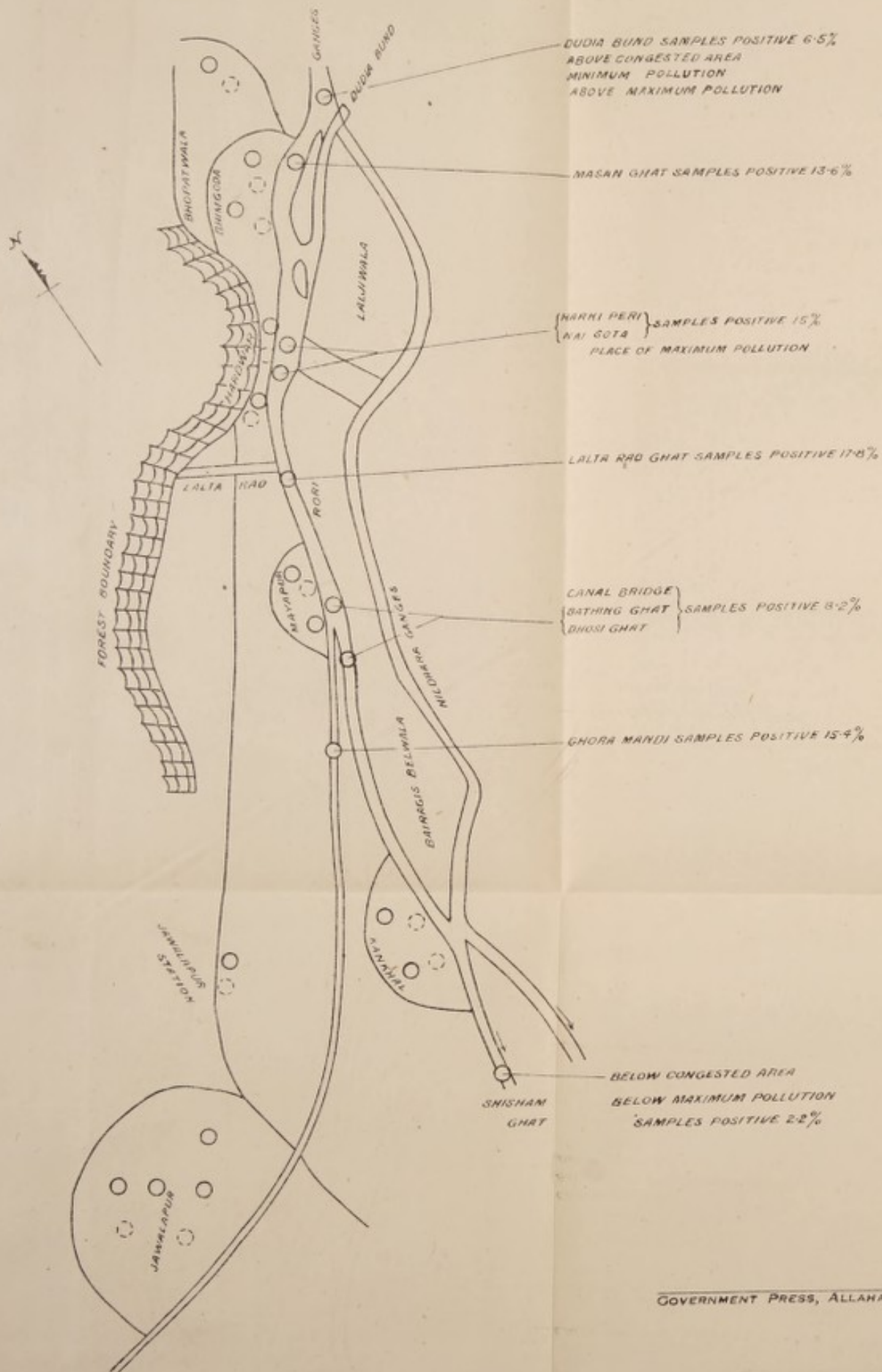
1. Jwalapur trenching ground.
2. Ghora Mandi.
3. Lalta Rao.
4. Baghrao.
5. Sukhrao.
- 6, 7, and 8. Three other trenching grounds in Bhopatwala.
- 9 and 10. Two in Kankhal.
- 11 and 12. Two in Belwala and the Bairagi area.

APPENDIX XIII.

SKETCH SHOWING WATER AND STOOL COLLECTING CENTRES.

WATER COLLECTING CENTRE ..... ○

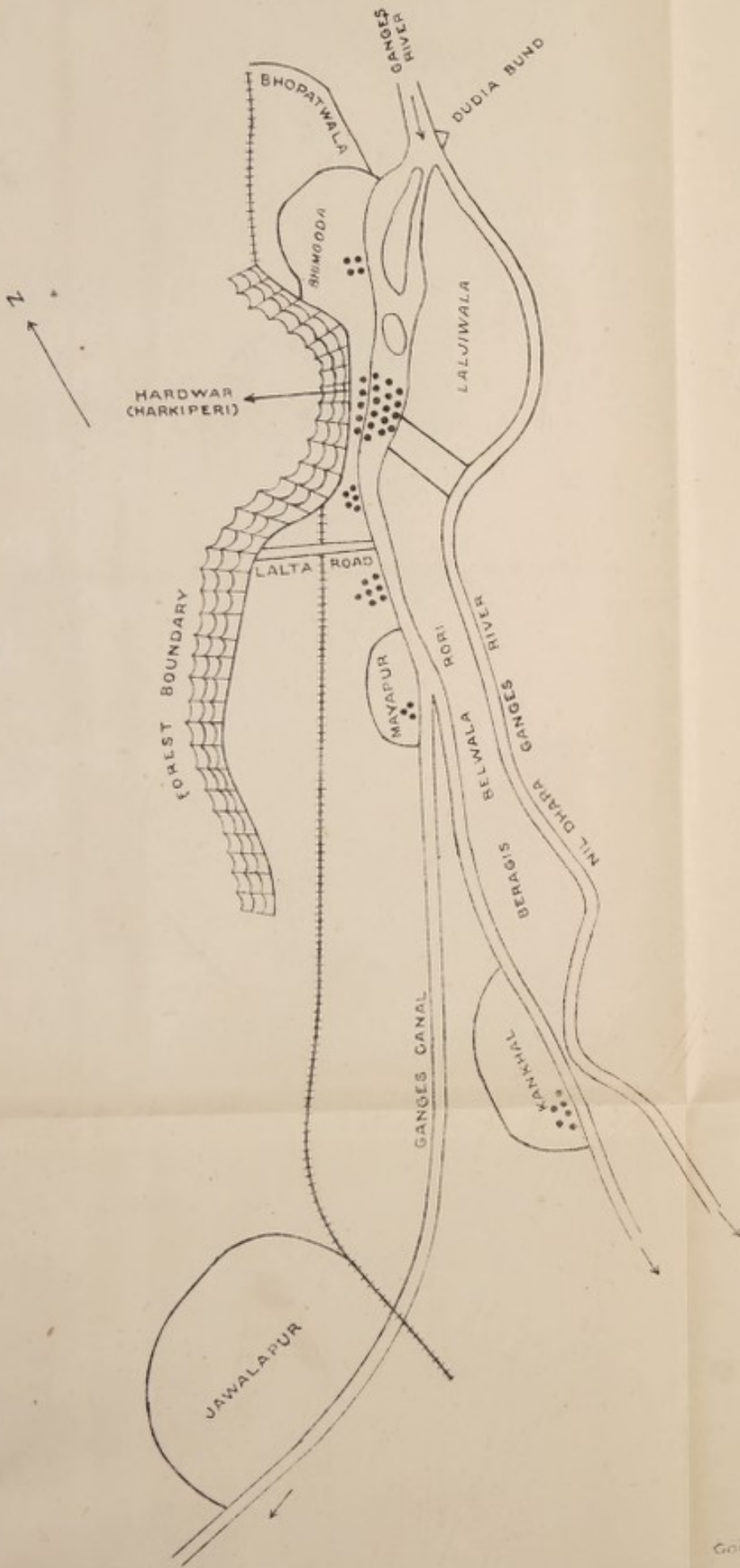
STOOL COLLECTING CENTER ..... ○





APPENDIX XIV.

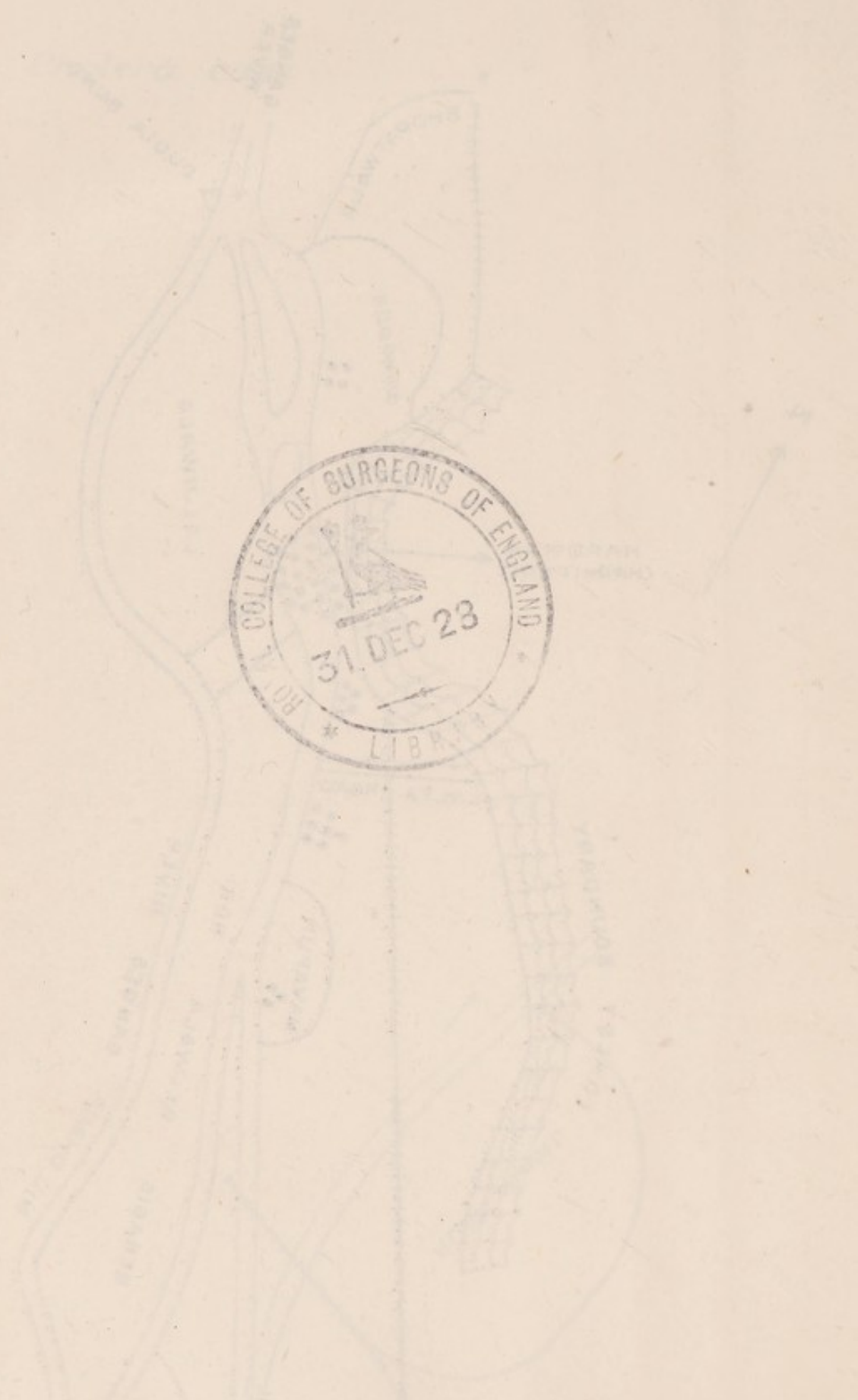
SHOWING PART OF THE GANGES RESPONSIBLE, FOR THE CASES OF CHOLERA.



*Cholera case* .....

APPENDIX XII

SHOWING PART OF THE BARROZ RESERVES



## APPENDIX XV.

*Statement showing anti-cholera inoculation centres in Hardwar.*

1. Public health camp.
2. Collecting station and dispensary.
3. Main Infectious Diseases Hospital.
4. General Diseases Hospital.
5. Kankhal Chauk.
6. Kankhal Daksh.
7. Rori Island Hospital.
8. Jwalapur.
9. Bhopatwala Baghrao.
10. Belwala.
11. Bhimgoda.

## APPENDIX XVI.

*Statement showing distribution of police on sanitary duty.*

Name of circles.	Gazetted officers.	Inspectors.	Sub-Inspectors.	Head constables.	Mounted sowars.	Constables.	Chaukidars.
1. Bhopatwala ..	..	..	1	1	..	28	10
2. Bhimgoda ..	..	1	1	1	..	28	12
3. Hardwar ..	..	..	1	1	..	34	12
4. Mayapur ..	2	1	1	1	2	42	14
5. Rori ..	..	..	1	1	..	40	14
6. Belwala Bairagi ..	..	1	1	1	..	34	12
7. Kankhal ..	..	1	1	1	..	22	10
8. Jwalapur ..	..	..	1	1	..	12	6
Reserve ..	..	..	..	..	..	10	10
<b>Total ..</b>	<b>2</b>	<b>4</b>	<b>8</b>	<b>8</b>	<b>2</b>	<b>250</b>	<b>100</b>

APPENDIX XVII.

*Duties of the police on sanitary duty.*

1. To prevent people from committing nuisance or throwing rubbish in unauthorized places under section 34, Police Act.
2. To regulate the rush of the crowd to wells to which kahars have been appointed.
3. If any place in their circle has been soiled, they should get it cleaned at once by the sweepers of the circle.
4. Careful search should be made for cases of illness of any kind, and if any case is found, it should be reported to the sanitary officer in charge of the circle.
5. To assist vaccinators in dealing with infectious cases.
6. The police deputed to the burning ghats should see that the corpses are properly cremated.
7. No body should be allowed to throw corpses into the river before they are cremated.
8. To arrange for the disposal of unclaimed dead bodies, etc.
9. Pilgrims should be directed to camp out in places fixed for the purpose.
10. They should prevent waste of water from hydrants in their respective beats and also see that people do not bathe at the stand-posts.
11. The police deputed on ghats should see that rubbish or dirty water is not thrown into the river. No one is allowed to wash clothes at the stand-posts or on the river ghats, as the case may be.
12. None is allowed to perform ablution after defecation in the river or at stand-posts.
13. They should prevent people from drinking water from Nildhara or dirty pools of water.
14. They should assist the sanitary and medical staff in the discharge of their duties.

APPENDIX XVIII.

*List of private hospitals opened in Hardwar in connexion with  
Kumbh Fair, 1927.*

BHOPATWALA CIRCLE.

1. Kalikamliwala Dispensary.
2. Singh Charitable Dispensary.
3. D. A.-V. Dispensary.
4. Ram Krishna Mission.
5. Vedic Dispensary.

HARDWAR CIRCLE.

1. Prayag Sewa Samiti Hospital.
2. Marwari Relief Society Hospital.
3. Ditto ditto at Gaughat.
4. Ditto ditto Bikaner Dharamshala.
5. Ayurvedic Dispensary of Kalikamliwala.
6. Ayurvedic Dispensary.

KANKHAL.

1. Ram Krishna Mission. Seva Ashram.
2. Four private dispensaries.

JWALAPUR.

1. Abadhut Mandal Charitable Dispensary.

MAYAPUR CIRCLE.

1. Bharat Sewa Ashram Relief Camp.
2. Lala Lachman Das Free Dispensary.
3. Railway Seva Samiti Charitable Dispensary.
4. Ayurvedic Charitable Pharmacy.
5. Prema Sewa Sabha Hospital.

BHIMGODA CIRCLE.

1. Private Hospital, Naraini Mission.
2. Punjab Mahabir Dal Dispensary.
3. Vedic Dispensary.
4. Sri Hanu Nath Samiti.

RORI CIRCLE.

1. Akali Dal Hospital, Punjab.
2. Kairana Dispensary.

BELWALA BAIRAGI CIRCLE.

1. Marwari Relief Society.



Appendix VIII

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Appendix IX

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Appendix X

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Appendix XI

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## STATISTICAL STATEMENTS.

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*Births registered in the districts of the*

1 Number.	2 District.	3 Population according to census of 1921.			4 Number of births registered.		
		Male.	Female.	Total.	Male.	Female.	Total.
		<b>MEERUT DIVISION.</b>					
1	Dehra Dun ..	128,176	84,067	<b>212,243</b>	3,083	2,683	<b>5,766</b>
2	Saharanpur ..	515,908	421,563	<b>937,471</b>	21,485	19,078	<b>40,503</b>
3	Muzaffarnagar ..	434,307	359,958	<b>794,265</b>	16,060	13,778	<b>29,838</b>
4	Meerut ..	809,994	689,080	<b>1,499,074</b>	30,878	26,896	<b>57,774</b>
5	Bulandshahr ..	562,529	503,990	<b>1,066,519</b>	24,685	21,763	<b>46,448</b>
<b>AGRA DIVISION.</b>							
6	Aligarh ..	575,379	486,366	<b>1,061,745</b>	24,176	21,675	<b>45,851</b>
7	Muttra ..	341,150	277,988	<b>619,138</b>	10,198	8,653	<b>18,851</b>
8	Agra ..	508,298	415,857	<b>924,155</b>	20,414	18,555	<b>38,969</b>
9	Mainpuri ..	411,981	336,046	<b>748,027</b>	12,141	10,407	<b>22,548</b>
10	Etah ..	449,162	380,598	<b>829,760</b>	15,113	13,351	<b>28,464</b>
<b>ROHILKHAND DIVISION.</b>							
11	Bareilly ..	544,885	468,990	<b>1,013,875</b>	24,213	22,099	<b>46,312</b>
12	Bijnor ..	389,643	350,539	<b>740,182</b>	18,227	16,514	<b>34,741</b>
13	Budaun ..	527,823	447,524	<b>975,347</b>	21,571	19,544	<b>41,115</b>
14	Meradabad ..	639,022	559,631	<b>1,198,653</b>	31,532	28,799	<b>60,331</b>
15	Shahjahanpur ..	452,837	386,278	<b>839,115</b>	20,143	18,455	<b>38,598</b>
16	Pilibhit ..	229,130	202,471	<b>431,601</b>	10,075	9,019	<b>19,094</b>
<b>ALLAHABAD DIVISION.</b>							
17	Farrukhabad ..	469,009	387,624	<b>856,633</b>	18,319	16,523	<b>34,842</b>
18	Etawah ..	404,323	329,209	<b>733,532</b>	13,835	12,302	<b>26,137</b>
19	Cawnpore ..	637,319	511,345	<b>1,148,664</b>	19,108	16,348	<b>35,456</b>
20	Fatehpur ..	341,527	310,865	<b>652,392</b>	11,792	10,355	<b>22,147</b>
21	Allahabad ..	722,188	682,257	<b>1,404,445</b>	26,774	23,610	<b>50,384</b>
<b>JHANSI DIVISION.</b>							
22	Jhansi ..	315,590	290,909	<b>606,499</b>	14,739	13,110	<b>27,849</b>
23	Jalaun ..	213,384	192,055	<b>405,439</b>	7,755	6,880	<b>14,635</b>
24	Hamirpur ..	237,103	228,220	<b>465,323</b>	11,010	9,877	<b>20,887</b>
25	Banda ..	300,930	287,106	<b>588,036</b>	11,030	9,446	<b>20,476</b>
<b>BENARES DIVISION.</b>							
26	Benares ..	487,165	464,866	<b>952,031</b>	19,552	18,007	<b>37,559</b>
27	Mirzapur ..	361,635	362,548	<b>724,183</b>	14,775	13,632	<b>28,407</b>
28	Jaunpur ..	574,480	580,625	<b>1,155,105</b>	17,832	15,411	<b>33,293</b>
29	Ghazipur ..	399,163	382,407	<b>781,570</b>	13,194	11,605	<b>24,799</b>
30	Ballia ..	426,520	404,489	<b>831,009</b>	14,396	12,187	<b>26,583</b>
<b>GORAKHPUR DIVISION.</b>							
31	Gorakhpur ..	1,658,592	1,608,238	<b>3,266,830</b>	58,958	54,483	<b>113,441</b>
32	Basti ..	984,741	940,487	<b>1,925,228</b>	33,155	29,521	<b>62,676</b>
33	Azamgarh ..	775,866	752,146	<b>1,528,012</b>	26,572	24,403	<b>50,975</b>
<b>KUMAUN DIVISION.</b>							
34	Naini Tal ..	160,798	116,077	<b>276,875</b>	4,635	4,178	<b>8,813</b>
35	Almora ..	265,253	265,085	<b>530,338</b>	11,876	11,445	<b>23,331</b>
36	Garhwal ..	232,863	252,323	<b>485,186</b>	10,293	10,270	<b>20,563</b>
<b>LUCKNOW DIVISION.</b>							
37	Lucknow ..	392,559	331,785	<b>724,344</b>	15,599	14,367	<b>29,966</b>
38	Unao ..	433,613	385,515	<b>819,128</b>	14,672	12,649	<b>27,321</b>
39	Rae Bareli ..	474,742	461,661	<b>936,403</b>	12,906	11,207	<b>24,113</b>
40	Sitapur ..	581,655	507,826	<b>1,089,481</b>	21,167	18,709	<b>39,876</b>
41	Hardoi ..	586,166	498,244	<b>1,084,410</b>	22,016	19,772	<b>41,788</b>
42	Kheri ..	485,177	428,298	<b>913,475</b>	17,807	15,420	<b>33,227</b>
<b>FYZABAD DIVISION.</b>							
43	Fyzabad ..	588,888	583,687	<b>1,172,575</b>	20,457	17,643	<b>38,100</b>
44	Gonda ..	752,896	720,202	<b>1,473,098</b>	23,479	19,613	<b>43,092</b>
45	Bahraich ..	554,548	510,829	<b>1,065,377</b>	19,350	16,816	<b>36,166</b>
46	Sultanpur ..	494,593	509,319	<b>1,003,912</b>	18,049	15,938	<b>34,017</b>
47	Partabgarh ..	417,339	437,791	<b>855,130</b>	14,580	12,736	<b>27,316</b>
48	Bara Banki ..	536,896	493,058	<b>1,029,954</b>	17,686	15,355	<b>33,041</b>
Total for the Province..		23,787,745	21,588,042	<b>45,375,787</b>	881,412	785,067	<b>1,666,479</b>

## FORM No. I.

United Provinces during the year 1927.

5			6	7	8	9			10
Ratio of births per 1,000 of population.			Number of males born to every 100 females born.	Excess of births over deaths per 1,000 of population	Excess of deaths over births per 1,000 of population.	Mean ratio of births per 1,000 during previous five years.			Number.
Male.	Female.	Total.				Male.	Female.	Total.	
14.52	12.64	27.17	114.91	8.41	..	13.60	11.68	25.28	1
22.92	20.29	43.20	112.97	11.93	..	22.50	19.75	42.25	2
20.22	17.35	37.57	116.56	13.97	..	20.19	17.18	37.37	3
20.60	17.24	38.54	114.80	13.61	..	21.70	18.91	40.61	4
23.14	20.40	43.55	113.43	18.08	..	22.14	19.46	41.60	5
22.77	24.41	43.18	111.54	18.82	..	21.87	19.59	41.46	6
16.47	13.97	30.45	117.85	11.49	..	17.43	15.11	32.54	7
22.09	22.08	42.17	110.02	16.71	..	21.95	19.67	41.62	8
16.23	13.91	30.14	116.66	8.69	..	15.46	13.24	28.70	9
18.21	16.09	34.30	113.20	11.66	..	15.86	14.00	29.86	10
23.88	21.80	45.68	109.57	11.64	..	22.38	20.53	42.91	11
24.62	22.31	46.93	110.37	13.57	..	24.33	22.01	46.34	12
22.12	20.04	42.15	110.37	12.71	..	20.08	18.29	38.37	13
26.31	24.03	50.34	109.49	18.08	..	23.58	21.51	45.04	14
24.00	21.99	46.00	109.46	15.38	..	22.48	20.47	42.95	15
23.34	20.90	44.24	111.71	11.82	..	23.24	21.35	44.59	16
21.38	19.29	40.67	110.87	15.42	..	19.77	17.76	37.53	17
18.86	16.17	35.63	112.46	14.70	..	17.91	15.88	33.79	18
16.63	14.23	30.87	116.88	11.67	..	15.80	13.60	29.40	19
18.07	15.87	33.95	113.88	18.66	..	14.78	12.98	27.76	20
19.06	16.81	35.87	113.40	15.74	..	15.74	13.95	29.69	21
24.30	21.61	45.92	112.42	15.81	..	22.51	20.80	43.31	22
19.13	16.97	36.10	112.72	16.50	..	17.93	15.86	33.79	23
23.66	21.23	44.89	111.47	23.69	..	21.17	19.06	40.23	24
18.76	16.06	34.82	116.77	17.90	..	16.33	14.10	30.43	25
20.54	18.91	39.45	108.58	13.87	..	18.44	17.07	35.51	26
20.40	17.46	39.23	108.33	12.55	..	18.28	16.64	34.92	27
15.49	13.34	28.82	116.03	12.62	..	14.31	12.49	26.80	28
16.88	14.85	31.73	113.69	12.38	..	14.45	12.90	27.35	29
17.32	14.66	31.99	118.12	13.91	..	16.06	14.02	30.08	30
18.05	16.68	34.72	108.21	16.79	..	15.48	14.18	29.66	31
17.22	15.33	32.55	112.31	10.66	..	17.24	15.47	32.71	32
17.38	15.94	33.36	108.89	13.51	..	15.87	14.45	30.32	33
16.74	15.09	31.83	110.94	2.45	..	15.03	13.45	28.48	34
22.39	21.60	43.99	136.75	18.61	..	19.15	18.44	37.59	35
21.21	21.17	42.38	100.22	12.49	..	19.45	18.78	38.23	36
21.53	19.83	41.37	108.57	15.72	..	19.11	17.70	36.81	37
17.91	15.44	33.35	115.99	13.92	..	14.66	12.71	27.37	38
13.78	11.97	25.75	115.16	10.49	..	12.44	10.76	23.20	39
19.43	17.17	36.61	113.14	14.58	..	19.10	17.12	36.22	40
20.30	18.23	38.53	111.35	18.44	..	17.42	15.50	32.92	41
19.49	16.88	36.37	115.48	14.30	..	18.36	15.99	34.35	42
17.45	15.04	32.49	115.95	8.95	..	15.63	13.88	29.51	43
15.94	13.31	29.25	119.71	14.41	..	13.83	11.75	25.58	44
18.16	15.78	33.95	115.07	14.56	..	16.85	14.75	31.60	45
17.98	15.90	33.88	113.03	11.20	..	17.10	14.74	31.84	46
17.05	14.89	31.94	114.48	14.01	..	15.36	13.13	28.49	47
17.17	14.91	32.08	115.18	13.44	..	16.95	15.07	32.02	48
19.42	17.30	36.72	112.27	14.13	..	17.96	16.02	33.98	

**Births and deaths registered in the districts**

1 Number.	2 District.	3 Area in square miles.	4 Average population per square mile.	5 Population (according to census of 1921).			6 Births		7 Number of deaths registered.		
				Male.	Female.	Total.	Total number.	Birth rate per 1,000 of population.	Male.	Female.	Total.
<b>MEERUT DIVISION.</b>											
1	Dehra Dun ..	1,190	178	128,176	84,067	212,243	5,766	27·17	2,706	2,337	5,043
2	Saharanpur ..	2,135	439	515,908	421,563	937,471	40,503	43·20	15,589	13,725	29,314
3	Muzaffarnagar ..	1,673	475	434,307	359,958	794,265	29,838	37·57	10,036	8,709	18,745
4	Meerut ..	2,344	639	809,994	689,080	1,499,074	57,774	38·54	19,862	17,515	37,377
5	Bulandshahr ..	1,906	559	562,529	503,990	1,066,519	46,448	43·55	14,148	13,015	27,163
<b>AGRA DIVISION.</b>											
6	Aligarh ..	1,946	546	575,379	486,366	1,061,745	45,851	43·18	13,624	12,238	25,862
7	Muttra ..	1,450	427	341,150	277,988	619,138	18,851	30·45	6,350	5,388	11,738
8	Agra ..	1,855	498	508,298	415,857	924,155	38,969	42·17	12,490	11,042	23,532
9	Mainpuri ..	1,674	447	411,981	336,046	748,027	22,548	30·14	9,290	6,756	16,046
10	Etah ..	1,729	480	449,162	380,598	829,760	28,464	34·30	10,388	8,396	18,784
<b>ROHILKHAND DIVISION.</b>											
11	Bareilly ..	1,579	642	544,885	468,990	1,013,875	46,312	45·68	18,191	16,327	34,518
12	Bijnor ..	1,879	394	389,643	350,539	740,182	34,741	46·93	12,912	11,782	24,694
13	Budaun ..	2,010	485	527,823	447,524	975,347	41,115	42·15	15,504	13,207	28,711
14	Moradabad ..	2,285	524	639,022	559,631	1,198,653	60,331	50·33	20,091	18,573	38,664
15	Shahjahanpur ..	1,726	486	452,837	386,278	839,115	38,598	46·00	13,854	11,837	25,691
16	Pilibhit ..	1,350	320	229,130	202,471	431,601	19,094	44·24	7,606	6,385	13,991
<b>ALLAHABAD DIVISION.</b>											
17	Farrukhabad ..	1,683	509	469,009	387,624	856,633	34,842	40·67	11,987	9,642	21,629
18	Etawah ..	1,691	434	404,323	329,209	733,532	26,137	35·63	8,639	6,717	15,356
19	Cawnpore ..	2,372	484	637,319	511,345	1,148,664	35,456	30·87	12,038	10,016	22,054
20	Fatehpur ..	1,642	397	341,527	310,865	652,392	22,147	33·95	5,568	4,406	9,974
21	Allahabad ..	2,858	491	722,188	682,257	1,404,445	50,384	35·87	15,404	12,865	28,269
<b>JHANSI DIVISION.</b>											
22	Jhansi ..	3,634	167	315,590	290,909	606,499	27,849	45·92	9,619	8,646	18,265
23	Jalaun ..	1,549	262	213,384	192,055	405,439	14,635	36·10	4,390	3,559	7,949
24	Hamirpur ..	2,435	191	237,103	228,220	465,323	20,887	44·89	5,356	4,507	9,863
25	Banda ..	2,822	208	300,930	287,106	588,036	20,476	34·82	5,478	4,472	9,950
<b>BENARES DIVISION.</b>											
26	Benares ..	1,097	868	487,165	464,866	952,031	37,559	39·45	12,702	11,655	24,357
27	Mirzapur ..	5,233	138	361,635	362,548	724,183	28,407	39·23	10,055	9,268	19,323
28	Jaunpur ..	1,550	745	574,480	580,625	1,155,105	33,293	28·82	10,406	8,311	18,717
29	Ghazipur ..	1,303	600	399,163	382,407	781,570	24,799	31·73	7,942	7,186	15,128
30	Ballia ..	1,244	668	426,520	404,489	831,009	26,583	31·99	8,192	6,835	15,027
<b>GORAKHPUR DIVISION.</b>											
31	Gorakhpur ..	4,528	721	1,658,592	1,608,238	3,266,830	1,13,441	34·72	31,569	27,012	58,581
32	Basti ..	2,802	687	984,741	940,487	1,925,228	62,676	32·55	22,615	19,532	42,147
33	Azamgarh ..	2,214	690	775,866	752,146	1,528,012	50,975	33·36	16,044	14,290	30,334
<b>KUMAUN DIVISION.</b>											
34	Naini Tal ..	2,721	102	160,798	116,077	276,875	8,813	31·83	4,356	3,779	8,135
35	Almora ..	5,372	99	265,253	265,085	530,338	28,331	43·99	6,615	6,845	13,460
36	Garhwal ..	5,629	88	232,863	252,323	485,186	20,563	42·38	7,211	7,292	14,503
<b>LUCKNOW DIVISION.</b>											
37	Lucknow ..	967	749	392,559	331,785	724,344	29,366	41·37	9,679	8,903	18,582
38	Unao ..	1,787	458	433,613	385,515	819,128	27,321	33·35	9,023	6,895	15,918
39	Rae Bareli ..	1,745	537	474,742	461,661	936,403	24,113	25·75	7,809	6,481	14,290
40	Sitapur ..	2,250	484	581,655	507,826	1,089,481	39,876	36·60	12,969	11,025	23,994
41	Hardoi ..	2,232	486	586,166	498,244	1,084,410	41,788	38·53	11,889	9,899	21,788
42	Kheri ..	2,976	307	485,177	428,298	913,475	33,227	36·37	11,089	9,076	20,165
<b>FYZABAD DIVISION.</b>											
43	Fyzabad ..	1,731	677	588,888	583,687	1,172,575	38,100	32·49	14,845	12,763	27,608
44	Gonda ..	2,809	524	752,896	720,202	1,473,098	43,092	29·25	11,946	9,920	21,866
45	Bahraich ..	2,645	403	554,548	510,829	1,065,377	36,106	33·95	11,080	9,584	20,664
46	Sultanpur ..	1,713	586	494,593	509,319	1,003,912	34,017	33·84	12,404	10,370	22,774
47	Partabgarh ..	1,443	593	417,339	437,791	855,130	27,316	31·94	8,421	6,911	15,332
48	Bara Banki ..	1,759	585	536,896	493,058	1,029,954	33,041	32·08	10,476	8,724	19,200
<b>Total for the Province</b>		107,167	423	23,787,745	21,588,042	45,375,787	1,666,479	36·73	550,457	474,618	1,025,075

NOTE.—Those born dead are not include

FORM No. II.

of the United Provinces during the year 1927.

8 Number of deaths of males to every 100 deaths of females.	9 Deaths per 1,000 of population from —											10 Mean ratio of death per 1,000 during previous five years			11 Number.
	Cholera.	Small-pox.	Plague	Fevers	Dysentery and diarr- hosa.	Respiratory diseases.	Injuries.	All other causes.	All causes.			Male.	Female.	Total.	
									Male.	Female.	Total.				
115.79	.11	.15	.	15.98	1.26	2.94	.39	2.91	21.11	37.80	23.76	18.87	23.66	20.76	1
113.58	.08	.15	.36	27.65	.28	.68	.40	1.66	30.22	32.56	31.27	29.12	31.99	30.42	2
115.24	.02	.04	.99	21.44	.20	.23	.23	.45	23.11	24.19	23.60	22.91	24.17	23.58	3
113.40	.35	.01	.21	22.73	.16	.63	.59	.51	24.52	25.42	24.93	29.25	33.21	31.07	4
108.70	.04	.06	.10	22.72	.45	.78	.37	.94	25.15	25.82	25.47	33.82	37.85	35.91	5
111.32	.19	.02	..	19.25	.74	.95	.35	2.84	33.68	25.16	24.36	28.71	30.81	29.67	6
117.85	.25	.10	.07	14.78	.43	1.35	.38	1.59	18.61	19.38	18.96	23.24	25.21	24.15	7
113.11	.09	.03	.08	17.96	.50	2.66	.69	3.54	24.57	26.55	25.46	27.09	39.13	28.00	8
137.51	.07	.01	..	19.82	.01	.06	.49	.99	22.55	20.10	21.45	27.11	25.63	26.45	9
123.72	.14	.07	..	19.51	.29	.29	.46	1.87	23.13	22.06	22.64	24.70	23.46	24.19	10
111.42	.18	.13	1.00	28.27	.20	1.06	.52	2.68	33.39	34.81	34.04	27.48	27.30	27.40	11
109.59	.15	.19	.29	26.37	.48	.50	.55	4.83	33.14	33.61	33.36	31.15	30.36	30.91	12
117.39	.07	.07	.56	26.63	.21	.25	.39	1.24	29.37	29.51	29.44	28.14	27.88	28.02	13
108.17	.06	.05	.44	27.71	.70	1.44	.38	1.45	31.44	33.19	32.26	30.86	32.06	31.42	14
117.04	.29	.14	.20	23.98	.27	1.12	.49	4.11	30.59	30.64	30.62	30.94	31.27	31.10	15
119.12	.50	.02	.03	27.20	.26	1.19	.88	2.34	33.19	31.53	32.42	30.85	29.60	30.31	16
124.32	.30	.02	..	18.74	.32	.90	.45	4.51	25.56	24.87	25.25	35.08	35.95	35.47	17
128.61	.07	.01	..	14.66	.18	.68	.44	4.88	21.12	20.40	20.93	27.41	27.44	27.42	18
120.19	.01	.03	.19	12.19	.27	1.92	.38	4.20	18.89	19.59	19.20	26.37	27.27	26.75	19
126.37	..	.04	.09	10.13	.04	.14	.52	4.30	16.30	14.17	15.29	21.22	19.78	20.55	20
119.73	.35	.41	.23	13.07	.23	.94	.53	4.37	21.33	18.86	20.13	24.23	21.02	22.67	21
111.25	1.75	.04	..	21.36	.34	.68	.62	5.32	30.48	19.72	30.11	32.84	31.38	32.14	22
123.35	.48	.01	..	14.75	.08	.81	.45	3.03	20.57	18.53	19.60	28.50	26.20	27.25	23
118.84	..	..	.01	14.24	.06	5.45	.64	.78	22.59	19.75	21.20	36.98	33.39	35.22	24
122.49	.05	.12	..	12.29	.02	.44	.57	3.42	18.20	15.58	16.92	29.40	25.37	27.43	25
108.98	.77	.44	.02	15.91	.82	1.50	.57	5.53	26.07	25.07	25.58	30.39	28.58	29.51	26
108.49	3.36	.67	.05	16.81	.17	.19	.53	4.89	27.80	25.56	26.68	28.56	23.84	26.20	27
125.21	.51	.22	.15	11.48	.04	.06	.67	3.17	18.11	14.31	16.20	23.81	18.55	21.16	28
110.52	.93	.68	2.41	12.20	.06	.13	.48	2.46	19.90	18.79	19.35	26.55	25.30	26.02	29
119.85	1.52	.26	.77	11.29	.46	.16	.50	3.11	19.21	16.90	18.08	23.73	21.72	22.81	30
116.87	.61	.37	.37	13.97	.04	.07	.44	2.05	19.03	16.80	17.93	18.86	16.71	17.87	31
115.78	2.39	.18	.45	14.71	.05	.05	.28	3.77	22.96	20.77	21.89	22.99	21.88	22.45	32
112.27	.15	.67	2.00	12.95	.08	.18	.54	3.26	20.68	19.00	19.85	30.27	28.98	29.60	33
115.27	.69	.05	.54	24.79	.44	1.57	.40	.91	27.09	32.55	29.38	28.58	33.10	30.23	34
96.64	3.09	.09	.01	18.46	1.20	1.12	.39	1.01	24.94	25.82	25.38	26.08	25.29	25.72	35
98.89	3.38	.08	..	20.61	4.16	.75	.42	.47	30.97	28.90	29.89	27.80	25.35	26.61	36
108.72	.07	.28	.16	14.32	.62	3.68	.45	6.07	24.66	26.83	25.65	26.28	27.37	26.72	37
130.86	.02	.10	.28	16.16	.07	.17	.41	2.22	20.81	17.88	19.43	23.47	21.78	22.76	38
120.49	.46	.03	.28	12.62	.04	.06	.41	1.37	16.45	14.04	15.26	21.31	17.02	18.47	39
117.63	.03	.08	.30	18.75	.07	.09	.46	2.24	22.30	21.71	22.02	23.22	22.88	23.06	40
120.10	.07	.04	.39	16.74	.09	.11	.40	2.25	20.28	19.87	20.09	24.57	23.46	24.13	41
122.18	.25	.05	.34	18.87	.03	.06	.51	1.94	22.85	21.19	22.07	23.21	21.78	22.62	42
116.31	3.70	.43	.48	14.92	.18	.59	.42	3.11	25.21	21.87	23.54	23.66	21.71	22.78	43
120.42	.32	.05	.02	12.24	.01	.09	.42	1.67	15.87	13.77	14.84	15.13	13.24	14.31	44
115.61	.02	.19	..	14.82	.04	.06	.47	3.78	19.98	18.76	19.39	20.77	19.03	20.06	45
119.61	1.61	.12	.03	16.77	.05	.10	.45	3.55	25.08	20.36	22.68	27.31	23.27	25.46	46
121.85	.51	.12	..	14.02	.02	.10	.43	2.72	20.18	15.79	17.93	23.71	19.28	21.66	47
120.08	.18	.02	.44	15.12	.08	.11	.38	2.31	19.51	17.69	18.64	22.82	20.97	22.04	48
115.98	.62	.17	.34	17.33	.27	.64	.45	2.76	23.14	21.98	22.59	25.74	24.73	25.31	

in this or any other statements.

## Deaths registered in the districts of the United

Number.	District.			2				
				January.	February.	March.	April.	May.
MEERUT DIVISION.								
1	Dehra Dun	..	..	376	334	406	472	584
2	Saharanpur	..	..	3,111	2,481	2,513	2,972	3,065
3	Muzaffarnagar	..	..	1,907	1,744	1,677	1,484	1,792
4	Meerut	..	..	4,432	3,244	2,644	2,395	3,231
5	Bulandshahr	..	..	2,990	2,429	1,876	1,823	1,909
AGRA DIVISION.								
6	Aligarh	..	..	2,497	2,003	1,517	1,974	2,189
7	Muttra	..	..	1,301	870	991	1,222	1,105
8	Agra	..	..	2,158	2,098	1,969	1,981	2,328
9	Mainpuri	..	..	2,434	1,599	1,407	1,238	1,133
10	Etah	..	..	1,825	2,150	1,414	1,440	1,612
ROHILKHAND DIVISION.								
11	Bareilly	..	..	2,798	2,468	2,173	2,873	3,659
12	Bijnor	..	..	2,278	2,004	1,508	1,810	2,873
13	Budaun	..	..	2,702	2,067	2,191	2,378	2,809
14	Moradabad	..	..	3,675	3,332	3,170	2,927	3,374
15	Shahjahanpur	..	..	1,966	1,791	1,448	1,926	2,210
16	Pilibhit	..	..	1,263	915	821	888	1,068
ALLAHABAD DIVISION.								
17	Farrukhabad	..	..	1,830	1,630	1,615	1,324	1,900
18	Etawah	..	..	1,461	1,451	1,345	1,190	1,245
19	Cawnpore	..	..	1,653	1,774	1,931	2,090	1,929
20	Fatehpur	..	..	792	763	870	797	664
21	Allahabad	..	..	2,367	1,815	2,133	2,109	2,320
JHANSI DIVISION.								
22	Jhansi	..	..	1,472	1,256	1,248	1,221	1,427
23	Jalaun	..	..	773	610	683	670	591
24	Hamirpur	..	..	937	769	622	582	644
25	Banda	..	..	1,100	871	762	783	652
BENARES DIVISION.								
26	Benares	..	..	1,617	1,521	1,602	2,085	2,079
27	Mirzapur	..	..	1,335	1,216	1,119	1,312	1,980
28	Jaunpur	..	..	1,369	1,398	1,047	1,539	1,989
29	Ghazipur	..	..	1,252	1,094	1,352	1,433	1,084
30	Ballia	..	..	1,041	802	981	1,004	971
GORAKHPUR DIVISION.								
31	Gorakhpur	..	..	4,019	3,637	3,510	4,475	4,935
32	Basti	..	..	2,765	2,682	3,001	4,197	4,634
33	Azamgarh	..	..	2,523	2,715	3,088	2,998	2,886
KUMAUN DIVISION.								
34	Naini Tal	..	..	788	772	669	629	760
35	Almora	..	..	594	640	973	903	1,582
36	Garhwal	..	..	680	350	825	847	1,489
LUCKNOW DIVISION.								
37	Lucknow	..	..	1,399	1,165	1,493	1,441	1,848
38	Unao	..	..	1,369	1,068	1,132	1,097	1,633
39	Rae Bareilly	..	..	1,151	1,042	1,095	1,293	1,350
40	Sitapur	..	..	2,187	2,362	1,937	1,907	2,294
41	Hardoi	..	..	1,592	1,627	1,664	1,767	1,609
42	Kheri	..	..	1,820	1,271	1,463	1,846	1,729
FYZABAD DIVISION.								
43	Fyzabad	..	..	1,349	1,954	1,826	2,105	5,000
44	Gonda	..	..	1,975	1,617	1,314	1,321	1,981
45	Bahraich	..	..	1,537	1,595	1,679	1,551	1,389
46	Sultanpur	..	..	1,734	1,527	1,547	2,073	3,038
47	Partabgarh	..	..	1,197	1,021	1,074	1,421	1,631
48	Bara Banki	..	..	1,889	1,405	1,256	1,412	1,752
Total for the Province				<b>87,840</b>	<b>77,469</b>	<b>74,636</b>	<b>82,278</b>	<b>96,016</b>
Ratio of deaths per 1,000 of population.				<b>1.93</b>	<b>1.71</b>	<b>1.64</b>	<b>1.81</b>	<b>2.12</b>

## FORM No. III.

Provinces during **each month** of the year 1927.

3							4	5
June.	July.	August.	September.	October.	November.	December	Total deaths registered during the year.	Number.
572	540	385	409	332	326	307	5,043	1
3,103	2,174	1,656	1,938	2,158	2,099	2,044	29,314	2
1,623	1,438	1,087	1,463	1,378	1,407	1,745	18,745	3
3,664	3,130	2,413	2,863	3,143	2,962	3,256	37,377	4
2,352	2,122	1,934	2,319	2,717	2,401	2,291	27,163	5
2,767	2,219	2,069	2,319	2,429	2,055	1,824	25,862	6
1,037	905	675	863	795	893	1,081	11,738	7
2,457	1,893	1,576	1,649	1,920	1,655	1,843	23,532	8
1,543	1,358	781	1,002	1,330	1,002	1,219	16,046	9
1,657	1,483	1,336	1,630	1,524	1,398	1,315	18,784	10
3,333	3,015	2,655	2,862	2,923	2,653	3,106	34,518	11
2,673	1,802	1,630	1,695	2,389	1,951	2,081	24,694	12
2,352	2,494	2,219	2,400	2,268	1,821	2,510	28,711	13
3,328	2,348	2,474	3,199	3,706	3,606	3,525	38,664	14
2,757	2,483	2,382	2,335	2,420	1,717	2,256	25,691	15
1,500	1,270	1,088	1,204	1,419	1,257	1,298	13,991	16
2,172	1,935	1,737	1,704	1,610	1,779	1,833	21,629	17
1,268	1,037	1,089	1,339	1,407	1,297	1,227	15,356	18
2,023	1,827	1,786	1,890	1,681	1,712	1,698	22,054	19
717	929	956	830	1,036	803	817	9,974	20
3,081	2,726	2,573	2,814	2,036	2,027	2,268	28,269	21
2,075	1,679	1,704	1,552	1,596	1,694	1,341	18,265	22
633	823	737	742	663	586	438	7,949	23
863	800	848	1,046	1,003	959	790	9,863	24
826	958	748	913	812	792	730	9,950	25
2,296	2,103	2,384	2,406	2,160	2,210	1,894	24,357	26
2,893	1,938	1,681	1,735	1,424	1,268	1,422	19,323	27
2,145	1,718	1,509	1,388	1,318	1,663	1,584	18,717	28
1,226	1,572	1,304	1,253	1,109	1,295	1,154	15,128	29
1,276	2,160	1,804	1,584	1,349	992	1,063	15,027	30
5,759	6,438	5,812	5,289	5,042	4,810	4,855	58,581	31
5,329	4,478	2,958	2,608	3,593	3,076	2,776	42,147	32
3,023	2,451	2,284	2,161	1,999	2,024	2,182	30,334	33
829	487	470	482	588	786	875	8,135	34
2,582	2,026	1,271	718	780	704	687	13,460	35
2,514	2,491	1,686	841	871	766	643	14,503	36
1,921	1,573	1,764	1,900	1,361	1,336	1,361	18,582	37
1,311	1,711	1,440	1,364	1,379	1,159	1,255	15,918	38
1,867	1,447	1,212	1,050	990	768	1,025	14,290	39
2,056	2,111	1,849	1,929	1,886	1,576	1,900	23,994	40
1,939	2,036	1,908	2,375	1,773	1,664	1,832	21,788	41
1,719	2,282	1,880	1,715	1,458	1,427	1,550	20,165	42
3,335	2,480	2,431	1,684	1,516	1,625	18,03	27,608	43
1,848	2,147	2,022	2,045	1,916	1,664	2,016	21,866	44
2,352	1,741	1,740	1,905	1,541	1,863	1,771	20,664	45
2,825	2,253	1,618	1,736	1,757	1,384	1,282	22,774	46
1,907	1,589	1,234	1,134	947	1,066	1,111	15,332	47
1,987	1,957	1,570	1,645	1,478	1,321	1,528	19,200	48
<b>105,315</b>	<b>94,577</b>	<b>82,369</b>	<b>83,927</b>	<b>82,932</b>	<b>77,299</b>	<b>80,417</b>	<b>1,025,075</b>	
<b>2 32</b>	<b>2 08</b>	<b>1 81</b>	<b>1 85</b>	<b>1 83</b>	<b>1 70</b>	<b>1 77</b>	<b>22 59</b>	





## FORM No. IV.

of the United Provinces during the year 1927.

3									4	
Under one year.									1 and under 5 years.	
Over one month and not exceeding six months.			Over six months and not exceeding twelve months.			Total.			Male.	Female.
Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.		
242	172	414	144	124	268	610	500	1,110	491	462
1,272	1,113	2,385	1,207	1,035	2,242	4,041	3,730	7,771	2,940	2,585
713	595	1,308	705	547	1,252	2,168	1,766	3,934	2,010	1,654
1,505	1,348	2,853	1,616	1,369	2,985	4,871	4,171	9,042	4,150	3,602
1,288	1,189	2,477	983	887	1,870	3,794	3,334	7,128	3,200	2,820
970	843	1,816	885	758	1,643	3,486	2,930	6,416	3,526	3,140
333	314	647	313	285	598	1,085	990	2,075	1,215	1,041
882	781	1,663	757	692	1,450	2,966	2,611	5,577	2,924	2,518
475	355	830	316	216	532	1,660	1,253	2,913	1,040	730
596	536	1,132	580	487	1,067	2,378	2,052	4,430	1,803	1,465
1,326	1,219	2,545	1,085	996	2,081	4,417	3,969	8,386	5,850	5,409
852	785	1,637	1,092	894	1,986	3,648	3,132	6,780	3,757	3,628
973	884	1,857	984	931	1,915	3,891	3,365	7,256	4,465	3,801
1,581	1,372	2,953	1,487	1,394	2,881	5,583	4,748	10,331	5,532	5,366
882	782	1,664	1,007	876	1,883	3,703	3,233	6,936	3,480	3,122
469	447	916	441	407	848	1,980	1,730	3,710	1,959	1,814
758	592	1,350	775	582	1,357	3,647	2,826	6,473	1,828	1,577
611	579	1,190	451	337	788	2,292	1,926	4,218	1,168	946
963	763	1,726	855	619	1,474	3,140	2,541	5,681	2,094	1,772
448	337	785	414	294	708	1,719	1,336	3,055	711	592
1,181	927	2,108	1,014	828	1,842	4,697	3,732	8,429	2,439	2,173
750	675	1,425	545	475	1,020	2,587	2,343	4,930	1,734	1,752
265	261	526	253	203	456	1,132	938	2,070	567	422
410	345	755	307	257	564	1,672	1,363	3,035	814	749
488	401	889	283	199	482	1,436	1,217	2,653	811	692
925	773	1,698	652	548	1,200	3,367	2,852	6,219	1,901	1,823
714	559	1,273	414	385	799	2,667	2,258	4,925	1,605	1,704
593	437	1,030	398	279	677	2,389	1,840	4,229	1,274	1,105
424	319	743	260	255	515	1,748	1,405	3,153	1,119	1,177
395	244	639	216	160	376	1,976	1,387	3,363	1,280	1,069
2,537	1,845	4,382	1,237	982	2,219	7,567	5,733	13,300	5,055	4,715
1,686	1,337	3,023	733	637	1,370	5,380	4,320	9,700	4,463	4,159
1,143	804	1,947	494	424	918	3,753	2,910	6,663	2,249	2,028
324	314	638	301	286	587	981	869	1,850	653	614
719	583	1,302	524	440	964	1,743	1,381	3,124	1,283	1,361
747	646	1,393	704	663	1,367	1,868	1,679	3,547	1,750	1,617
840	692	1,532	855	756	1,611	3,242	2,753	5,995	2,036	1,953
598	427	1,025	512	449	961	2,185	1,654	3,839	1,847	1,457
463	304	767	353	276	629	1,551	1,153	2,704	1,406	1,164
936	787	1,723	801	711	1,512	3,160	2,670	5,830	3,668	3,134
746	615	1,361	680	582	1,262	2,922	2,441	5,363	2,741	2,485
548	473	1,021	507	433	940	2,112	1,775	3,887	2,896	2,438
1,003	831	1,834	554	470	1,024	3,305	2,649	5,954	2,876	2,608
764	655	1,419	625	507	1,132	2,769	2,220	4,989	2,628	2,453
794	652	1,446	530	457	987	3,019	2,553	5,572	2,662	2,279
747	552	1,299	607	514	1,121	3,275	2,543	5,818	2,473	2,101
698	524	1,222	558	463	1,021	2,922	1,784	4,006	1,357	1,210
516	423	939	616	512	1,128	2,524	1,992	4,516	2,661	2,275
39,093	32,414	71,507	31,630	26,882	58,512	138,328	114,557	252,885	112,391	100,761
...	...	...	...	...	...	714,286	674,414	1,388,700	2,023,596	2,098,014
...	...	...	...	...	...	193.66	169.86	182.10	55.54	48.03

## Deaths registered according to age in the districts

1 Number.	2 District.	5		6		7		8	
		5 and under 10 years.		10 and under 15 years.		15 and under 20 years.		20 and under 30 years.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
<b>MEERUT DIVISION.</b>									
1	Dehra Dun ...	86	88	58	77	88	123	260	263
2	Saharanpur ...	622	557	542	478	546	604	1,173	1,269
3	Muzaffarnagar ...	460	434	375	355	358	377	766	814
4	Meerut ...	922	701	569	503	564	596	1,118	1,482
5	Bulandshahr ...	535	472	354	298	305	391	920	1,174
<b>AGRA DIVISION.</b>									
6	Aligarh ...	572	428	344	299	339	430	864	1,125
7	Muttra ...	307	248	195	138	192	185	512	522
8	Agra ...	564	487	355	311	366	472	893	1,096
9	Mainpuri ...	300	185	251	178	362	282	1,143	916
10	Etah ...	450	335	337	236	375	355	872	816
<b>ROHILKHAND DIVISION.</b>									
11	Bareilly ...	832	726	438	464	410	459	1,063	1,198
12	Bijnor ...	490	427	349	261	309	344	774	893
13	Budaun ...	683	485	372	322	329	398	881	972
14	Moradabad ...	935	792	512	473	455	544	1,098	1,496
15	Shahjahanpur ...	583	439	344	309	322	356	770	784
16	Pilibhit ...	343	262	241	151	199	182	521	448
<b>ALLAHABAD DIVISION.</b>									
17	Farrukhabad ...	362	295	318	245	322	360	899	985
18	Etawah ...	263	214	260	165	296	265	832	700
19	Cawnpore ...	388	376	330	348	349	431	908	1,039
20	Fatehpur ...	200	159	157	114	121	126	417	406
21	Allahabad ...	611	570	541	448	381	336	1,102	1,078
<b>JHANSI DIVISION.</b>									
22	Jhansi ...	465	417	330	262	347	259	749	724
23	Jalaun ...	162	141	169	107	161	118	396	340
24	Hamirpur ...	157	145	170	100	155	97	345	301
25	Banda ...	262	212	209	151	171	116	441	350
<b>BENARES DIVISION.</b>									
26	Benares ...	575	590	505	498	403	511	920	1,002
27	Mirzapur ...	647	594	516	407	311	332	1,032	951
28	Jaunpur ...	549	436	442	349	416	301	967	796
29	Ghazipur ...	504	491	387	388	231	225	674	741
30	Ballia ...	464	416	406	345	258	276	655	648
<b>GORAKHPUR DIVISION.</b>									
31	Gorakhpur ...	1,529	1,429	1,252	997	1,068	963	2,713	2,647
32	Basti ...	1,650	1,405	1,092	899	632	494	1,741	1,727
33	Azamgarh ...	865	896	774	704	451	478	1,247	1,386
<b>KUMAUN DIVISION.</b>									
34	Naini Tal ...	197	202	190	176	178	157	501	482
35	Almora ...	347	354	215	238	169	279	433	718
36	Garhwal ...	319	295	220	249	208	232	441	738
<b>LUCKNOW DIVISION.</b>									
37	Lucknow ...	314	252	191	231	172	344	495	763
38	Unao ...	419	324	317	230	256	213	605	600
39	Rae Bareli ...	380	315	274	235	258	242	583	608
40	Sitapur ...	559	478	312	285	257	297	742	826
41	Hardoi ...	502	366	335	310	310	331	733	717
42	Kheri ...	471	347	299	210	299	287	778	767
<b>FYZABAD DIVISION.</b>									
43	Fyzabad ...	933	792	604	529	424	373	1,116	1,110
44	Gonda ...	526	441	347	204	221	185	728	707
45	Bahraich ...	507	397	307	265	263	226	638	716
46	Sultanpur ...	521	393	328	255	310	237	795	809
47	Partabgarh ...	295	242	227	195	198	150	633	542
48	Bara Banki ...	385	316	265	215	206	263	560	676
Total for the Province		25,012	21,368	17,925	15,207	15,371	15,603	39,497	41,869
Population ...		3,351,783	3,039,972	2,898,415	2,196,894	2,038,900	1,609,368	3,999,332	3,789,269
Ratio per 1,000 living		7.46	7.03	6.11	6.92	7.54	9.69	9.87	11.05

## FORM No. IV.

of the United Provinces during the year 1927—(concluded).

9		10		11		12		13		14
30 and under 40 years.		40 and under 50 years.		50 and under 60 years.		60 years and upwards.		Total.		
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Number.
213	196	236	158	213	149	451	321	2,706	2,337	
1,181	1,143	1,162	853	1,131	822	2,251	1,684	15,589	13,725	2
753	755	703	609	786	733	1,657	1,212	10,036	8,709	3
1,293	1,316	1,324	1,045	1,578	1,340	3,473	2,759	19,862	17,515	4
856	994	881	763	1,139	982	2,164	1,787	14,148	13,015	5
786	868	837	668	939	737	1,881	1,613	13,624	12,238	6
527	465	546	452	637	450	1,134	897	6,350	5,388	7
860	790	927	687	899	707	1,786	1,363	12,490	11,042	8
1,225	931	1,158	759	1,126	789	1,025	733	9,290	6,756	9
836	730	923	643	1,001	702	1,413	1,061	10,388	8,396	10
1,146	927	1,115	774	1,137	854	1,783	1,547	18,191	16,327	11
725	711	704	570	742	646	1,414	1,170	12,912	11,782	12
856	844	928	649	1,086	789	2,013	1,582	15,504	13,207	13
1,004	1,137	1,182	833	1,329	1,019	2,461	2,165	20,091	18,573	14
852	708	1,170	790	1,022	658	1,608	1,438	13,854	11,837	15
547	419	576	354	532	363	708	662	7,606	6,385	16
937	819	1,112	734	1,171	755	1,391	1,045	11,987	9,642	17
844	677	967	632	856	591	861	601	8,639	6,717	18
904	832	1,054	770	1,200	728	1,671	1,179	12,038	10,016	19
464	403	550	396	502	347	727	527	5,568	4,406	20
1,285	1,070	1,315	983	1,234	1,023	1,799	1,452	15,404	12,865	21
770	636	860	564	733	599	1,044	1,090	9,619	8,646	22
471	403	465	321	395	335	472	434	4,390	3,559	23
353	323	564	364	515	405	611	660	5,356	4,507	24
592	472	557	417	512	420	487	425	5,478	4,472	25
867	796	960	762	986	728	2,218	2,093	12,702	11,655	26
817	759	892	738	669	626	399	899	10,055	9,268	27
1,082	862	1,041	761	923	675	1,323	1,186	10,406	8,311	28
743	661	765	553	682	521	1,089	1,024	7,942	7,186	29
748	655	600	415	534	406	1,271	1,218	8,192	6,835	30
2,805	2,562	2,728	1,977	2,901	2,374	3,951	3,615	31,569	27,012	31
1,736	1,590	1,629	1,209	1,612	1,215	2,680	2,614	22,615	19,532	32
1,524	1,432	1,497	1,247	1,398	1,103	2,286	2,104	16,044	14,290	33
505	390	479	286	359	277	313	326	4,356	3,779	34
370	584	434	402	466	472	1,155	1,056	6,615	6,845	35
423	578	500	448	566	480	916	976	7,211	7,292	36
572	554	576	411	644	429	1,437	1,213	9,679	8,903	37
716	582	762	529	760	560	1,156	746	9,023	6,895	38
685	623	684	565	779	575	1,209	1,001	7,809	6,481	39
826	772	828	547	908	633	1,709	1,383	12,969	11,025	40
870	719	900	649	970	728	1,556	1,153	11,889	9,899	41
884	742	973	577	920	637	1,457	1,296	11,089	9,076	42
1,159	1,063	1,151	807	1,147	832	2,130	2,000	14,845	12,763	43
927	744	934	670	933	610	1,933	1,686	11,946	9,920	44
747	666	775	532	740	578	1,422	1,372	11,080	9,584	45
900	735	856	631	950	767	1,996	1,899	12,404	10,370	46
745	567	798	584	866	649	1,080	988	8,421	6,911	47
593	617	625	476	709	481	1,948	1,413	10,476	8,724	48
41,524	37,822	43,263	31,564	43,837	33,399	73,309	62,568	5,50,457	4,74,618	
3,416,415	3,147,346	2,552,757	2,320,241	1,592,005	1,450,417	1,200,254	1,262,103	23,787,745	21,588,042	
12·15	12·02	16·92	13·60	27·53	22·96	61·13	49·57	23·14	21·98	

\* Includes 2 persons of unspecified ages.

† " " " " " " " " " " " "

Paragraph 25.]

ANNUAL

## Deaths registered according to classes and sexes

1 Number	2 District	Population					
		Muhammadans.			Hindus.		
		Male.	Female.	Total.	Male.	Female.	Total.
<b>MEERUT DIVISION.</b>							
1	Dehra Dun ... ..	19,174	10,757	29,931	103,997	69,571	173,568
2	Saharanpur ... ..	167,821	140,585	308,406	335,801	272,231	608,032
3	Muzaffarnagar ... ..	122,061	104,270	226,331	295,836	242,406	538,242
4	Meerut ... ..	183,384	159,274	342,658	584,032	495,014	1,079,046
5	Bulandshahr ... ..	104,228	94,813	199,041	437,660	390,468	828,128
<b>AGRA DIVISION.</b>							
6	Aligarh ... ..	71,812	60,550	132,362	484,713	409,054	893,767
7	Muttra ... ..	32,532	26,651	59,183	302,155	246,266	548,421
8	Agra ... ..	60,417	49,724	110,141	434,327	356,244	790,571
9	Mainpuri ... ..	21,096	18,190	39,286	380,613	309,805	690,418
10	Etah ... ..	46,750	40,161	86,911	389,634	329,142	718,776
<b>ROHILKHAND DIVISION.</b>							
11	Bareilly ... ..	138,725	124,025	262,750	393,311	334,068	727,379
12	Bijnor ... ..	137,488	127,922	265,410	242,444	214,484	456,928
13	Budaun ... ..	88,136	77,902	166,028	429,587	360,795	790,382
14	Moradabad ... ..	228,916	207,132	436,048	395,270	339,146	734,416
15	Shahjahanpur ... ..	67,711	62,068	129,779	382,171	321,756	703,897
16	Pilibhit ... ..	40,711	38,338	79,049	186,295	162,274	348,569
<b>ALLAHABAD DIVISION.</b>							
17	Farrukhabad ... ..	52,430	47,229	99,659	411,672	336,112	747,784
18	Etawah ... ..	22,911	20,088	42,999	377,097	305,602	682,699
19	Cawnpore ... ..	62,911	48,742	111,653	568,932	458,813	1,027,745
20	Fatehpur ... ..	38,316	37,507	75,823	301,761	272,144	573,905
21	Allahabad ... ..	92,807	86,170	178,977	624,241	592,678	1,216,919
<b>JHANSI DIVISION.</b>							
22	Jhansi ... ..	18,161	14,782	32,943	288,606	269,529	558,135
23	Jalaun ... ..	13,765	12,809	26,574	198,652	178,483	377,135
24	Hamirpur ... ..	14,719	15,138	29,857	221,745	212,190	433,935
25	Banda ... ..	17,356	17,292	34,648	283,040	269,340	552,380
<b>BENARES DIVISION.</b>							
26	Benares ... ..	50,920	46,851	97,771	434,846	416,762	851,608
27	Mirzapur ... ..	21,967	21,277	43,244	338,498	339,998	678,496
28	Jaunpur ... ..	49,995	51,508	101,563	524,105	528,726	1,052,831
29	Ghazipur ... ..	34,557	37,735	72,292	364,288	344,369	708,657
30	Ballia ... ..	25,625	26,667	52,292	400,129	377,131	777,260
<b>GORAKHPUR DIVISION.</b>							
31	Gorakhpur ... ..	168,843	161,798	330,641	1,487,976	1,445,011	2,932,987
32	Basti ... ..	167,210	158,583	325,793	817,286	781,720	1,599,006
33	Azamgarh ... ..	91,969	91,472	183,441	683,423	660,224	1,343,647
<b>KUMAUN DIVISION.</b>							
34	Naini Tal ... ..	32,983	22,779	55,762	124,272	90,422	214,694
35	Almora ... ..	1,840	1,133	3,023	262,557	262,907	525,464
36	Garhwal ... ..	2,695	1,134	3,829	229,561	250,664	480,225
<b>LUCKNOW DIVISION.</b>							
37	Lucknow ... ..	81,140	70,580	151,720	305,608	257,928	563,536
38	Unao ... ..	36,895	33,496	70,391	396,139	351,542	747,681
39	Rae Bareilly ... ..	41,810	41,944	83,754	432,678	419,514	852,192
40	Sitapur ... ..	86,271	78,632	164,903	494,684	428,597	923,281
41	Hardoi ... ..	62,736	55,759	118,495	521,518	440,805	962,323
42	Kheri ... ..	70,989	64,092	135,081	413,423	363,554	776,977
<b>FYZABAD DIVISION.</b>							
43	Fyzabad ... ..	63,925	63,863	127,788	523,546	519,338	1,042,884
44	Gonda ... ..	126,183	121,798	247,986	626,311	598,121	1,224,432
45	Bahraich ... ..	113,000	103,892	216,892	440,749	406,257	847,006
46	Sultanpur ... ..	55,769	60,622	116,391	438,688	448,533	887,221
47	Partabgarh ... ..	45,808	47,726	93,534	371,353	389,911	761,264
48	Bara Banki ... ..	90,688	87,311	177,999	445,584	405,191	850,775
	Total for the Province ... ..	3,388,151	3,092,581	6,481,032	20,130,814	18,274,810	38,405,624

## FORM No. V.

in the districts of the United Provinces during the year 1927.

3									4
according to census of 1921.									
Christians.			Other classes.			Total.			Number.
Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	
2,933	2,673	5,606	2,072	1,066	3,138	128,176	84,067	212,243	1
3,293	2,186	5,479	8,993	6,561	15,554	515,908	421,563	937,471	2
3,451	2,964	6,415	12,959	10,318	23,277	434,307	359,958	794,265	3
16,995	14,125	31,120	25,583	20,667	46,250	809,994	689,080	1,499,074	4
6,203	6,208	12,411	14,438	12,501	26,939	562,529	503,990	1,066,519	5
7,665	7,455	15,120	11,189	9,307	20,496	575,379	486,366	1,061,745	6
3,320	2,767	6,087	3,143	2,304	5,447	341,150	277,988	619,138	7
4,199	2,621	6,820	9,355	7,268	16,623	508,298	415,857	924,155	8
1,552	1,383	2,935	8,720	6,668	15,388	411,981	336,046	748,027	9
6,298	5,732	12,030	6,480	5,563	12,043	449,162	380,598	829,760	10
7,186	6,522	13,708	5,063	4,375	10,038	544,885	468,990	1,013,875	11
812	840	1,652	8,899	7,293	16,192	389,643	350,539	740,182	12
6,935	6,201	13,136	3,175	2,626	5,801	527,823	447,524	975,347	13
8,714	8,002	16,716	6,122	5,351	11,473	639,022	559,631	1,198,653	14
1,768	1,687	3,455	1,187	797	1,984	452,837	386,278	839,115	15
1,426	1,271	2,697	698	588	1,286	229,130	202,471	431,601	16
1,561	1,455	3,016	3,346	2,828	6,174	469,009	387,624	856,633	17
693	549	1,242	3,622	2,970	6,592	404,323	329,209	733,532	18
3,564	2,368	5,932	1,912	1,422	3,334	637,319	511,345	1,148,664	19
227	172	399	1,223	1,042	2,265	341,527	310,865	652,392	20
4,102	2,776	6,878	1,038	633	1,671	722,188	682,257	1,404,445	21
2,770	1,382	4,152	6,053	5,216	11,269	315,590	290,909	606,499	22
138	113	251	829	650	1,479	213,384	192,055	405,439	23
188	476	664	451	416	867	237,103	228,220	465,323	24
96	71	167	438	403	841	300,930	287,106	588,036	25
933	924	1,857	466	329	795	487,165	464,866	952,031	26
369	427	796	801	846	1,647	361,635	362,548	724,183	27
71	50	121	309	281	590	574,480	580,625	1,155,105	28
193	181	374	125	122	247	399,163	382,407	781,570	29
485	462	947	281	229	510	426,520	404,489	831,009	30
468	385	853	1,305	1,044	2,349	1,658,592	1,608,238	3,266,830	31
58	56	114	187	128	315	984,741	940,487	1,925,228	32
70	47	117	404	403	807	775,866	752,146	1,528,012	33
1,343	1,101	2,444	2,200	1,775	3,975	160,798	116,077	276,875	34
671	876	1,547	185	119	304	265,253	265,085	530,338	35
491	483	974	116	42	158	232,863	252,323	485,186	36
4,818	2,712	7,530	993	565	1,558	392,559	331,785	724,344	37
100	75	175	479	402	881	433,613	385,515	819,128	38
96	74	170	158	129	287	474,742	461,661	936,403	39
301	286	587	399	311	710	581,655	507,826	1,089,481	40
448	540	988	1,464	1,140	2,604	586,166	498,244	1,084,410	41
338	258	596	427	394	821	485,177	428,298	913,475	42
1,151	275	1,426	266	211	477	588,888	583,687	1,172,575	43
284	202	486	113	81	194	752,896	720,202	1,473,098	44
149	101	250	650	579	1,229	554,548	510,829	1,065,377	45
34	96	130	102	68	170	494,593	509,319	1,003,912	46
9	10	19	169	144	313	417,339	437,791	855,130	47
55	74	129	569	482	1,051	536,896	493,058	1,029,954	48
199,024	91,694	200,718	159,756	128,657	288,413	23,787,745	21,588,042	45,375,787	

## Deaths registered according to classes and sexes

Number.	District.	Deaths registered according to classes and sexes					
		Muhammadans.			Hindus.		
		Male.	Female.	Total.	Male	Female.	Total.
<b>MEERUT DIVISION.</b>							
1	Dehra Dun ... ..	345	339	684	2,289	1,942	4,231
2	Saharanpur ... ..	5,255	4,980	10,235	10,263	8,677	18,940
3	Muzaffarnagar ... ..	3,124	2,725	5,849	6,722	5,829	12,551
4	Meerut ... ..	4,218	3,907	8,125	15,503	13,468	28,971
5	Bulandshahr ... ..	2,610	2,512	5,122	11,484	10,451	21,935
<b>AGRA DIVISION.</b>							
6	Aligarh ... ..	1,663	1,696	3,359	11,949	10,529	22,478
7	Muttra ... ..	556	546	1,102	5,788	4,833	10,621
8	Agra ... ..	1,490	1,488	2,978	10,974	9,541	20,515
9	Mainpuri ... ..	392	308	700	8,892	6,443	15,335
10	Etah ... ..	967	861	1,828	9,385	7,504	16,889
<b>ROHILKHAND DIVISION.</b>							
11	Bareilly ... ..	4,320	4,079	8,399	13,748	12,116	25,864
12	Bijnor ... ..	4,423	4,321	8,744	8,897	7,352	15,749
13	Budaun ... ..	2,619	2,534	5,153	12,840	10,632	23,472
14	Moradabad ... ..	6,976	7,028	14,004	13,024	11,447	24,471
15	Shahjahanpur ... ..	1,953	1,910	3,863	11,889	9,912	21,801
16	Pilibhit ... ..	1,447	1,217	2,664	6,096	5,112	11,208
<b>ALLAHABAD DIVISION.</b>							
17	Farrukhabad ... ..	1,268	1,035	2,303	10,686	8,577	19,263
18	Etawah ... ..	600	604	1,204	8,036	6,108	14,144
19	Cawnpore ... ..	1,568	1,501	3,069	10,452	8,500	18,952
20	Fatehpur ... ..	699	558	1,257	4,867	3,847	8,714
21	Allahabad ... ..	1,929	1,753	3,687	13,416	11,068	24,484
<b>JHANSI DIVISION.</b>							
22	Jhansi ... ..	463	471	934	9,080	8,104	17,184
23	Jalaun ... ..	277	235	512	4,112	3,324	7,436
24	Hamirpur ... ..	299	280	579	5,055	4,226	9,281
25	Banda ... ..	285	271	556	5,175	4,182	9,357
<b>BENARES DIVISION.</b>							
26	Benares ... ..	1,414	1,511	2,925	11,270	10,127	21,397
27	Mirzapur ... ..	578	522	1,100	9,473	8,744	18,217
28	Jaunpur ... ..	798	827	1,625	9,607	7,484	17,091
29	Ghazipur ... ..	729	776	1,505	7,204	6,403	13,607
30	Ballia ... ..	569	510	1,079	7,622	6,319	13,941
<b>GORAKHPUR DIVISION.</b>							
31	Gorakhpur ... ..	3,008	2,558	5,566	28,549	24,442	52,991
32	Basti ... ..	3,429	2,827	6,256	19,180	16,704	35,884
33	Azamgarh ... ..	2,089	2,126	4,215	13,954	12,163	26,117
<b>KUMAUN DIVISION.</b>							
34	Naini Tal ... ..	1,243	1,076	2,319	3,090	2,684	5,774
35	Almora ... ..	37	31	68	6,554	6,784	13,338
36	Garhwal ... ..	25	35	60	7,181	7,254	14,435
<b>LUCKNOW DIVISION.</b>							
37	Lucknow ... ..	2,009	2,098	4,107	7,622	6,775	14,397
38	Unao ... ..	697	619	1,316	8,325	6,275	14,600
39	Rae Bareli ... ..	720	673	1,393	7,087	5,806	12,893
40	Sitapur ... ..	1,751	1,545	3,296	11,207	9,471	20,678
41	Hardoi ... ..	1,225	1,176	2,401	10,655	8,714	19,369
42	Kheri ... ..	1,364	1,130	2,494	9,710	7,937	17,647
<b>FYZABAD DIVISION.</b>							
43	Fyzabad ... ..	1,396	1,257	2,653	13,441	11,502	24,943
44	Gonda ... ..	1,925	1,604	3,529	10,014	8,313	18,327
45	Bahraich ... ..	2,041	1,860	3,901	9,030	7,721	16,751
46	Sultanpur ... ..	1,283	1,152	2,435	11,121	9,217	20,338
47	Partabgarh ... ..	708	693	1,401	7,712	6,218	13,930
48	Bara Banki ... ..	1,756	1,588	3,344	8,711	7,132	15,843
	Total for the Province ... ..	80,540	75,358	155,898	468,441	397,913	866,354

## FORM No. V.

in the districts of the United Provinces during the year 1927--(continued)

Number of deaths registered.									Number.
Christians.			Other classes.			Total.			
Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	
33	38	71	39	18	57	2,706	2,337	5,043	1
9	8	17	62	60	122	15,589	13,725	29,314	2
2	6	8	188	149	337	10,036	8,709	18,745	3
19	13	32	122	127	249	19,862	17,515	37,377	4
10	10	20	44	42	86	14,148	13,015	27,163	5
7	10	17	5	3	8	13,624	12,238	25,862	6
...	2	2	6	7	13	6,350	5,388	11,738	7
14	9	23	12	4	16	12,490	11,042	23,532	8
3	4	7	3	1	4	9,290	6,756	16,046	9
12	13	25	24	18	42	10,388	8,396	18,784	10
37	40	77	83	92	178	18,191	16,327	34,518	11
6	9	15	86	100	186	12,912	11,782	24,694	12
9	19	28	36	22	58	15,504	13,207	28,711	13
46	16	102	45	42	87	20,091	18,573	38,664	14
7	12	19	5	3	8	13,854	11,837	25,691	15
3	4	7	60	52	112	7,606	6,385	13,991	16
6	3	9	27	27	54	11,987	9,642	21,629	17
2	5	7	1	...	1	8,639	6,717	15,356	18
13	13	26	5	2	7	12,038	10,016	22,054	19
2	...	2	...	1	1	5,568	4,406	9,974	20
51	27	78	8	12	20	15,404	12,865	28,269	21
18	16	34	58	55	113	9,619	8,646	18,265	22
...	...	...	1	...	1	4,390	3,559	7,949	23
...	1	1	2	...	2	5,356	4,507	9,863	24
10	12	22	8	7	15	5,478	4,472	9,950	25
13	14	27	5	3	8	12,702	11,625	24,327	26
2	1	3	2	1	3	10,055	9,268	19,323	27
1	...	1	...	...	...	10,406	8,311	18,717	28
5	4	9	4	3	7	7,942	7,186	15,128	29
...	...	...	1	6	7	8,192	6,835	15,027	30
5	4	9	7	8	15	31,569	27,012	58,581	31
2	1	3	4	...	4	22,615	19,532	42,147	32
1	1	2	...	...	...	16,044	14,290	30,334	33
7	3	10	16	16	32	4,356	3,779	8,135	34
16	23	39	8	7	15	6,615	6,845	13,460	35
3	...	3	2	3	5	7,211	7,292	14,503	36
39	20	59	9	10	19	9,679	8,903	18,582	37
...	...	...	1	1	2	9,023	6,895	15,918	38
...	...	...	2	2	4	7,809	6,481	14,290	39
3	2	5	8	7	15	12,969	11,025	23,994	40
4	5	9	5	4	9	11,889	9,899	21,788	41
8	2	10	7	7	14	11,089	9,076	20,165	42
1	...	1	7	4	11	14,845	12,763	27,608	43
2	1	3	5	2	7	11,946	9,920	21,866	44
1	...	1	8	3	11	11,080	9,584	20,664	45
...	1	1	...	...	...	12,404	10,370	22,774	46
...	...	...	1	...	1	8,421	6,911	15,332	47
...	...	...	9	4	13	10,476	8,724	19,200	48
432	412	844	1,044	935	1,979	550,457	474,618	1,025,075	



## Deaths registered according to classes and sexes

1 Number.	2 District.	Muhammadans.			Hindus.		
		Male.	Female.	Total.	Male.	Female.	Total.
		MEERUT DIVISION.					
1	Dehra Dun ...	17·99	31·51	22·85	22·01	27·91	24·38
2	Saharanpur ...	31·33	35·42	33·19	30·56	31·87	30·98
3	Muzaffarnagar ...	25·59	26·13	25·93	22·72	24·05	23·32
4	Meerut ...	23·00	24·47	23·71	26·54	27·21	26·85
5	Bulandshahr ...	25·04	26·49	25·73	26·24	26·76	26·49
AGRA DIVISION.							
6	Aligarh ...	23·16	28·01	25·38	24·65	25·74	25·14
7	Muttra ...	17·09	20·49	18·62	19·15	19·62	19·36
8	Agra ...	24·66	29·92	27·03	25·26	26·78	25·95
9	Mainpuri ...	18·58	16·93	17·84	23·39	20·80	22·21
10	Etah ...	20·68	21·44	21·03	24·09	22·77	23·50
ROHILKHAND DIVISION.							
11	Bareilly ...	31·14	32·89	31·96	34·95	36·26	35·56
12	Bijnor ...	32·24	33·78	32·94	34·63	34·28	34·47
13	Budaun ...	29·72	32·53	31·04	29·89	29·47	29·70
14	Moradabad ...	30·47	33·93	32·11	32·95	33·75	33·32
15	Shahjahanpur ...	28·84	30·77	29·76	31·11	30·81	30·97
16	Pilibhit ...	35·54	31·74	33·70	32·72	31·50	32·15
ALLAHABAD DIVISION.							
17	Farrukhabad ...	24·18	21·91	23·11	25·96	25·53	25·76
18	Etawah ...	26·02	30·07	28·00	21·31	19·99	20·72
19	Cawnpore ...	24·92	30·79	27·49	18·37	18·53	18·44
20	Fatehpur ...	18·24	14·88	16·58	16·13	14·13	15·18
21	Allahabad ...	20·68	20·04	20·05	21·49	18·67	20·12
JHANSI DIVISION.							
22	Jhansi ...	25·49	31·86	28·35	31·46	30·07	30·78
23	Jalaun ...	20·12	18·19	19·26	20·70	19·18	19·72
24	Hamirpur ...	20·31	18·50	19·39	22·75	19·91	21·39
25	Banda ...	16·42	15·67	16·47	18·21	15·53	16·94
BENARES DIVISION.							
26	Benares ...	27·77	32·25	29·92	25·92	24·27	25·12
27	Mirzapur ...	26·31	24·53	25·44	27·99	25·72	26·82
28	Jaunpur ...	15·96	16·04	16·00	18·33	14·15	16·14
29	Ghazipur ...	21·09	20·56	20·82	19·77	18·59	19·20
30	Ballia ...	22·20	19·12	20·63	19·05	16·75	17·94
GORAKHPUR DIVISION.							
31	Gorakhpur ...	17·81	15·81	16·83	19·18	16·91	18·06
32	Basti ...	20·51	17·83	19·20	23·46	21·37	22·44
33	Azamgarh ...	22·71	23·24	22·98	20·42	18·42	19·44
KUMAUN DIVISION.							
34	Naini Tal ...	37·69	47·24	41·59	24·86	29·61	26·89
35	Almora ...	20·11	26·20	22·49	24·96	25·80	25·38
36	Garhwal ...	9·28	30·86	15·67	31·28	28·94	30·06
LUCKNOW DIVISION.							
37	Lucknow ...	24·76	29·72	27·07	24·94	26·27	25·55
38	Unao ...	18·87	18·48	18·69	21·01	17·85	19·52
39	Rae Bareilly ...	17·22	16·04	16·63	16·38	13·84	15·13
40	Sitapur ...	20·30	19·65	19·99	22·65	22·10	22·40
41	Hardoi ...	19·52	21·09	20·27	20·43	19·77	20·12
42	Kheri ...	19·21	17·63	18·46	23·49	21·83	22·71
FYZABAD DIVISION.							
43	Fyzabad ...	21·84	19·68	20·76	25·67	22·15	23·92
44	Gonda ...	15·25	13·19	14·23	15·99	13·90	14·97
45	Bahraich ...	18·06	17·90	17·98	20·49	19·00	19·78
46	Sultanpur ...	23·00	19·00	20·92	25·35	20·55	22·92
47	Partabgarh ...	15·45	14·52	14·98	20·77	15·95	18·29
48	Bara Banki ...	19·36	18·19	18·78	19·55	17·60	18·62
Total for the Province ...		23·77	24·36	24·05	23·27	21·77	22·56

## FORM No. V.

in the districts of the United Provinces during the year 1927—(concluded).

7									8
Ratio of deaths per 1,000 of population.									
Christians.			Other classes.			Total.			Number.
Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	
11.25	14.22	12.66	18.82	16.88	18.16	21.11	27.80	23.76	1
2.73	3.65	3.10	6.89	9.14	7.84	30.22	32.56	31.27	2
.58	2.02	1.25	14.51	14.44	14.48	23.11	24.19	23.60	3
1.12	.92	1.03	4.74	6.14	5.34	24.52	25.42	24.93	4
1.61	1.61	1.61	3.05	3.36	3.19	25.15	25.82	25.47	5
.91	1.34	1.12	.45	.32	.39	23.68	25.16	24.36	6
...	.72	.33	1.91	3.04	2.39	18.61	19.38	18.96	7
3.33	3.43	3.37	1.28	.55	.96	24.57	26.55	25.46	8
1.93	2.90	2.38	.34	.15	.26	22.55	20.10	21.45	9
1.90	2.27	2.08	3.70	3.23	3.49	23.13	22.06	22.64	10
5.15	6.13	5.61	15.19	21.03	17.73	33.39	34.81	34.04	11
7.39	10.71	9.08	9.66	13.71	11.49	33.14	33.61	33.36	12
1.29	3.06	2.13	11.34	8.38	10.00	29.37	29.51	29.44	13
5.25	7.00	6.10	7.35	7.85	7.58	31.44	33.19	32.26	14
3.96	7.11	5.49	4.21	3.76	4.03	30.59	30.64	30.62	15
2.10	3.15	2.59	85.96	88.43	87.09	33.19	31.53	32.42	16
3.84	2.06	2.98	8.07	9.55	8.75	25.56	24.87	25.25	17
2.89	9.11	5.64	.28	...	.15	21.12	20.40	20.93	18
3.65	5.49	4.33	2.61	1.41	2.10	18.89	19.59	19.20	19
8.81	...	5.01	...	.96	.44	16.30	14.17	15.29	20
12.38	9.73	11.34	7.71	18.96	11.97	21.33	18.86	20.13	21
6.50	11.58	8.19	9.58	10.54	10.00	30.48	29.72	30.11	22
...	...	...	1.21	...	.68	20.57	18.53	19.60	23
...	2.10	1.50	4.43	...	2.31	22.59	19.75	21.20	24
104.17	109.01	131.74	18.26	17.34	17.83	18.20	15.58	16.92	25
13.93	15.15	14.54	10.73	9.12	10.06	26.07	25.07	25.58	26
5.42	2.36	3.77	2.50	1.18	1.82	27.80	25.56	26.68	27
14.08	...	8.26	...	...	...	18.11	14.31	16.20	28
25.20	22.10	24.07	32.00	24.59	28.54	19.90	18.79	19.35	29
...	...	...	3.56	26.20	13.72	19.21	16.90	18.08	30
10.68	10.39	10.55	5.36	7.66	6.38	19.03	16.80	17.93	31
34.48	17.86	26.31	21.39	...	12.69	22.96	20.77	21.89	32
14.28	21.28	17.09	..	...	...	20.68	19.00	19.85	33
5.21	2.72	4.09	7.27	9.01	8.05	27.09	32.55	29.38	34
23.84	26.25	25.21	43.24	58.82	49.34	24.94	25.82	25.38	35
6.11	..	3.08	17.24	71.43	31.64	30.97	28.90	29.89	36
8.09	7.37	8.11	9.06	17.70	12.19	24.66	26.83	25.65	37
..	...	...	2.09	2.49	2.27	20.81	17.88	19.43	38
...	...	...	12.66	15.50	13.94	16.45	14.04	15.26	39
9.97	6.99	8.52	20.00	22.51	21.13	22.30	21.71	22.02	40
8.93	9.24	9.11	3.41	3.51	3.44	20.28	19.87	20.09	41
23.67	7.75	16.78	16.39	17.77	17.05	22.85	21.19	22.07	42
.87	...	.70	26.30	18.96	23.06	25.21	21.87	23.54	43
5.21	4.95	6.17	44.25	24.69	36.08	15.87	13.77	14.84	44
6.71	...	4.00	12.31	5.18	8.95	19.80	18.76	19.39	45
...	10.42	7.69	...	...	...	25.08	20.36	22.68	46
...	...	...	5.92	...	3.19	20.18	15.79	17.93	47
...	...	...	15.82	8.30	12.37	19.51	17.69	18.64	48
3.96	4.49	4.20	6.53	7.27	6.86	23.14	21.98	22.59	

Deaths from **different causes** and births registered in the towns  
(such towns) of the United

1 Number.	2 Districts and towns.	3 Popula- tion according to census of 1921.	4 Births.			5 Birth-rate per 1,000 of popula- tion.	6 Cholera.	7 Small-pox.	8 Plague.
			Male.	Female.	Total.				
<i>A.—Rural districts.</i>									
MEERUT DIVISION.									
1	Dehra Dun ...	170,446	2,352	2,007	4,359	25.57	20	23	...
2	Saharanpur ...	802,435	17,942	15,898	33,840	42.17	12	80	309
3	Muzaffarnagar ...	743,280	14,882	12,719	27,601	37.13	11	17	724
4	Meerut ...	1,388,632	28,624	24,864	53,488	38.52	498	15	322
5	Bulandshahr ...	994,155	22,732	19,918	42,650	42.90	39	60	51
AGRA DIVISION.									
6	Aligarh ...	943,001	20,920	18,582	39,502	41.88	186	25	4
7	Muttra ...	555,782	8,650	7,192	15,842	28.50	78	13	44
8	Agra ...	740,222	14,538	12,730	27,268	36.84	67	24	77
9	Mainpuri ...	723,301	11,833	10,174	22,007	30.42	38	8	...
10	Etah ...	797,813	14,384	12,669	27,053	33.91	110	54	...
ROHILKHAND DIVISION.									
11	Bareilly ...	881,568	21,256	19,344	40,600	46.05	144	75	406
12	Bijnor ...	645,057	16,040	14,431	30,471	47.24	23	102	215
13	Budaun ...	909,071	19,662	17,853	37,515	41.27	64	69	465
14	Moradabad ...	1,008,785	25,748	23,473	49,216	48.79	53	58	487
15	Shahjahanpur ...	753,749	18,033	16,499	34,532	45.81	241	28	125
16	Pilibhit ...	399,257	9,065	8,110	17,175	43.02	202	4	12
ALLAHABAD DIVISION.									
17	Farrukhabad ...	790,044	16,589	14,998	31,587	39.98	235	13	..
18	Etawah ...	691,974	12,666	11,143	23,809	34.41	38	5	...
19	Cawnpore ...	953,579	15,069	12,676	27,745	39.58	7	20	204
20	Fatehpur ...	637,444	11,353	9,921	21,274	33.37	3	25	61
21	Allahabad ...	1,258,840	23,216	20,358	43,574	34.61	423	454	326
JHANSI DIVISION.									
22	Jhansi ...	528,056	12,402	11,111	23,513	44.53	1,054	11	...
23	Jalaun ...	380,899	7,034	6,317	13,351	35.05	194	2	...
24	Hamirpur ...	453,675	10,731	9,642	20,373	44.91	...	2	5
25	Banda ...	568,007	10,703	9,178	19,881	35.00	29	70	...
BENARES DIVISION.									
26	Benares ...	756,658	14,419	12,895	27,314	36.10	688	357	24
27	Mirzapur ...	669,189	13,362	12,317	25,679	38.37	2,431	438	37
28	Jaunpur ...	1,122,536	17,392	14,932	32,324	28.78	577	216	167
29	Ghazipur ...	756,862	12,807	11,271	24,078	31.81	711	526	1,881
30	Ballia ...	812,794	14,116	11,977	26,093	32.10	1,219	211	642
GORAKHPUR DIVISION.									
31	Gorakhpur ...	3,203,835	57,508	53,138	110,646	34.53	1,928	1,182	1,206
32	Basti ...	1,907,537	32,957	29,385	62,342	32.68	4,600	297	861
33	Azamgarh ...	1,482,726	25,678	23,626	49,304	33.25	229	968	3,029
KUMAON DIVISION.									
34	Naini Tal ...	255,907	4,216	3,781	7,997	31.25	174	9	122
35	Almora ...	530,338	11,876	11,455	23,331	43.99	1,640	47	7
36	Garhwal ...	485,186	10,293	10,270	20,563	42.38	1,641	39	...
LUCKNOW DIVISION.									
37	Lucknow ...	507,177	10,282	9,160	19,442	38.14	30	91	114
38	Unao ...	807,981	14,431	12,446	26,877	33.26	14	83	231
39	Rae Bareli ...	920,220	12,516	10,851	23,367	25.39	417	17	259
40	Sitapur ...	1,048,342	20,166	17,756	37,922	36.17	18	47	324
41	Hardoi ...	1,037,228	20,966	18,766	39,732	38.30	67	44	198
42	Kheri ...	901,079	17,602	15,260	32,862	36.47	231	38	257
FYZABAD DIVISION.									
43	Fyzabad ...	1,102,975	19,172	16,492	35,664	32.33	4,300	499	560
44	Gonda ...	1,443,739	22,831	19,085	41,916	29.03	479	61	28
45	Bahraich ...	1,027,082	18,483	16,080	34,563	33.65	23	195	...
46	Sultanpur ...	1,003,912	18,049	15,968	34,017	33.88	1,620	122	34
47	Partabgarh ...	855,130	14,580	12,736	37,316	31.94	435	106	1
48	Bara Banki ...	1,007,258	17,288	14,966	32,254	32.02	177	21	458
Total of Rural districts		42,364,763	807,409	716,420	1,523,829	35.97	27,418	6,871	14,277

## FORM NO. VI.

(having a population of 10,000 and upwards) and **Districts** (exclusive of Provinces during the year 1927.

8	9	10	11						12	13	Number.
			Injuries.								
			Suicide.		Wounds or accidents.	Snake-bite or killed by wild beasts.	Rabies.	Total.			
Male.	Female.										
3,107	194	242	4	1	40	5	3	53	337	3,976	1
22,230	36	110	8	10	192	20	1	231	218	23,226	2
15,904	108	97	17	15	112	11	4	159	215	17,235	3
32,949	55	259	21	67	273	39	6	406	398	34,902	4
22,912	323	315	13	37	253	34	7	344	654	24,698	5
18,468	135	174	11	32	187	40	9	279	1,843	21,114	6
7,975	58	76	3	20	140	22	4	189	415	8,848	7
13,442	26	74	26	50	231	46	1	354	1,662	15,726	8
14,523	4	11	18	53	206	82	7	366	722	15,672	9
15,479	143	175	13	37	254	46	18	368	1,428	17,757	10
26,994	81	150	9	19	235	190	6	459	1,780	30,089	11
17,835	96	135	8	16	161	144	5	334	2,705	21,445	12
24,062	77	64	27	37	219	69	1	353	552	25,706	13
29,597	199	208	2	4	225	120	5	356	399	31,297	14
19,002	26	77	20	29	183	116	16	364	2,716	22,579	15
10,932	26	49	3	4	146	177	29	359	902	12,486	16
15,307	59	96	13	58	228	56	6	361	3,104	19,175	17
9,952	25	55	12	21	214	51	4	302	2,794	13,171	18
11,108	18	28	8	18	247	95	2	370	2,264	14,019	19
6,395	19	54	5	13	202	90	3	313	2,745	9,615	20
16,882	75	159	13	31	427	217	25	713	4,590	23,622	21
11,111	76	125	19	50	184	79	4	336	2,482	15,195	22
5,662	13	42	7	26	64	67	..	164	1,173	7,250	23
6,437	29	2,504	12	42	141	86	3	284	358	9,619	24
7,056	7	216	9	20	154	142	2	327	1,939	9,644	25
10,265	17	55	9	15	194	109	2	329	3,331	15,066	26
11,431	36	66	7	24	191	127	1	350	3,210	17,999	27
12,877	13	24	12	38	389	192	3	634	3,561	18,069	28
9,322	29	49	2	8	241	106	3	360	1,878	14,756	29
9,297	353	139	6	11	277	110	5	409	2,453	14,713	30
44,411	84	91	3	33	885	460	34	1,415	6,270	56,587	31
28,179	82	77	1	4	377	148	1	531	7,232	41,859	32
19,478	60	95	14	58	526	218	2	818	4,764	29,441	33
6,727	70	126	2	8	48	37	4	99	138	7,465	34
9,793	695	597	9	24	124	44	4	205	536	13,460	35
10,002	2,021	364	15	24	122	40	5	206	230	14,503	36
8,676	61	152	3	5	123	22	11	164	1,508	10,796	37
13,087	43	120	5	13	227	69	10	324	1,691	15,593	38
11,486	21	45	20	20	277	56	5	378	1,144	13,767	39
19,650	29	64	23	22	319	105	4	473	2,109	22,714	40
17,252	45	45	25	54	252	76	7	414	2,212	20,277	41
17,047	24	38	20	29	265	134	10	458	1,769	19,862	42
16,696	44	78	5	15	312	117	3	452	3,222	25,851	43
17,472	19	119	4	8	347	237	25	621	2,346	21,145	44
15,183	22	25	8	3	274	184	9	478	3,833	19,759	45
16,832	50	101	11	22	296	117	5	451	3,564	22,774	46
11,987	18	84	10	25	281	56		372	2,329	15,332	47
15,317	37	71	12	21	246	103	3	385	2,241	18,707	48
737,788	5,721	8,110	527	1,194	11,511	4,911	327	18,470	99,906	918,561	

## ANNUAL FORM NO. VI.

Deaths from **different causes** and births registered in the **towns** (having a population of 10,000 and upwards) and **Districts** (exclusive of such towns) of the United Provinces during the year 1927—(contd.).

1 Number.	2 Districts and towns.	3 Popula- tion according to census of 1921.	14 Ratio of deaths per 1,000 of population.								From all causes.	
			Cholera.	Small-pox.	Plague.	Fevers.	Dysentery and diarrhoea.	Respiratory dis- eases.	Injuries.	All other causes.	For the year.	Mean ratio of previous five years.
<i>A.—Rural Districts—</i>												
<i>(concl.)</i>												
MEERUT DIVISION.												
1	Dehra Dun ...	170,446	·12	·18	...	18·23	1·14	1·42	·31	1·98	23·33	20·28
2	Saharanpur ...	802,435	·01	·10	·38	27·70	·04	14	·29	·27	28·94	28·74
3	Muzaffarnagar ...	743,280	·01	·02	·97	21·40	·15	·13	·21	·29	23·19	23·02
4	Meerut ...	1,388,632	·36	·01	·23	23·73	·04	·18	·29	·29	25·13	31·03
5	Bulandshahr ...	994,155	·04	·06	·05	23·05	·32	·32	·34	·66	24·84	35·13
AGRA DIVISION.												
6	Aligarh ...	943,001	·20	·03	...	19·58	·14	·18	·30	1·95	22·39	27·71
7	Muttra ...	555,782	·14	·02	·08	14·35	·10	·14	·34	·75	15·92	21·66
8	Agra ...	740,222	·09	·03	·10	18·16	·03	·10	·48	2·25	21·24	24·85
9	Mainpuri ...	723,301	·05	·01	...	20·08	...	·01	·51	1·00	21·66	26·79
10	Etah ...	797,813	·14	·07	..	19·40	·18	·22	·46	1·79	22·26	23·88
ROHILKHAND DIVISION.												
11	Bareilly ...	881,568	·16	·08	·4	30·62	09	·17	·52	2·02	34·13	28·39
12	Bijnor ..	645,057	·03	·16	·33	27·65	·15	·21	·52	4·19	33·24	30·63
13	Budaun ...	909,071	·07	·07	·50	26·47	·08	·07	·39	·61	28·27	27·27
14	Moradabad ...	1,008,785	·05	·03	·48	29·34	·20	·20	·35	·34	31·02	29·95
15	Shahjahanpur ...	753,749	·32	·04	·17	25·21	·03	·10	·48	3·60	29·95	30·73
16	Pilibhit ...	399,257	·51	·01	·03	27·38	·06	·12	·90	2·26	31·27	29·55
ALLAHABAD DIVISION.												
17	Farrukhabad ...	790,044	·30	·02	...	19·37	·07	·12	·46	3·98	24·27	34·91
18	Etawah ...	691,974	·05	·01	...	14·38	·04	·08	·43	4·04	19·03	26·25
19	Cawnpore ...	953,579	01	·02	·21	11·65	·02	·03	·39	2·37	14·70	22·43
20	Fatehpur ...	637,444	...	·04	·09	10·03	·03	·08	·49	4·31	15·03	20·37
21	Allahabad ...	1,258,840	·33	·36	·26	13·41	·06	·12	·57	3·65	18·76	21·73
JHANSI DIVISION.												
22	Jhansi ...	528,056	2·00	·02	...	21·04	·14	·24	·63	4·70	28·77	31·65
23	Jalaun ...	380,899	·51	...	...	14·86	·03	·11	·43	·08	19·03	26·43
24	Hamirpur ...	453,675	...	...	·01	14·19	·06	5·52	·62	·79	21·20	35·34
25	Banda ...	568,007	·05	·12	..	12·42	·01	·38	·57	3·41	16·98	27·30
BENARES DIVISION.												
26	Benares ...	756,658	·91	·47	·03	13·57	·02	·07	·43	4·40	19·91	23·47
27	Mirzapur ...	669,189	3·63	·65	·05	17·03	·05	·10	·52	4·80	26·89	26·10
28	Jaunpur ...	1,122,536	·51	·19	·15	11·47	·01	·02	·56	3·17	16·09	21·03
29	Ghazipur ...	756,862	·94	·69	2·48	12·32	·04	·06	·48	2·48	19·49	26·29
30	Ballia ...	812,794	1·50	·26	·79	11·44	·43	·16	·50	3·02	18·10	22·85
GORAKHPUR DIVISION.												
31	Gorakhpur ...	3,203,835	·60	·37	·38	13·86	·03	·03	·42	1·96	17·66	17·62
32	Basti ...	1,907,537	2·41	·15	·45	14·77	·04	·04	·28	3·79	21·94	22·51
33	Azamgarh ...	1,482,726	·15	·65	2·04	13·14	·04	·06	·55	3·21	19·85	29·67
KUMAUN DIVISION.												
34	Naini Tal ...	255,907	·68	·03	·48	26·29	·27	·49	·39	·54	29·17	30·36
35	Almora ...	530,338	3·09	·09	·01	18·46	1·20	1·13	·39	1·01	25·38	25·72
36	Garhwal ...	485,186	3·38	·08	...	20·61	4·17	·75	·42	·47	29·89	26·61
LUCKNOW DIVISION.												
37	Lucknow ...	507,177	·06	·18	·22	17·11	·12	·30	·32	2·97	21·28	20·83
38	Unao ...	807,981	·02	·10	·28	16·20	·05	·15	·40	2·09	19·30	22·62
39	Rae Bareilly ...	920,220	·45	·02	·28	12·48	·02	·05	·41	1·24	14·96	18·15
40	Sitapur ...	1,048,342	·02	·04	·31	18·74	·03	·06	·45	2·01	21·66	22·66
41	Hardoi ...	1,037,228	·06	·04	·19	16·63	·04	·04	·40	2·13	19·55	23·78
42	Kheri ...	901,079	·26	·04	·28	18·92	·03	·04	·51	1·96	22·04	22·73
FYZABAD DIVISION.												
43	Fyzabad ...	1,102,975	3·90	·45	·51	15·14	·04	·07	·41	2·92	23·44	22·28
44	Gonda ...	1,443,739	·33	·04	·02	12·10	·01	·08	·43	1·62	14·64	14·07
45	Bahraich ...	1,027,082	·02	·19	..	14·78	·02	·02	·46	3·73	19·24	19·94
46	Sultanpur ...	1,003,912	1·61	·12	·03	16·77	·05	·10	·45	3·55	22·68	25·46
47	Partabgarh ...	855,130	·51	·12	...	14·02	·02	·10	·43	2·72	17·93	21·66
48	Bara Banki ...	1,007,258	·17	·02	·45	15·21	·04	·07	·38	2·22	18·56	21·92
Total of Rural districts		42,364,763	·65	·16	·33	17·41	·13	·19	·44	2·36	21·68	24·50

## ANNUAL FORM No. VI.

Paragraphs 26, 38, 39, 40, 41, 45-48 and 52-57.]

Deaths from **different causes** and Births registered in the **Towns** (having a population of 10,000 and upwards) and **districts** (exclusive of such towns) of the United Provinces during the year 1927—(contd.).

1 Number.	2 Districts.	3 Towns.	4 Popula- tion according to census of 1921.	5 Births.			Birth-rate per 1,000 of population.	6 Cholera.	7 Small-pox.	8 Plague.
				Male.	Female.	Total.				
		<i>B.—Towns.</i>								
1	Dehra Dun	Dehra ...	33,500	652	588	1,240	36.01	4	9	...
2		Mussooree ...	(a) 8,297	79	88	167	12.90	...	1	...
3	Saharanpur	Hardwar Union ...	30,795	652	545	1,197	38.87	52	20	2
4		Saharanpur ...	62,261	1,781	1,565	3,346	53.74	7	23	19
5		Deoband ...	17,891	554	477	1,031	57.63	2	12	...
6		Gangoh ...	11,843	309	313	622	52.52	1	5	7
7		Roorkee ...	12,246	247	220	467	38.13	...	3	1
8	Muzaffar- nagar.	Kairana ...	16,683	397	347	744	44.60	1	2	...
9		Kandhla ...	10,365	232	187	419	40.42	...	2	39
10		Muzaffarnagar ...	23,937	549	525	1,074	44.87	4	8	24
11	Meerut	Meerut ...	77,711	1,405	1,193	2,598	33.43	5	1	...
12		Hapur ...	20,388	564	568	1,132	55.52	10	...	...
13		Ghaziabad ...	12,343	285	271	556	45.04	7	...	...
14	Buland- shahr.	Khurja ...	25,719	732	704	1,436	55.83	...	...	2
15		Sikandrabad ...	16,857	499	481	980	58.14	...	1	10
16		Bulandshahr ...	19,509	467	461	928	47.57	6	1	1
17		Jahangirabad ...	10,279	255	199	454	44.17	2	...	46
18	Aligarh	Aligarh or Koil .	66,963	1,815	1,689	3,504	52.33	10	..	...
19		Hathras ...	38,763	1,055	1,036	2,091	53.94	10	...	...
20		Atrauli ...	13,018	386	368	754	57.92	...	1	...
21	Muttra	Muttra ...	48,724	1,301	1,210	2,511	51.53	30	8	...
22		Brindaban ...	14,632	247	251	498	34.03	47	44	...
23	Agra	Agra ...	163,750	5,390	5,357	10,747	65.63	16	4	...
24		Firozabad ...	20,183	486	468	954	47.27	...	...	...
25	Mainpuri	Mainpuri ...	14,352	140	96	236	16.44	13	...	...
26		Sbikohabad ...	10,374	168	137	305	29.40	...	3	...
27	Etah	Kasganj ...	20,988	442	405	847	40.36	2	6	...
28		Soron ...	10,959	287	277	564	51.46	1	..	...
29	Bareilly	Bareilly ...	119,175	2,524	2,345	4,869	40.85	40	48	367
30		Aonla ...	13,132	433	410	843	64.19	2	8	288
31	Bijnor	Nagina ...	18,736	502	465	967	51.63	6	11	...
32		Najibabad ...	18,504	480	473	953	51.50	53	...	...
33		Bijnor ...	18,095	459	429	888	49.07	3	2	...
34		Sherkot ...	13,889	153	152	305	21.96	2	8	...
35		Chandpur ...	11,032	364	347	711	64.45	1	...	1
36		Kiratpur ...	14,869	229	217	446	29.99	26	15	1
37	Budaun	Ujhani ...	11,186	216	215	431	38.53	...	..	81
38		Budaun ...	39,118	1,196	1,018	2,214	56.60	...	2	4
39		Sahaswan ...	15,972	497	458	955	59.79	1	...	...
40		Moradabad ...	82,671	2,588	2,350	4,938	59.73	18	2	7
41	Moradabad	Sambhal ...	41,585	1,177	1,087	2,264	54.44	1	...	37
42		Amroha ...	40,448	1,244	1,194	2,438	60.27	4	3	...
43		Chandausi ...	25,164	780	695	1,475	58.61	...	...	3
44	Shahjahan- pur.	Tilhar ...	16,584	488	461	949	57.22	3	86	1
45		Shahjahanpur ...	68,782	1,622	1,495	3,117	45.32	...	5	48

(a) Rates calculated on average population 12,943.

Deaths from **different causes** and Births registered in the **Towns**  
(such towns) of the United Provinces

1	2	3	4	9	10	11	12			
							Suicide.		Injuries	
Number.	Districts.	Towns.	Popula- tion according to census of 1921.	Fevers.	Dysentery and diarrhoea.	Respiratory diseases.	Male.	Female.	Wounds or acci- dents.	Snake-bite or killed by wild beasts.
		<i>B.—Towns—</i> (contd.).								
1	Dehra Dun	Dehra ..	33,500	256	71	350	1	..	25	1
2		Mussooree ..	(a)8,297	28	3	33	1	..	3	..
3	Saharanpur	Hardwar Union ...	30,795	790	73	156	..	..	64	1
4		Saharanpur ...	62,261	1,885	81	313	1	1	52	..
5		Deoband ...	17,891	478	15	12	1	..	7	1
6		Gangoh ...	11,843	155	34	43	..	..	9	..
7	Roorkee ...	12,246	381	24	9	..	..	4	1	
8	Muzaffar- nagar.	Kairana ...	16,683	497	..	1	..	..	1	1
9		Kandhla ...	10,365	238	8	3	..	..	3	..
10		Muzaffarnagar ...	23,937	389	43	83	..	1	19	..
11	Meerut	Meerut ...	77,711	631	111	523	3	..	9	..
12		Hapur ...	20,388	269	72	179	..	..	21	..
13		Ghaziabad ...	12,343	226	7	33	..	..	2	..
14	Buland- shahr.	Khurja ...	25,719	537	92	187	..	1	23	..
15		Sikandrabad ...	16,857	425	27	73	1	..	6	..
16		Bulandshahr ...	19,509	220	34	244	..	..	16	1
17		Jahangirabad ...	10,279	140	3	12	..	..	3	..
18	Aligarh	Aligarh or Koil ...	66,963	1,220	239	503	1	..	50	1
19		Hathras ...	38,763	549	223	330	..	..	32	..
20		Atrauli ...	13,018	205	193	2	..	..	6	..
21	Muttra	Muttra ...	48,724	552	143	632	..	..	40	1
22		Brindaban ...	14,632	623	63	127	..	..	7	..
23	Agra	Agra ..	163,750	2,835	972	2,352	6	4	170	1
24		Firozabad ...	20,183	326	65	30	..	..	8	..
25	Mainpuri	Mainpuri ...	14,352	140	..	5	..	..	1	..
26		Shikohabad ...	10,374	162	4	26	..	..	4	..
27	Etah	Kasganj ...	20,988	415	61	42	1	..	9	..
28		Soron ...	10,959	298	34	25	..	..	6	..
29	Bareilly	Bareilly ...	119,175	1,362	65	855	3	3	58	3
30		Aonla ...	13,132	304	61	72	..	..	9	..
31	Bijnor	Nagina ...	18,736	272	110	145	2	..	13	4
32		Najibabad ...	18,504	489	7	21	..	1	7	4
33		Bijnor ...	18,095	367	53	18	1	..	17	3
34		Sherkot ...	13,889	168	14	8	..	..	1	1
35		Chandpur ...	11,032	216	45	15	..	..	2	..
36		Kiratpur ..	14,869	169	31	28	..	1	10	..
37	Budaun	Ujhani ..	11,186	288	15	18	..	..	2	..
38		Budaun ...	39,118	1,126	69	123	1	1	20	1
39		Sahaswan ...	15,972	498	48	41	..	..	7	..
40	Moradabad	Moradabad ...	82,671	1,934	259	480	2	..	47	1
41		Sambhal ..	41,585	815	177	471	..	1	25	..
42		Amroha ...	40,448	525	109	280	..	2	13	..
43		Chandausi ...	25,164	344	102	292	..	1	9	1
44	Shahjahan- pur.	Tilhar ...	16,584	411	32	75	..	..	10	1
45		Shahjahanpur ...	68,782	712	170	792	..	..	27	6

## FORM No. VI.

(having a population of 10,000 and upwards) and **districts** (exclusive of during the year 1927—(continued).

		13	14	15										Ratio of deaths per 1,000 of population.		From all causes.		Number.
Rabies.	Total.	All other causes.	Total deaths from all causes.	Cholera.	Smallpox.	Plague.	Fevers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	For the year.	Mean ratio of previous five years.					
..	27	244	961	.12	.27	..	7.64	2.12	10.44	.81	7.28	28.68	24.81	1				
..	4	37	106	..	.08	..	2.16	.23	2.55	.31	2.86	8.19	10.40	2				
..	65	409	1,567	1.69	.65	.07	25.65	2.37	5.06	2.11	13.28	50.88	37.20	3				
..	54	703	3,085	.11	.37	.30	30.27	1.30	5.03	.87	11.29	49.55	46.54	4				
..	9	103	631	.11	.67	..	26.72	.84	.67	.50	5.76	35.27	32.74	5				
..	9	70	324	.08	.42	.59	13.09	2.87	3.63	.76	5.91	27.36	31.76	6				
..	5	58	481	..	.24	.08	31.11	1.96	.73	.41	4.74	39.28	36.22	7				
..	2	2	505	.06	.12	..	29.79	..	.06	.12	.12	30.27	34.48	8				
..	3	23	316	..	.19	3.76	22.96	.77	.29	.29	2.22	30.49	34.10	9				
1	21	117	689	.17	.33	1.00	16.25	1.79	3.47	.88	4.89	28.78	25.22	10				
2	13	209	1,493	.06	.01	..	8.12	1.43	6.73	.17	2.69	19.21	26.24	11				
..	21	138	689	.49	..	..	13.19	3.53	8.78	1.03	6.77	33.79	46.18	12				
..	2	18	293	.57	..	..	18.31	.57	2.67	.16	1.46	23.74	40.46	13				
1	25	204	1,047	..	..	.08	20.38	3.58	7.27	.97	7.93	40.71	54.21	14				
1	8	75	619	..	.06	.59	25.21	1.60	4.33	.47	4.45	36.71	50.74	15				
1	18	53	577	.31	.05	.05	11.28	1.74	12.51	.92	2.72	29.58	41.58	16				
..	3	16	222	.19	..	4.47	13.62	.29	1.17	.29	1.56	21.60	30.82	17				
1	53	477	2,502	.15	..	..	18.22	3.57	7.51	.79	7.12	37.36	42.32	18				
1	33	564	1,709	.26	..	..	14.16	5.75	8.51	.85	14.55	44.09	51.41	19				
2	8	128	537	..	.08	..	15.75	14.82	.15	.61	9.83	41.25	40.09	20				
..	41	498	1,904	.61	.16	..	11.33	2.93	12.97	.84	10.22	39.07	43.21	21				
1	8	74	986	3.21	3.01	..	42.58	4.30	8.68	.55	5.06	67.39	55.58	22				
4	185	1,336	7,100	.10	.02	..	17.31	2.27	14.36	1.13	3.16	43.36	41.70	23				
..	8	277	706	..	..	..	16.15	3.22	1.49	.40	13.72	34.98	32.78	24				
..	1	5	164	.90	..	..	9.75	..	.35	.07	.35	11.43	17.29	25				
..	4	11	210	..	.29	..	15.61	.38	2.51	.38	1.06	20.24	14.92	26				
..	10	51	587	.09	.28	..	19.77	2.91	2.00	.48	2.43	27.97	26.57	27				
..	6	76	440	.09	..	..	27.19	3.10	2.28	.55	6.93	40.15	42.36	28				
1	63	766	3,566	.33	.40	3.08	11.43	.54	7.17	.53	6.43	29.92	18.74	29				
..	9	169	863	.15	.61	18.12	23.15	4.64	5.48	.69	12.86	65.72	39.05	30				
1	20	168	732	.32	.59	..	14.52	5.87	7.74	1.07	8.96	39.07	35.49	31				
2	14	231	815	2.86	..	..	26.43	.38	1.13	.76	12.48	44.04	37.60	32				
..	21	226	690	.16	.11	..	20.28	2.92	.99	1.16	12.49	38.13	36.33	33				
1	3	5	208	.14	.57	..	12.09	1.01	.57	.21	.36	14.95	24.19	34				
..	2	177	457	.09	..	.09	19.58	4.08	1.36	.18	16.04	41.42	44.36	35				
..	11	66	347	1.75	1.01	.07	1.37	2.08	1.88	.74	4.44	23.34	18.49	36				
..	2	36	440	..	..	7.24	25.74	1.34	1.61	.18	3.22	39.33	27.17	37				
..	23	422	1,769	..	.05	.10	28.78	1.76	3.14	.59	10.79	45.22	40.18	38				
..	7	201	796	.06	..	..	31.18	3.00	2.57	.44	12.58	49.84	41.72	39				
..	50	702	3,452	.22	.02	.08	23.39	3.13	5.81	.60	8.49	41.75	38.88	40				
..	26	142	1,669	.02	..	.89	19.60	4.26	11.33	.62	3.41	40.13	40.06	41				
1	16	310	1,247	.10	.07	..	12.98	2.69	6.92	.39	7.66	30.83	37.81	42				
1	12	246	999	..	..	.12	13.67	4.05	11.60	.48	9.78	39.70	40.91	43				
..	11	226	845	.18	5.18	.06	24.78	1.93	4.52	.66	13.63	50.95	44.93	44				
3	36	509	2,267	..	.07	.63	10.35	2.47	11.51	.52	7.40	32.96	31.78	45				



Deaths from **different causes** and Births registered in the **Towns**  
 such towns) of the United Provinces during

1 Number.	2 Districts.	3 Towns.	4 Population according to census of 1921.	5 Births.			6 Birth-rate per 1,000 of population.	7 Cholera.	8 Small-pox.	9 Plague.
				Male.	Female.	Total.				
		<i>B. — Towns— (contd.)</i>								
46	Pilibhit ...	Pilibhit ...	32,344	1,010	909	1,919	59.33	13	3	...
47	Farrukhabad {	Farrukhabad- cum-Fateh- garh.	48,331	1,270	1,138	2,414	49.95	22	2	...
48		Kanauj ...	18,258	454	387	841	46.06	3	...	...
49	Etawah ...	Etawah ...	41,558	1,169	1,159	2,328	56.01	16	1	...
50	Cawnpore ...	Cawnpore ...	195,085	4,039	36,72	7,711	39.53	2	18	10
51	Fatehpur ...	Fatehpur ...	14,948	439	434	873	58.40	...	...	...
52	Allahabad ...	Allahabad ...	145,605	3,558	3,252	6,810	46.77	75	119	...
53	Jhansi {	Jhansi ...	54,385	1,612	1,400	3,012	55.38	8	10	...
54		Mau ...	12,554	382	300	682	54.32	...	1	...
55	Jalaun {	Lalitpur ...	11,504	343	299	642	55.81	3	2	...
56		Kalpi ...	10,037	282	227	509	50.71	...	1	...
57	Hamirpur {	Konch ...	14,503	439	336	775	53.44	...	...	...
58		Mahoba ...	11,648	279	235	514	44.13	...	...	...
59	Banda ...	Banda ...	20,029	327	268	595	29.71	3	3	...
60	Benares ...	Benares ...	195,373	5,133	5,112	10,245	52.44	45	60	...
61	Mirzapur ...	Mirzapur Bin- dhachal.	54,994	1,413	1,315	2,728	49.60	4	48	...
62	Jaunpur ...	Jaunpur ...	32,569	490	479	969	29.75	15	45	4
63	Ghazipur ...	Ghazipur ...	24,708	387	334	721	29.18	20	9	...
64	Ballia ...	Ballia ...	18,215	280	210	490	26.90	43	10	...
65	Gorakhpur ... {	Gaura Barhaj	12,497	203	175	378	30.25	...	...	...
66		Gorakhpur ...	50,498	1,247	1,170	2,417	47.86	64	22	1
67	Basti ...	Basti ...	17,691	198	136	334	18.88	10	45	1
68	Azamgarh ... {	Mubarakpur	12,500	303	245	548	43.84	...	2	30
69		Azamgarh ...	14,788	258	221	479	32.39	4	32	...
70	Naini Tal ... {	Mau ...	17,998	333	311	644	35.78	...	25	...
71		Naini Tal ...	(b) 10,392	203	177	380	28.24	...	3	...
72	Lucknow ... {	Kashipur ...	10,576	216	220	436	41.22	17	2	27
73		Lucknow ...	217,167	5,317	5,207	10,524	48.46	20	114	1
74	Unao ...	Unao ...	11,147	241	203	444	39.83	3	1	...
75	Rae Bareli ...	Rae Bareli ...	16,183	390	356	746	46.10	10	11	...
76	Sitapur ... {	Khairabad ...	11,522	274	247	521	45.22	15	1	...
77		Laharpur ...	11,185	231	226	457	40.86	1	16	...
78	Hardoi ... {	Sitapur ...	18,432	496	480	976	52.95	1	19	...
79		Shahabad ...	18,696	403	414	817	43.61	6	...	223
80	Kheri ... {	Sandila ...	14,074	422	387	809	57.48	2	3	...
81		Hardoi ...	14,412	225	205	430	29.84	...	...	2
82	Fyzabad ... {	Lakhimpur...	12,396	205	160	365	29.44	1	12	59
83		Fyzabad- Ajodhya.	51,342	784	709	1,493	29.08	25	...	...
84	Gonda ... {	Tanda ...	18,258	501	442	943	51.65	18	4	...
85		Gonda ...	13,228	250	206	456	34.47	1	18	...
86	Bahraich ... {	Balrampur ...	16,131	398	322	720	44.63	...	1	...
87		Bahraich ...	27,371	610	499	1,109	40.52	...	6	...
88	Bara Banki {	Nanpara ...	10,924	257	237	494	45.22	...	6	...
89		Nawabganj...	12,369	167	172	339	27.41	7	4	1
90	Rudauli ...	10,327	231	217	448	43.48	...	...	...	
		Total of Towns	3,011,024	74,008	68,647	1,42,650	35.37	837	1,023	1,293
		Total of Rural districts.	42,364,763	807,409	716,420	1,523,829	35.97	27,418	6,871	14,277
		Total for the Province.	45,375,787	881,412	785,067	1,666,479	36.73	28,285	7,894	15,570

(b) Rates calculated on population 13,454.

## FORM NO. VI.

(having a population of 10,000 and upwards) and **districts** (exclusive of the year 1927—(continued).

9	10	11	12						13	14	15			Number		
			Injuries.								All other causes.	Total deaths from all causes.	Ratio of deaths per 1,000 of population.			
			Suicide.		Wounds or accidents.	Snake bite or killed by wild beasts.	Rabies.	Total.					Cholera.		Small-pox.	Plague.
Male.	Female.															
808	87	463	...	...	23	...	...	23	108	1,505	·43	·09	...	46		
430	187	640	...	1	20	1	...	22	674	1,977	·45	·04	...	47		
316	30	36	...	..	2	2	..	4	88	477	·16	..	..	48		
803	109	445	3	3	12	4	2	24	787	2,185	·38	·02	...	49		
2,899	293	2,181	...	..	65	1	1	67	2,565	8,035	·01	·09	·05	50		
217	11	41	...	2	14	1	11	28	62	359	...	...	...	51		
1,474	243	1,158	...	...	20	9	2	31	1,547	4,647	·51	·82	...	52		
1,428	68	127	1	...	15	2	1	19	574	2,234	·15	·18	...	53		
199	23	90	...	...	6	1	...	7	85	405	...	·08	...	54		
217	38	70	...	...	15	1	...	16	85	431	·26	·17	...	55		
150	9	130	...	...	11	2	1	14	48	352	...	·10	...	56		
168	12	156	...	...	2	1	...	3	8	347	...	...	...	57		
191	1	34	...	...	11	2	...	13	5	244	...	...	...	58		
172	6	41	2	...	4	..	...	6	75	306	·15	·15	...	59		
4,887	766	1,377	6	1	202	9	1	219	1,937	9,291	·23	·31	...	60		
745	89	70	...	...	33	1	..	34	334	1,324	·07	·87	...	61		
383	32	47	1	1	15	4	1	22	100	648	·46	1·38	·12	62		
217	16	50	...	...	15	..	..	15	45	372	·81	·36	..	63		
88	30	6	...	...	5	1	..	6	131	314	2·36	·55	..	64		
129	4	1	...	...	5	1	...	6	20	160	...	...	...	65		
1,091	61	138	1	...	28	6	...	35	422	1,834	1·27	·43	·02	66		
152	11	20	...	...	6	5	6	17	32	288	·56	2·54	·06	67		
13	35	137	...	...	7	..	...	7	83	307	...	·16	2·40	68		
209	14	10	...	..	3	..	...	3	54	326	·27	2·16	...	69		
95	17	42	...	...	..	2	2	4	77	260	...	1·39	...	70		
16	17	174	...	...	4	..	...	4	57	271	...	·22	...	71		
120	35	134	...	2	5	..	1	8	56	399	1·61	·19	2·55	72		
1,695	390	2,515	1	1	145	6	9	162	2,889	7,786	·09	·52	...	73		
152	12	20	...	...	11	..	...	11	126	325	·27	·09	...	74		
328	14	13	...	...	7	1	...	8	139	523	·62	·68	...	75		
203	23	6	...	..	4	5	1	10	116	374	1·30	·09	...	76		
159	...	2	...	...	2	2	...	4	18	200	·09	1·43	...	77		
420	30	22	...	..	17	2	...	19	195	706	·05	1·03	...	78		
356	12	21	...	1	5	1	...	7	73	698	·32	...	11·93	79		
315	35	53	...	...	12	2	...	14	145	567	·14	·21	...	80		
231	3	1	...	...	..	..	...	..	9	246	...	...	·14	81		
195	5	18	...	...	5	1	...	6	7	303	·08	·97	4·76	82		
455	136	236	...	...	22	3	...	25	256	1,133	·48	...	...	83		
345	37	32	...	...	12	1	1	14	174	624	·98	·22	...	84		
181	...	...	...	...	..	..	...	..	46	246	·07	1·36	...	85		
380	...	16	...	...	2	..	...	2	76	475	..	·06	...	86		
436	7	32	...	...	16	4	...	20	130	631	...	·22	...	87		
172	11	12	...	...	9	..	...	9	64	274	...	·55	...	88		
89	10	14	...	..	4	1	...	5	47	177	·56	·32	·08	89		
165	34	25	...	...	3	1	...	4	88	316	...	...	...	90		
48,764	6,465	20,918	39	29	1,696	120	65	1,949	25,235	106,514	·29	·34	·43			
737,788	5,721	8,110	527	1,194	11,511	4,911	327	18,470	99,906	918,561	·65	·16	·33			
786,552	12,186	29,028	566	1,223	13,207	5,031	392	20,419	125,141	1,025,075	·62	·17	·34			

Paragraphs 26, 38, 39, 40, 41, 45-48 and 52-57.]

## ANNUAL FORM NO. VI.

Deaths from **different causes** and Births registered in the **Towns** having a population of 10,000 and upwards) and **districts** (exclusive such towns) of the United Provinces during the year 1927—(concluded).

Number.	Districts.	Towns.	Population according to census of 1921.	Ratio of deaths per 1,000 of population.						From all causes.	
				Fevers.	Dysentery and diarrhoea.	Respiratory dis. causes.	Injuries.	All other causes.	For the year.	Mean ratio of previous five years.	
		<i>B—Towns—</i> (concl.).									
46	Pilibhit ...	Pilibhit ...	32,344	24.98	2.69	14.31	.71	3.34	46.53	39.74	
47	Farrukhabad ...	Farrukhabad-cum-Fatehgarh.	48,331	8.90	3.87	13.24	.45	13.95	40.90	47.98	
48		Kanauj ...	18,258	17.31	1.64	1.97	.22	4.82	26.12	26.83	
49	Etawah ...	Etawah ...	41,558	19.32	2.62	10.71	.58	18.94	52.58	46.94	
50	Cawnpore ...	Cawnpore ...	195,085	14.86	1.50	11.18	.34	13.15	41.19	47.87	
51	Fatehpur ...	Fatehpur ...	14,948	14.52	.73	2.74	1.87	4.15	24.01	27.81	
52	Allahabad ...	Allahabad ...	145,605	10.12	1.67	7.95	.21	10.62	31.91	30.77	
53		Jhansi ...	54,385	26.26	1.25	2.33	.35	10.55	41.08	33.34	
54	Jhansi ...	Mau ...	12,554	15.85	1.83	7.17	.57	6.77	32.26	43.19	
55		Lalitpur ...	11,504	18.86	3.30	6.08	1.39	7.40	37.46	36.82	
56	Jalaun ...	Kalpi ...	10,037	14.94	.90	12.95	1.39	4.78	35.07	40.79	
57		Konch ...	14,503	11.58	.83	10.76	.21	.55	23.93	39.47	
58	Hamirpur ...	Mahoba ...	11,648	16.40	.08	2.92	1.12	.43	20.95	30.58	
59	Banda ...	Banda ...	20,029	8.56	.30	2.05	.30	3.74	15.27	31.50	
60	Benares ...	Benares ...	195,373	25.01	3.92	7.05	1.12	9.91	47.55	50.73	
61	Mirzapur ...	Mirzapur-Bindhachal.	54,994	13.55	1.62	1.27	.62	6.07	24.07	27.33	
62	Jaunpur ...	Jaunpur ...	32,569	11.76	.98	1.44	.68	3.07	19.89	25.68	
63	Ghazipur ...	Ghazipur ...	24,708	8.78	.65	2.02	.61	1.82	15.05	17.47	
64	Ballia ...	Ballia ...	18,215	4.83	1.65	.33	.38	7.19	17.24	20.91	
65	Gorakhpur ...	Gaura Barhaj	12,497	10.32	.32	.08	.48	1.60	12.80	20.96	
66		Gorakhpur ...	50,498	21.60	1.21	2.73	.69	8.36	36.32	32.99	
67	Basti ...	Basti ...	17,691	8.59	.62	1.13	.96	1.81	16.28	16.08	
68		Mubarakpur	12,500	1.04	2.80	10.96	.56	6.64	24.56	32.46	
69	Azamgarh ...	Azamgarh ...	14,788	14.13	.95	.68	.20	3.65	22.04	25.88	
70		Mau ...	17,998	5.28	.94	2.33	.22	4.28	14.44	25.05	
71	Naini Tal ...	Naini Tal ...	(b) 10,392	1.19	1.26	12.93	.30	4.24	20.14	19.28	
72		Kashipur ...	10,576	11.35	3.31	12.67	.76	5.29	37.73	30.09	
73	Lucknow ...	Lucknow ...	217,167	7.80	1.80	11.58	.75	13.30	35.85	40.45	
74	Unao ...	Unao ...	11,147	13.63	1.08	1.79	.99	11.30	29.15	33.34	
75	Rae Bareli ...	Rae Bareli ...	16,183	20.27	.86	.80	.49	8.59	32.32	36.95	
76		Khairabad ...	11,522	17.62	1.99	.52	.87	10.07	33.46	35.71	
77	Sitapur ...	Laharpur ...	11,185	14.21	...	.18	.36	1.61	17.88	19.92	
78		Sitapur ...	18,432	22.79	1.63	1.19	1.03	10.58	38.30	39.66	
79		Shahabad ...	18,696	19.04	.64	1.12	.37	3.90	37.33	31.36	
80	Hardoi ...	Sandila ...	14,074	22.38	2.49	3.76	.99	10.30	40.29	41.01	
81		Hardoi ...	14,412	16.03	.21	.07	...	.63	17.07	23.31	
82	Kheri ...	Lakhimpur	12,396	15.73	.46	1.45	.48	.56	24.44	14.04	
83	Fyzabad ...	Fyzabad-Ajodhya.	51,342	8.87	2.65	4.60	.48	4.99	22.07	27.73	
84		Tanda ...	18,258	18.89	2.03	1.75	.77	9.53	34.17	39.02	
85	Gonda ...	Gonda ...	13,228	13.68	...	...	...	3.48	18.59	18.29	
86		Balrampur ...	16,131	23.56	...	.99	.12	4.71	29.44	31.95	
87	Bahraich ...	Bahraich ...	27,371	15.93	.25	1.17	.73	4.75	23.05	20.47	
88		Nanpara ...	10,924	15.74	1.01	1.10	.82	5.85	25.08	35.46	
89	Bara Banki...	Nawabganj	12,369	7.20	.81	1.12	.40	3.80	14.31	20.60	
90		Rudauli ...	10,327	15.98	3.29	2.42	.39	8.52	30.60	35.87	
		Total of Towns	3,011,024	16.19	2.14	6.95	.65	8.38	35.37	36.65	
		Total of rural districts.	42,364,763	17.41	.13	.19	.44	2.36	21.68	24.50	
		Total for the Province.	45,375,787	17.33	.27	.64	.45	2.76	22.59	23.31	

(b) Rates calculated on average population 13,454.

Paragraphs 23, 49 and 58.]

## SUPPLEMENTARY ANNUAL FORM NO. VI(a).

Deaths registered from **Certain Causes** in the **Towns** (having a population of 10,000 and upwards) and **Districts** (exclusive of such towns) of the United Provinces, during the year 1927.

1 Number.	2 Districts and Towns.	3 Popula- tion according to census of 1921.	4		5		6	
			Malaria.		Enteric fever.		Measles.	
			Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.
<b>A.—Rural Districts.</b>								
<b>MEERUT DIVISION.</b>								
1	Dehra Dun	170,446	2,319	13·60	5	·03	49	·29
2	Sabarapur	802,435	21,977	27·39	56	·07	71	·09
3	Muzaffarnagar	743,280	15,316	20·60	222	·30	35	·05
4	Meerut	1,388,632	32,108	23·12	27	·02	64	·05
5	Bulandshahr	994,155	21,733	21·86	108	·11	200	·20
<b>AGRA DIVISION.</b>								
6	Aligarh	943,001	18,148	19·24	60	·06	159	·17
7	Muttra	555,782	7,486	13·47	170	·30	86	·15
8	Agra	740,222	12,808	17·30	25	·03	57	·08
9	Mainpuri	723,301	14,475	20·01	..	..	28	·04
10	Etah	797,813	15,103	19·00	44	·05	56	·07
<b>ROHILKHAND DIVISION.</b>								
11	Bareilly	881,568	26,162	29·68	59	·07	729	·83
12	Bijnor	645,057	17,256	26·75	25	·04	245	·38
13	Budaun	909,071	23,761	26·14	22	·02	270	·30
14	Moradabad	1,008,785	27,036	26·80	36	·03	307	·30
15	Shahjahanpur	753,749	17,686	23·46	34	·04	146	·19
16	Pilibhit	399,257	10,844	27·16	20	·05	59	·15
<b>ALLAHABAD DIVISION.</b>								
17	Farrukhabad	790,044	15,050	19·05	71	·09	28	·03
18	Etawah	691,974	9,376	13·55	42	·06	46	·07
19	Cawnpore	953,579	10,620	11·14	81	·08	164	·17
20	Fatehpur	637,444	6,229	9·77	9	·01	140	·22
21	Allahabad	1,258,840	13,947	11·08	1,683	1·34	393	·31
<b>JHANSI DIVISION.</b>								
22	Jhansi	528,056	10,124	19·17	359	·68	62	·12
23	Jalaun	380,899	3,337	8·76	155	·41	10	·03
24	Hamirpur	453,675	4,447	9·80	7	·01	28	·06
25	Banda	568,007	6,015	10·59	20	·03	463	·81
<b>BENARES DIVISION.</b>								
26	Benares	756,658	10,018	13·24	58	·08	110	·14
27	Mirzapur	669,189	10,703	15·99	32	·05	278	·41
28	Jaunpur	1,122,536	11,826	10·53	13	·01	173	·15
29	Ghazipur	756,862	9,042	11·94	135	·18	132	·17
30	Ballia	812,794	6,714	8·26	332	·41	116	·14
<b>GORAKHPUR DIVISION.</b>								
31	Gorakhpur	3,203,835	37,282	11·64	219	·07	943	·30
32	Basti	1,907,537	26,519	13·90	18	·01	1,623	·85
33	Azamgarh	1,482,726	18,256	12·31	178	·12	269	·18
<b>KUMAUN DIVISION.</b>								
34	Naini Tal	255,907	6,425	25·11	28	·11	19	·07
35	Almora	530,338	7,707	14·53	18	·03	75	·14
36	Garhwal	485,186	9,602	19·79	5	·01	50	·10
<b>LUCKNOW DIVISION.</b>								
37	Lucknow	507,177	8,308	16·38	43	·08	187	·37
38	Unao	807,981	11,305	13·99	30	·04	529	·65
39	Rae Bareli	920,220	9,646	10·46	109	·12	216	·24
40	Sitapur	1,048,342	18,451	17·60	117	·11	1,064	1·01
41	Hardoi	1,037,228	16,960	16·35	10	·01	232	·22
42	Kheri	901,079	16,618	18·44	14	·01	394	·44
<b>FYZABAD DIVISION.</b>								
43	Fyzabad	1,102,975	9,376	8·50	3	..	281	·25
44	Gonda	1,443,739	16,351	11·32	95	·06	949	·66
45	Babraich	1,027,082	13,815	13·45	31	·03	1,325	1·29
46	Sultanpur	1,003,912	15,969	15·91	3	..	392	·39
47	Partabgarh	855,130	11,821	13·82	8	·01	153	·18
48	Bara Banki	1,007,258	14,481	14·38	35	·03	793	·79
TOTAL OF RURAL DISTRICTS		42,364,763	680,618	16·06	4,874	·11	14,208	·33

1 Number.	2 Districts and towns.	3 Popula- tion according to census of 1921.	7 Relapsing fever.		8 Kala Azar.		9 Other fevers.		10 Dysentery.	
			Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.
<b>A.—Rural Districts—</b> (concluded).										
MEERUT DIVISION.										
1	Dehra Dun ...	170,446	...	...	...	...	734	4.31	98	.57
2	Saharanpur ...	802,435	...	...	...	...	126	.16	10	.01
3	Muzaffarnagar ...	743,280	3	...	...	...	328	.44	24	.03
4	Meerut ...	1,388,632	1	...	1	...	748	.54	13	.01
5	Bulandshahr ...	994,155	2	...	3	...	866	.87	129	.13
AGRA DIVISION.										
6	Aligarh ...	943,001	3	...	2	...	96	.10	51	.03
7	Muttra ...	555,782	...	...	30	.05	203	.36	5	.01
8	Agra ...	740,222	...	...	...	...	552	.74	6	.01
9	Mainpuri ...	723,301	...	...	...	...	20	.03	1	...
10	Etah ...	797,813	2	...	3	...	211	.26	18	.02
ROHILKHAND DIVISION.										
11	Bareilly ...	881,568	3	...	...	...	41	.05	27	.03
12	Bijnor ...	645,057	1	...	...	...	308	.48	26	.04
13	Budaun ...	909,071	1	...	...	...	8	.01	18	.02
14	Moradabad ...	1,008,785	...	...	...	...	2,218	2.20	58	.06
15	Shahjahanpur ...	753,749	5	.01	...	...	1,131	1.50	6	.01
16	Pilibhit ...	399,257	...	...	2	...	7	.02	13	.03
ALLAHABAD DIVISION.										
17	Farrukhabad ...	790,044	1	...	...	...	157	.19	5	.01
18	Etawah ...	691,974	...	...	...	...	488	.70	3	...
19	Cawnpore ...	953,579	...	...	...	...	243	.25	13	.01
20	Fatehpur ...	637,444	2	...	4	.01	11	.02	12	.02
21	Allahabad ...	1,258,840	1	...	5	...	853	.68	27	.02
JHANSI DIVISION.										
22	Jhansi ...	528,056	...	...	...	...	566	1.07	18	.03
23	Jalaun ...	380,899	...	...	8	.02	2,152	5.65	2	...
24	Hamirpur ...	453,675	...	...	...	...	1,955	4.31	5	.01
25	Banda ...	568,007	...	...	...	...	558	.98	3	...
BENARES DIVISION.										
26	Benares ...	756,658	1	...	5	.01	73	.10	6	.01
27	Mirzapur ...	669,189	...	...	...	...	4.8	.62	14	.02
28	Jaunpur ...	1,122,536	...	...	...	...	865	.77	9	.01
29	Ghazipur ...	756,862	...	...	4	...	9	.01	19	.02
30	Ballia ...	812,794	7	.01	6	.01	2,122	2.61	320	.39
GORAKHPUR DIVISION.										
31	Gorakhpur ...	3,203,835	3	...	...	...	5,964	1.86	71	.02
32	Basti ...	1,907,537	6	...	6	...	7	...	51	.03
33	Azamgarh ...	1,482,726	...	...	7	...	768	.51	50	.03
KUMAUN DIVISION.										
34	Naini Tal ...	255,907	...	...	...	...	255	1.00	33	.13
35	Almora ...	530,338	...	...	...	...	1,993	3.76	350	.66
36	Garhwal ...	485,186	...	...	...	...	345	.71	1,894	3.90
LUCKNOW DIVISION.										
37	Lucknow ...	507,177	1	...	...	...	137	.27	37	.07
38	Unao ...	807,981	2	...	11	.01	1,210	1.50	33	.04
39	Rae Bareli ...	920,220	3	...	65	.07	1,437	1.56	20	.02
40	Sitapur ...	1,048,342	2	...	3	...	13	.01	14	.01
41	Hardoi ...	1,037,228	15	.01	10	.01	25	.02	9	.01
42	Kheri ...	901,079	...	...	4	...	17	.02	14	.01
FYZABAD DIVISION.										
43	Fyzabad ...	1,102,975	14	.01	...	...	7,022	6.37	40	.04
44	Gonda ...	1,443,739	...	...	...	...	77	.05	8	...
45	Bahraich ...	1,027,082	...	...	9	.01	3	...	10	.01
46	Sultanpur ...	1,003,912	...	...	...	...	468	.47	49	.05
47	Partabgarh ...	855,130	2	...	...	...	3	...	17	.02
48	Bara Banki ...	1,007,258	2	...	...	...	6	...	21	.02
TOTAL OF RURAL DISTRICTS.		42,364,763	83	...	188	...	37,817	.89	3,680	.09

## ANNUAL FORM No. VI (a).

population of 10,000 and upwards) and **Districts** (exclusive of such towns) during the year 1927—(continued).

11		12		13		14		15	16			17	18
Diarrhoea.		Pneumon- ia.		Phthisis.		Other respir- atory diseases.		Deaths from child birth.	Deaths under one year.			Infant mortal- ity rate.	Number.
Deaths.	Ratio.	Deaths	Ratio.	Deaths.	Ratio.	Deaths	Ratio.	Male.	Female.	Total.			
96	·56	59	·35	17	·10	166	·97	12	443	369	812	186·28	1
26	·03	25	·03	5	...	80	·10	22	3,055	2,846	5,901	174·38	2
84	·11	..	...	6	·01	91	·12	18	1,937	1,583	3,520	127·53	3
42	·03	...	...	36	·02	223	·16	30	4,445	3,816	8,261	154·44	4
194	·19	13	·01	39	·04	263	·26	57	3,379	2,937	6,316	148·08	5
84	·09	12	·01	25	·02	137	·14	17	2,626	2,154	4,780	121·01	6
53	·09	1	...	3	...	72	·13	19	737	655	1,392	87·87	7
20	·03	3	...	8	·01	63	·08	9	1,817	1,577	3,394	124·47	8
3	...	...	...	...	...	11	·01	8	1,593	1,218	2,811	127·73	9
125	·16	5	·01	28	·03	142	·18	22	2,194	1,876	4,070	150·44	10
54	·06	22	·02	20	·02	108	·12	13	3,868	3,497	7,365	181·40	11
70	·11	...	...	3	...	132	·20	31	3,138	2,661	5,799	190·31	12
59	·06	1	...	5	...	58	·06	11	3,339	2,909	6,248	166·55	13
141	·14	...	...	15	·01	193	·19	25	4,217	3,643	7,860	159·70	14
20	·03	...	...	7	·01	70	·09	6	3,223	2,806	6,029	174·59	15
13	·03	...	...	2	...	47	·12	5	1,676	1,505	3,181	185·21	16
54	·07	12	·01	8	·01	76	·10	13	3,149	2,455	5,604	177·41	17
22	·03	2	...	3	...	50	·07	6	1,837	1,549	3,386	142·22	18
5	...	...	...	10	·01	18	·02	7	1,823	1,370	3,193	84·59	19
7	·01	2	...	3	...	49	·08	3	1,655	1,279	2,934	137·91	20
48	·04	22	·02	28	·02	110	·09	13	3,828	3,031	6,859	157·41	21
58	·11	17	·03	32	·06	76	·14	4	2,000	1,839	3,839	163·27	22
11	·03	1	...	4	·01	37	·10	2	975	825	1,800	134·81	23
24	·05	61	·13	3	·01	2,440	5·38	12	1,627	1,332	2,959	145·24	24
4	·01	...	...	...	...	216	·38	4	1,392	1,186	2,578	129·67	25
11	·01	1	...	8	·01	46	·06	3	2,151	1,732	3,913	143·26	26
22	·03	1	...	...	...	65	·10	10	2,364	2,029	4,393	171·07	27
4	...	...	...	...	...	24	·02	7	2,314	1,772	4,086	126·41	28
10	·01	...	...	17	·02	32	·04	4	1,696	1,357	3,053	126·80	29
33	·04	...	...	14	·02	115	·14	20	1,935	1,361	3,296	126·32	30
13	...	...	...	18	...	73	·02	25	7,249	5,444	12,693	114·72	31
31	·02	...	...	4	...	73	·04	13	5,356	4,289	9,645	154·71	32
10	·01	...	...	7	...	88	·05	23	3,586	2,789	6,375	129·30	33
37	·14	19	·07	23	·09	84	·33	11	890	790	1,680	210·08	34
285	·54	46	·09	47	·09	504	·75	40	1,743	1,381	3,124	133·90	35
127	·26	39	·08	27	·05	298	·61	20	1,868	1,679	3,547	172·49	36
24	·05	6	·01	19	·04	127	·25	11	1,849	1,447	3,296	169·53	37
10	·01	1	...	15	·02	104	·13	17	2,117	1,605	3,722	138·48	38
1	...	1	...	3	...	41	·04	3	1,466	1,071	2,537	108·57	39
15	·01	8	·01	5	...	51	·06	4	2,928	2,485	5,413	142·74	40
36	·03	...	...	1	...	44	·04	7	2,723	2,224	4,947	124·51	41
10	·01	1	·01	4	...	33	·04	5	2,086	1,748	3,834	116·67	42
4	...	1	...	8	·01	69	·06	5	2,386	2,376	5,362	150·03	43
11	·01	1	...	7	...	111	·08	7	2,644	2,127	4,771	113·82	44
12	·01	...	...	4	...	21	·02	3	2,888	2,413	5,301	153·37	45
1	...	...	...	1	...	100	·10	6	3,275	2,543	5,818	171·03	46
1	...	3	...	2	...	79	·09	2	2,222	1,784	4,006	146·65	47
16	·01	1	...	3	...	67	·07	6	2,425	1,911	4,336	134·43	48
2,041	·05	386	·01	547	·01	7,177	·17	621	120,734	99,305	220,039	144·39	

\* NOTE.—By the term "Deaths from childbirth" is meant "deaths during or within 14 days of labour."

Paragraphs 23, 49 and 58.]

SUPPLEMENTARY  
Deaths registered from **Certain Causes** in the **Towns** (having a  
of the United Provinces

1 Number.	2 Districts.	3 Towns	4 Popula- tion according to census of 1921.	5 Malaria.		6 Enteric fever.		7 Measles.	
				Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.
<i>B.—Towns.</i>									
1	Dehra Dun	Dehra ...	33,500	3	·09	2	·06	2	·06
2		Mussoree ...	(a) 8,297	4	·31	..	..	..	..
3	Saharanpur	Hardwar Union	30,795	1	·03	..	..	28	·91
4		Saharanpur	62,261	..	..	..	..	49	·79
5		Deoband ...	17,891	..	..	..	..	..	..
6		Gangoh ...	11,843	40	3·38	..	..	9	·76
7		Roorkee ...	12,246	217	17·72	1	·08	8	·65
8	Muzaffar- nagar.	Kairana ...	16,683	93	5·57	..	..	1	·06
9		Kandhla ...	10,365	224	21·61	..	..	14	1·35
10		Muzaffarnagar ...	25,937	364	15·21	1	·04	6	·25
11	Meerut ...	Meerut ...	77,711	23	·29	1	·01	29	·37
12		Hapur ...	20,388	164	8·04	5	·24	35	1·72
13		Ghaziabad ...	12,343	199	16·12	22	1·78	..	..
14	Buland- shahr.	Khurja ...	25,719	502	19·52	22	·85	12	·47
15		Sikandrabad ...	16,857	315	18·68	63	3·74	39	2·31
16		Bulandshahr ...	19,509	62	3·18	4	·20	26	1·33
17		Jahangirabad ...	10,279	181	12·74	8	·78	1	·10
18	Aligarh ...	Aligarh or Koil... ..	66,963	58	·87	155	2·31	112	1·67
19		Hathras ...	38,763	27	·70	83	2·14	172	4·44
20		Atrauli ...	13,018	200	15·86	..	..	5	·38
21	Muttra ...	Muttra ...	48,724	61	1·25	107	2·20	41	·84
22		Brindaban ...	14,632	584	39·91	..	..	24	1·64
23	Agra ...	Agra ...	163,750	2,091	12·77	467	2·85	260	1·59
24		Firozabad ...	20,183	27	1·34	1	·05	31	1·53
25	Mainpuri ...	Mainpuri ...	14,352	132	9·20	..	..	1	·07
26		Shikohabad ...	10,374	154	14·84	..	..	4	·38
27	Etah ...	Kasganj ...	20,988	323	15·39	24	1·14	58	2·52
28		Soron ...	10,959	221	20·16	..	..	..	..
29	Bareilly ...	Bareilly ...	119,175	200	1·68	..	..	122	1·02
30		Aonla ...	13,132	175	13·33	5	·38	77	5·86
31	Bijnor ...	Nagina ...	18,736	208	11·10	..	..	59	3·15
32		Najibabad ...	18,504	..	..	2	·11	73	3·94
33		Bijnor ...	18,095	245	13·54	..	..	53	2·93
34		Sherkot ...	13,889	136	9·79	11	·79	16	1·15
35		Chandpur ...	11,032	117	10·60	..	..	6	·54
36		Kiratpur ...	14,869	65	4·37	2	13	8	·54
37	Budaun ...	Ujhani ...	11,186	244	21·81	2	·18	38	3·40
38		Budaun ...	39,118	891	22·78	105	2·68	122	3·12
39		Sahaswan ...	15,972	396	24·79	..	..	102	6·39
40	Moradabad	Moradabad ...	82,671	1,243	15·03	3	·04	89	1·08
41		Sambhal ...	41,585	635	15·27	6	·14	174	4·18
42		Amroha ...	40,448	406	10·04	..	..	79	1·95
43		Chandausi ...	25,164	163	6·48	56	2·22	121	4·81
44	Shahjahan- pur.	Tilhar ...	16,584	..	..	..	..	..	..
45		Shahjahanpur ...	68,782	75	1·09	70	1·02	25	·36

(a) Rates calculated on average population 12,943.

ANNUAL FORM No. VI (a).  
 population of 10,000 and upwards) and **Districts** (exclusive of such towns)  
 during the year 1927—(contd.).

8		9		10		11		12		13		14		Number.
Relapsing fever.		Kala Azar.		Other fevers.		Dysentery.		Diarrhoea.		Pneumonia.		Phthisis.		
Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	
..	..	..	..	249	7.43	28	.83	43	1.28	150	4.48	69	2.06	1
..	..	..	..	24	1.85	1	.08	2	.15	22	1.70	2	.15	2
..	..	..	..	761	24.71	28	.91	45	1.46	55	1.78	26	.84	3
..	..	..	..	1,836	29.49	25	.40	56	.90	65	1.04	3	.05	4
..	..	..	..	478	26.72	1	.05	14	.78	2	.11	6	.33	5
..	..	2	.17	104	8.78	10	.84	24	2.02	11	.93	6	.51	6
..	..	..	..	155	12.66	7	.57	17	1.39	..	..	3	.25	7
..	..	..	..	403	24.16	..	..	..	..	..	..	..	..	8
..	..	..	..	..	..	..	..	8	.77	..	..	..	..	9
4	.16	..	..	14	.58	21	.87	22	.92	..	..	32	1.34	10
..	..	..	..	578	7.44	5	.06	106	1.36	48	.62	230	2.95	11
..	..	..	..	65	3.19	9	.44	63	3.09	15	.73	..	..	12
..	..	..	..	5	.40	4	.32	3	.24	..	..	..	..	13
..	..	..	..	1	.04	39	1.52	53	2.06	44	1.71	67	2.00	14
2	.12	..	..	6	.35	8	.47	19	1.13	22	1.30	26	1.54	15
..	..	..	..	128	6.56	11	.56	23	1.18	..	..	1	.05	16
..	..	..	..	..	..	1	.10	2	.19	..	..	..	..	17
..	..	..	..	895	13.36	33	.49	206	3.07	191	2.85	204	3.05	18
..	..	..	..	267	6.88	13	.33	210	5.42	136	3.51	2	.05	19
..	..	..	..	..	..	49	3.76	144	11.06	..	..	..	..	20
..	..	..	..	343	7.04	38	.78	105	2.15	227	4.66	124	2.54	21
1	.06	..	..	14	.96	8	.55	55	3.76	44	3.01	2	.14	22
..	..	..	..	17	.10	123	.75	249	1.52	352	8.26	505	3.08	23
..	..	..	..	267	13.23	..	..	65	3.22	..	..	..	..	24
..	..	..	..	7	.49	..	..	..	..	..	..	..	..	25
..	..	..	..	4	.38	..	..	4	.38	5	.48	15	1.44	26
..	..	..	..	15	.71	2	.09	59	2.81	..	..	..	..	27
..	..	..	..	77	7.03	..	..	34	3.10	..	..	..	..	28
..	..	..	..	1,040	8.73	45	.37	20	.17	128	1.07	301	2.52	29
..	..	..	..	47	3.58	16	1.22	45	3.43	..	..	..	..	30
..	..	..	..	5	.27	24	1.28	86	4.59	3	.16	18	.96	31
..	..	..	..	414	22.37	5	.27	2	.11	..	..	..	..	32
..	..	..	..	69	3.81	21	1.16	32	1.77	1	.05	..	..	33
..	..	..	..	5	.36	5	.36	9	.64	1	.07	..	..	34
..	..	..	..	93	8.43	14	1.27	31	2.81	..	..	..	..	35
..	..	..	..	94	6.32	17	1.14	14	.94	12	.80	..	..	36
..	..	..	..	4	.36	10	.89	5	.45	..	..	..	..	37
..	..	..	..	8	.20	20	.51	49	1.25	47	1.20	2	.05	38
..	..	..	..	..	..	4	.25	44	2.75	..	..	1	.06	39
..	..	..	..	599	7.24	103	1.24	156	1.89	..	..	17	.20	40
..	..	..	..	..	..	71	1.71	106	2.55	81	1.95	97	2.38	41
..	..	..	..	40	.99	50	1.24	59	1.46	47	1.16	92	2.27	42
..	..	..	..	4	.16	11	.44	91	3.62	120	4.77	63	2.50	43
..	..	..	..	411	24.78	13	.78	19	1.14	8	.48	32	1.93	44
..	..	..	..	542	7.88	76	1.10	94	1.37	117	1.70	125	1.81	45



Paragraphs 23, 49 and 58.]

## SUPPLEMENTARY ANNUAL FORM No. VI (a).

Deaths registered from **Certain Causes** in the **Towns** (having a population of 10,000 and upwards) and **Districts** (exclusive of such towns) of the United Provinces during the year 1927—(contd.).

1 Number.	2 Districts.	3 Towns.	4 Population according to census of 1921.	15 Other respiratory diseases.		16 Deaths from child birth*.	17 Deaths under one year.			18 Infant mortality rate.
				Deaths.	Ratio.		Male.	Female.	Total.	
		<i>B.—Towns.</i> (contd.).								
1	Dehra Dun	Dehra ...	33,500	131	3·91	21	153	115	268	216·12
2		Mussooree	(a)8,297	9	·69	1	14	16	30	179·64
3		Hardwar Union.	30,795	75	2·43	6	190	168	358	299·08
4	Saharanpur	Saharanpur	62,261	245	3·93	23	563	499	1,062	317·39
5		Deoband ...	17,891	4	·22	4	113	90	203	196·90
6		Gangoh ...	11,843	26	2·19	3	46	59	105	168·81
7		Roorkee	12,246	6	·49	4	74	68	142	304·07
8	Muzaffarnagar.	Kairana ...	16,683	1	·06	1	86	52	138	185·48
9		Kandhla ...	10,365	3	28	...	41	38	79	188·54
10		Muzaffarnagar	23,937	51	2·13	13	104	93	197	183·43
11	Meerut ...	Meerut ...	77,711	245	3·15	20	254	185	439	168·98
12		Hapur ...	20,388	164	8·04	6	127	124	251	221·73
13		Ghaziabad ...	12,343	33	2·68	5	45	46	91	163·67
14	Bulandshahr.	Khurja	25,719	76	2·95	13	188	166	354	246·52
15		Sikandrabad	16,857	25	1·48	6	93	118	211	215·30
16		Bulandshahr	19,509	243	12·46	8	113	98	211	227·37
17		Jahangirabad	10,279	12	1·17	6	21	15	36	79·29
18	Aligarh ...	Aligarh or Koil.	66,963	108	1·61	24	485	435	920	262·56
19		Hathras ...	38,763	192	4·95	22	276	259	535	255·86
20		Atrauli ...	13,018	2	·15	3	99	82	181	240·05
21	Muttra ...	Muttra ...	48,724	281	5·77	25	286	269	555	221·03
22		Brindaban...	14,632	81	5·53	5	62	66	128	257·03
23	Agra ...	Agra ...	163,750	495	3·02	69	1,025	945	1,970	183·31
24		Firozabad ...	20,183	30	1·49	7	124	89	213	223·27
25	Mainpuri ...	Mainpuri ...	14,352	5	·35	5	35	15	50	211·86
26		Shikohabad	10,374	6	·58	6	32	20	52	170·05
27	Etah ...	Kasganj ...	20,988	42	2·00	5	96	103	199	234·95
28		Soron ...	10,959	25	2·28	5	88	73	161	285·46
29	Bareilly ...	Bareilly ...	119,175	426	3·57	28	426	354	780	160·20
30		Aonla ...	13,132	72	5·48	9	123	118	241	285·88
31	Bijnor ...	Nagina ...	18,736	124	6·62	7	118	107	225	232·68
32		Najibabad ...	18,504	21	1·13	8	111	112	223	234·00
33		Bijnor ...	18,095	17	·94	7	107	99	206	231·98
34		Sherkot ...	13,889	7	·50	2	33	21	54	177·05
35		Chandpur ...	11,032	15	1·36	6	92	80	172	241·91
36		Kiratpur ...	14,869	16	1·07	6	49	52	101	226·46
37	Budaun ...	Ujhani ...	11,186	18	1·61	3	45	49	94	218·10
38		Budaun ...	39,118	74	1·89	11	349	274	623	281·39
39		Sahaswan ...	15,972	40	2·50	9	158	133	291	304·71
40	Moradabad	Moradabad	82,671	463	5·60	40	639	502	1,141	231·06
41		Sambhal ...	41,585	293	7·04	15	286	237	523	231·01
42		Amroha ...	40,448	141	3·48	11	238	189	427	171·04
43		Chandausi ...	25,164	109	4·33	7	213	177	390	264·41
44	Shahjahanpur.	Tilhar ...	16,584	35	2·11	13	141	123	264	278·19
45		Shahjahanpur	68,782	550	7·99	36	339	304	643	206·29

(a) Rates calculated on average population 12,943.

\* Note—By the term "Deaths from child-birth" is meant "deaths during or within 14 days of labour."

## SUPPLEMENTARY ANNUAL FORM No. VI (a)—(contd.).

Deaths registered from **Certain Causes** in the **Towns** (having a population of 10,000 and upwards) and **Districts** (exclusive of such towns) of the United Provinces during the year 1927—(contd.).

1 Number.	2 Districts.	3 Towns.	4 Popula- tion according to census of 1921.	5 Malaria.		6 Enteric fever.		7 Measles.	
				Deaths.	Ratio.	Deaths.	Ratio.	Deaths	Ratio.
		<i>B.—Towns— (concl'd.).</i>							
46	Pilibhit ..	Pilibhit ...	32,344	383	11·84	...	...	51	1·58
47	Farrukh- abad. }	Farrukhabad- cum-Fateh- garh. }	48,331	215	4·45	158	3·27	54	1·12
48		Kanauj ...	18,258	286	12·92	52	2·85	20	1·09
49	Etawah ...	Etawah ...	41,558	220	5·29	2	·05	...	...
50	Cawnpore...	Cawnpore ...	195,085	2	·01	8	·04	272	1·39
51	Fatehpur ...	Fatehpur ...	14,948	13	·87	3	·20	5	·33
52	Allahabad...	Allahabad ...	145,605	2	·01	52	·36	100	·69
53		Jhansi ...	54,385	4	·07	11	·20	119	2·18
54	Jhansi ... }	Mau ...	12,554	176	14·02	23	1·83	...	...
55		Lalitpur ...	11,504	196	17·03	5	·43	13	1·13
56	Jalaun ... }	Kalpi ...	10,037	136	13·55	...	...	14	1·39
57		Konch ...	14,503	...	...	...	...	15	1·03
58	Hamirpur...	Mahoba ...	11,648	187	16·05	...	...	4	·34
59	Banda ...	Banda ...	20,029	42	2·09	...	...	2	·10
60	Benares ...	Benares ...	195,373	465	2·38	46	·23	96	·49
61	Mirzapur ...	Mirzapur Bin- dhachal.	54,994	725	13·17	...	...	20	·36
62	Jaunpur ...	Jaunpur ...	32,569	...	...	...	...	19	·58
63	Ghazipur ...	Ghazipur ...	24,708	217	8·78	...	...	...	...
64	Ballia ...	Ballia ...	18,215	50	2·74	36	1·98	2	·11
65	Gorakhpur {	Gaura Barhaj	12,497	128	10·24	...	...	...	...
66		Gorakhpur ...	50,498	...	...	...	...	39	·77
67	Basti ...	Basti ...	17,691	135	7·63	4	·23	11	·62
68		Mubarakpur ...	12,500	...	...	...	...	13	1·05
69	Azamgarh...	Azamgarh ...	14,788	178	12·05	16	1·08	7	·47
70		Mau ...	17,998	85	4·72	2	·11	8	·44
71	Naini Tal.. {	Naini Tal ...	(b) 10,392	4	·30	1	·07	4	·30
72		Kashipur ...	10,576	49	4·63	45	4·25	14	1·32
73	Lucknow ...	Lucknow ...	217,167	78	·36	134	·62	73	·34
74	Unao ...	Unao ...	11,147	...	...	...	...	9	·81
75	Rae Bareli	Rae Bareli ...	16,183	...	...	...	...	...	...
76		Khairabad ...	11,522	146	12·67	10	·87	45	3·90
77	Sitapur ... }	Laharpur ...	11,185	9	80	...	...	...	...
78		Sitapur ...	18,432	...	...	...	...	61	3·31
79		Shahabad ...	18,696	325	17·38	...	...	31	1·66
80	Hardoi ... }	Sandila ...	14,074	184	20·18	...	...	30	2·13
81		Hardoi ...	14,412	209	14·50	14	·97	2	·14
82	Kheri ...	Lakhimpur ...	12,396	77	6·21	55	4·44	13	1·05
83	Fyzabad ... }	Fyzabad-Ajodh- ya. }	51,342	25	·49	2	·04	7	·14
84		Tanda ...	18,258	308	16·87	...	...	5	·27
85	Gonda ... }	Gonda ...	13,228	178	13·46	...	...	3	·23
86		Balrampur ...	16,131	371	23·00	1	·06	8	·49
87	Bahraich ... {	Bahraich ...	27,371	13	·47	1	·04	24	·88
88		Nanpara ...	10,924	159	14·55	...	...	13	1·19
89	Bara Banki {	Nawabganj ...	12,369	60	4·85	14	1·13	10	·81
90		Rudauli ...	10,327	163	15·78	...	...	2	·19
		Total of towns	3,011,024	17,672	5·87	1,923	·64	3,364	1·12
		Total of Rural districts.	42,364,763	680,618	16·06	4,874	·11	14,208	·33
		Total for the Province.	45,375,787	698,290	15·39	6,797	·15	17,572	·39

(b) Rates calculated on average population 13,454.

Deaths registered from **Certain Causes** in the **Towns** (having a of the United Provinces

1 Number.	2 Districts.	3 Towns.	4 Population according to census of 1921.	8 Relapsing fever.		9 Kala A zar.		10 Other fevers.		11 Dysentery.	
				Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.
		<i>B.—Towns—</i> (conold)									
46	Pilibhit ...	Pilibhit ...	32,344	...	...	...	...	374	11.56	34	1.05
47	Farrukhabad.	Farrukhabad-cum-Fatehgarh.	48,331	...	...	...	...	3	.06	96	1.99
48		Kanauj ...	18,258	...	...	...	...	8	.44	7	.38
49	Etawah ...	Etawah ...	41,558	...	...	...	...	581	13.98	5	.12
50	Cawnpore ..	Cawnpore ...	195,085	...	...	...	...	2,617	13.41	119	.61
51	Fatehpur ..	Fatehpur ...	14,948	...	...	...	...	196	13.10	7	.47
52	Allahabad ...	Allahabad ..	145,605	...	...	...	...	1,320	9.06	80	.55
53		Jhansi ...	54,385	...	...	...	...	1,294	23.79	10	.18
54	Jhansi ...	Mau ...	12,554	...	...	...	...	...	...	7	...
55		Lalitpur ...	11,504	...	...	...	...	3	.26	7	.61
56	Jalaun ...	Kalpi ...	10,037	...	...	...	...	...	...	...	...
57		Konch ...	14,503	...	...	...	...	153	10.55	1	...
58	Hamirpur...	Mahoba ...	11,648	...	...	...	...	...	...	5	.08
59	Banda ...	Banda ...	20,029	...	...	...	...	128	6.39	5	.25
60	Benares ...	Benares ...	195,373	3	.01	3	.01	4,274	21.87	229	1.17
61	Mirzapur ...	Mirzapur Bin-dhachal.	54,994	...	...	...	...	...	...	20	.36
62	Jaunpur ...	Jaunpur ...	32,569	2	.06	...	...	362	11.11	12	.37
63	Gbazipur ...	Ghazipur ...	24,708	...	...	...	...	...	...	6	.24
64	Ballia ...	Ballia ...	18,215	...	...	...	...	...	...	23	1.26
65	Gorakhpur {	Gaura Barhaj	12,497	...	...	...	...	1	.08	2	.16
66		Gerakhpur ..	50,498	...	...	...	...	1,052	20.83	13	.45
67	Basti ...	Fasti ...	17,691	...	...	1	.06	1	.06	1	.06
68		Mubarakpur	12,500	...	...	...	...	...	...	16	1.28
69	Azamgarh..	Azamgarh ...	14,788	...	...	...	...	8	.54	3	.20
70		Mau ...	17,998	...	...	...	...	...	...	13	.72
71	Naini Tal... {	Naini Tal	(b)10,392	...	...	1	.07	6	.44	8	.59
72		Kashipur ...	10,576	12	1.13	...	...	...	...	8	.75
73	Lucknow ...	Lucknow ...	217,167	...	...	2	.01	1,408	6.48	203	.93
74	Unao ...	Unao ...	11,147	...	...	...	...	143	12.83	12	1.08
75	Rae Bareli	Rae Bareli ...	16,183	...	...	...	...	328	20.27	11	.68
76		Khairabad ...	11,522	...	...	...	...	2	.17	13	1.13
77	Sitapur ...	Laharpur ...	11,185	...	...	4	.36	146	13.05	...	...
78		Sitapur ...	18,432	...	...	...	...	359	19.47	9	.49
79		Shahabad ...	18,696	...	...	...	...	...	...	5	.27
80	Hardoi ...	Sandila ...	14,074	...	...	...	...	1	.07	12	.85
81		Hardoi ...	14,412	...	...	...	...	6	.42	3	.21
82	Kheri ...	Lakhimpur..	12,396	...	...	2	.16	48	3.87	1	.08
83	Fyzabad ...	Fyzabad	51,342	1	.02	...	...	420	8.18	74	1.44
84		Ajodhya.	...	...	...	...	...	...	...	...	...
85		Tanda ...	18,258	...	...	...	...	32	1.75	13	.71
86	Gonda ...	Gonda ...	13,228	...	...	...	...	...	...	...	...
87		Balrampur..	16,131	...	...	...	...	...	...	...	...
88	Bahraich ..	Bahraich ..	27,371	...	...	...	...	398	14.54	2	.07
89		Nanpara ...	10,924	...	...	...	...	...	...	3	.27
89	Bara Banki	Nawabganj ..	12,369	...	...	...	...	5	.40	...	...
90		Rudauli ..	10,327	...	...	...	...	...	...	10	.97
		Total of towns	3,011,024	25	.01	15	...	25,765	8.56	2,075	.69
		Total of Rural districts.	42,364,763	83	...	188	...	37,817	.89	3,680	.09
		Total for the Province.	45,375,787	108	...	203	...	63,582	1.40	5,755	.13

(b) Rates calculated on average population 13,454.

## ANNUAL FORM No. VI (a).

population of 10,000 and upwards) and **Districts** (exclusive of such towns) during the year 1927—(concl.).

12		13		14		15		16	17			18	Numbers.
Diarrhoea.		Pneumonia.		Phthisis.		Other respiratory diseases.		Deaths from child birth.*	Deaths under one year.			Infant mortality rate.	
Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.		Male.	Female.	Total.		
53	1.63	..	...	...	...	463	14.31	4	304	225	529	275.66	46
91	1.88	274	5.67	230	4.76	136	2.81	20	408	314	722	299.09	47
23	1.26	...	...	...	...	36	1.97	3	90	57	147	174.79	48
104	2.50	149	3.58	128	3.08	168	4.04	8	455	377	832	357.39	49
174	.89	598	3.06	986	5.05	597	3.06	49	1,317	1,171	2,488	322.65	50
4	.27	1	.07	1	.07	39	2.61	5	64	57	121	138.60	51
163	1.12	56	.38	384	2.64	718	4.93	45	869	701	1,570	280.54	52
58	1.07	31	.57	14	.26	81	1.51	9	456	377	833	276.56	53
23	1.83	...	...	...	...	90	7.17	1	68	62	130	190.61	54
31	2.69	...	...	...	...	70	6.09	10	63	65	128	199.38	55
9	.90	...	...	20	1.99	110	10.96	...	76	54	130	255.40	56
12	.83	119	8.20	...	...	37	2.55	...	81	59	140	180.64	57
...	...	...	...	...	...	34	2.92	...	45	31	76	147.86	58
1	.05	...	...	...	...	41	2.05	2	44	31	75	126.05	59
537	2.75	109	.56	386	1.97	881	4.51	71	1,216	1,090	2,306	225.08	60
69	1.25	...	...	1	.02	69	1.25	2	303	229	532	195.01	61
20	.62	1	.03	1	.03	45	1.38	...	75	68	143	147.68	62
10	.40	...	...	33	1.33	17	.69	1	52	48	100	138.70	63
7	.38	...	...	...	...	6	.33	3	41	26	67	136.73	64
2	.16	...	...	...	...	1	.08	...	17	13	30	79.36	65
38	.75	...	...	104	2.06	34	.67	5	301	276	577	238.72	66
10	.56	1	.06	2	.11	17	.96	1	24	31	55	164.67	67
19	1.52	97	7.76	16	1.28	24	1.92	1	50	53	103	187.96	68
11	.74	...	...	...	...	10	.68	1	63	30	93	194.15	69
4	.22	...	...	24	1.33	18	1.00	5	54	38	92	142.86	70
9	.67	114	8.47	27	2.01	33	2.45	1	34	36	70	184.21	71
27	2.55	...	...	89	8.41	45	4.25	4	57	43	100	229.36	72
187	.86	1,243	5.72	943	4.34	330	1.52	73	1,393	1,306	2,699	256.46	73
...	...	2	.18	...	...	18	1.61	...	68	49	117	263.51	74
3	.18	...	...	...	...	13	.80	...	85	82	167	223.86	75
10	.07	...	...	...	...	6	.52	...	73	51	124	238.00	76
...	...	...	...	2	.18	...	...	1	19	19	38	83.15	77
21	1.14	...	...	...	...	22	1.19	6	140	115	255	261.27	78
7	.37	...	...	...	...	21	1.12	2	64	61	125	153.00	79
23	1.63	...	...	2	.14	51	3.62	...	100	110	210	259.58	80
...	...	...	...	...	...	1	.07	1	35	46	81	188.37	81
4	.32	3	.24	...	...	15	1.21	4	26	27	53	145.20	82
62	1.21	12	.22	27	.52	197	3.84	9	199	180	379	253.85	83
24	1.31	...	...	19	1.04	13	.71	2	120	93	213	225.87	84
...	...	...	...	...	...	...	...	...	43	41	84	184.21	85
...	...	...	...	...	...	16	.99	3	82	52	134	186.11	86
5	.18	...	...	...	...	32	1.17	8	95	96	191	172.29	87
8	.73	...	...	...	...	12	1.10	...	36	44	80	160.73	88
16	.81	2	.16	6	.48	6	.48	...	31	27	58	170.79	89
24	2.32	...	...	...	...	25	2.42	4	68	54	122	272.32	90
4,320	1.46	5,765	1.91	5,516	1.83	9,637	3.20	897	17,594	15,252	32,846	230.25	
2,041	.05	386	.01	547	.01	7,177	.17	621	120,734	99,305	220,039	144.39	
6,431	.14	6,151	.14	6,063	.13	16,814	.37	1,518	138,328	114,557	252,885	151.75	

\* NOTE.—By the term "Deaths from child-birth" is meant "deaths during or within 14 days of labour."

Deaths registered from *cholera* in the districts of the

1 Number.	2 District.	3 Circles of registration.		4 Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which deaths from cholera were reported.	Number in each district.	Number from which deaths from cholera were reported.					
MEERUT DIVISION.										
1	Debra Dun ...	14	4	494	4	...	...	...	5	10
2	Saharanpur ...	30	8	1,618	8	...	...	...	40	13
3	Muzaffarnagar ...	26	4	928	5	...	...	...	...	3
4	Meerut ...	45	24	1,534	54	...	...	1	1	112
5	Bulandshahr ...	35	12	1,417	19	...	...	...	1	11
AGRA DIVISION.										
6	Aligarh ...	37	18	1,748	32	1	...	3	10	20
7	Muttra ...	32	14	891	17	1	8	55	19	52
8	Agra ...	37	10	1,233	15	...	...	3	3	25
9	Mainpuri ...	22	8	1,368	11	...	...	...	4	11
10	Etah ...	31	11	1,551	31	...	...	...	...	...
ROBILKHAND DIVISION.										
11	Bareilly ...	31	14	2,196	25	...	...	1	3	1
12	Bijnor ...	31	15	2,154	17	3	...	1	10	38
13	Budaun ...	28	12	1,659	23	...	1	...	2	15
14	Moradabad ...	34	15	2,657	19	...	...	1	3	14
15	Shahjahanpur ...	23	11	2,388	31	...	...	1	...	1
16	Pilibhit ...	15	7	1,094	7	...	2	...	...	3
ALLAHABAD DIVISION.										
17	Farrukhabad ...	24	15	1,717	42	...	...	...	2	12
18	Etawah ...	25	5	1,487	10	...	...	...	...	10
19	Cawnpore ...	28	5	1,972	5	...	...	...	...	...
20	Fatehpur ...	16	2	1,436	2	...	...	...	...	...
21	Allahabad ...	36	24	3,864	171	1	5	3	3	125
JHANSI DIVISION.										
22	Jhansi ...	39	14	1,323	84	...	...	...	33	20
23	Jalaun ...	15	4	848	19	...	...	...	...	...
24	Hamirpur ...	24	...	798	...	...	...	...	...	...
25	Banda ...	24	2	1,231	6	...	...	...	...	2
BENARES DIVISION.										
26	Benares ...	17	15	2,117	119	...	...	28	92	113
27	Mirzapur ...	23	20	3,142	486	...	...	1	82	599
28	Jaunpur ...	22	13	3,169	44	...	...	...	189	148
29	Ghazipur ...	22	16	2,390	160	1	...	...	58	45
30	Ballia ...	19	17	1,740	164	...	...	6	7	28
GORAKHPUR DIVISION.										
31	Gorakhpur ...	47	36	7,208	193	1	...	2	39	284
32	Basti ...	25	24	6,921	567	...	...	4	664	1,218
33	Azamgarh ...	34	21	4,809	63	1	...	...	54	98
KUMAUN DIVISION.										
34	Naini Tal ...	20	9	1,650	46	1	1	...	1	58
35	Almora ...	6	4	5,082	250	...	...	...	3	339
36	Gathwal ...	15	12	3,605	152	...	...	...	6	78
LUCKNOW DIVISION.										
37	Lucknow ...	15	6	937	9	...	...	...	8	15
38	Unao ...	19	...	1,715	...	...	...	...	1	1
39	Rae Bareilly ...	14	12	1,748	82	...	...	1	15	94
40	Sitapur ...	23	5	2,311	8	...	...	...	3	14
41	Hardoi ...	25	9	1,897	19	...	...	...	...	23
42	Kheri ...	16	11	1,731	21	...	...	...	10	22
FYZABAD DIVISION.										
43	Fyzabad ...	23	19	2,951	600	...	...	2	397	2,740
44	Gonda ...	25	16	1,910	81	...	2	1	8	48
45	Bahraich ...	19	8	1,894	13	...	...	...	3	2
46	Sultanpur ...	14	13	2,490	309	...	2	1	74	890
47	Partabgarh ...	16	12	2,188	87	...	...	...	...	153
48	Bara Banki ...	23	10	2,070	21	...	1	3	3	60
Total for the Province		1,184	566	106,281	4,156	10	22	118	1,857	7,558

FORM No. VII.

United Provinces during each month of the year 1927.

5							6			7			8	9
June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
3	2	..	4	...	...	...	20	4	24	.16	.05	.11	.09	1
5	1	3	11	...	1	...	46	28	74	.09	.07	.08	.04	2
...	8	..	2	1	1	1	10	6	16	.02	.02	.02	.01	3
301	88	7	9	...	1	...	311	209	520	.38	.30	.35	.08	4
4	7	14	10	...	...	...	25	22	47	.04	.04	.04	.55	5
59	34	45	27	7	...	...	116	90	206	.20	.18	.19	.56	6
9	3	1	6	...	...	1	82	73	155	.24	.26	.25	.05	7
27	25	...	...	...	...	...	48	35	83	.09	.08	.09	.08	8
32	2	2	...	...	...	...	31	20	51	.07	.06	.07	.28	9
5	20	20	22	26	18	2	68	45	113	.15	.12	.14	.24	10
...	..	35	94	51	1	...	102	84	186	.19	.18	.18	.13	11
29	19	3	5	6	...	...	63	51	114	.16	.14	.15	.03	12
9	8	24	5	1	...	...	37	28	65	.07	.06	.07	.06	13
16	...	15	14	8	...	5	41	35	76	.06	.06	.06	.05	14
8	43	108	45	17	...	21	140	104	244	.31	.27	.29	.03	15
6	1	27	69	80	27	...	121	94	215	.53	.46	.50	.08	16
189	87	13	5	2	...	...	147	113	260	.31	.29	.30	.25	17
34	2	1	..	7	...	...	29	25	54	.07	.07	.07	.14	18
3	2	4	...	...	...	...	4	5	9	.01	.01	.01	.14	19
...	..	...	1	2	...	...	2	1	3	...	...	...	.09	20
284	68	3	5	...	...	6	323	175	498	.45	.26	.35	.14	21
307	395	272	19	12	1	1	521	544	1,065	1.65	1.87	1.75	.02	22
5	114	58	17	...	...	...	96	98	194	.45	.51	.48	.12	23
...	...	...	...	...	...	...	...	...	...	...	...	...	.24	24
1	9	3	15	2	...	...	20	12	32	.07	.04	.05	1.09	25
203	55	73	77	37	27	27	368	365	733	.75	.78	.77	.55	26
1,168	378	159	47	2	...	5	1,298	1,142	2,435	3.57	3.15	3.56	.70	27
174	56	14	8	3	...	...	348	244	592	.60	.41	.51	1.17	28
101	240	83	75	109	19	...	385	346	731	.96	.90	.93	.55	29
238	544	362	75	2	...	...	638	624	1,262	1.49	1.54	1.52	.59	30
655	527	241	180	14	27	22	1,025	967	1,992	.61	.60	.61	1.00	31
1,519	800	193	179	14	19	...	2,392	2,218	4,610	2.43	2.36	2.39	.42	32
42	14	20	2	2	...	...	131	102	233	.17	.13	.15	1.28	33
105	...	15	6	1	...	3	106	85	191	.66	.73	.69	.11	34
881	376	41	...	...	...	...	709	931	1,640	2.67	3.55	3.09	.07	35
791	587	269	..	...	...	...	676	965	1,641	2.90	3.82	3.38	.18	36
5	8	12	2	...	...	...	32	18	50	.08	.05	.07	.25	37
11	2	1	...	1	...	...	9	8	17	.03	.02	.02	.59	38
254	26	28	9	...	...	...	239	188	427	.50	.41	.46	.43	39
6	1	2	8	1	...	...	19	16	35	.03	.03	.03	.04	40
28	5	9	12	7	1	...	32	43	75	.05	.09	.07	.55	41
16	3	35	79	65	..	2	123	109	232	.25	.25	.25	.09	42
998	126	51	6	16	3	4	2,194	2,149	4,343	3.72	3.68	3.70	.54	43
165	147	71	22	16	..	..	245	235	480	.32	.33	.32	.17	44
...	...	2	13	3	...	...	10	13	23	.02	.02	.02	.15	45
447	191	2	13	...	...	...	850	770	1,620	1.72	1.51	1.61	.89	46
254	23	5	...	...	...	...	229	206	435	.55	.47	.51	.53	47
71	20	24	1	...	...	1	99	85	184	.18	.17	.18	.06	48
9,328	5,062	2,364	1,199	515	146	106	14,575	13,710	28,285	.61	.63	.62	.38	

Deaths registered from **small-pox** in the districts

1 Number.	2 District.	3 Circles of registration.		4 Villages.		5						
		Number in each district.	Number from which deaths from small-pox were reported.	Number in each district.	Number from which deaths from small-pox were reported.	January.	February.	March.	April.	May.	June.	July.
MEERUT DIVISION.												
1	Dehra Dun ...	14	7	494	13	3	2	...	8	3	6	7
2	Saharanpur ...	30	18	1,618	42	16	22	17	11	31	25	14
3	Muzaffarnagar ...	26	8	928	8	2	3	1	1	2	3	5
4	Meerut ...	45	7	1,534	7	7	2	2	1	1	2	...
5	Bulandshahr ...	35	15	1,417	21	...	15	13	6	6	9	4
AGRA DIVISION.												
6	Aligarh ...	37	7	1,748	7	...	...	...	1	...	5	12
7	Muttra ...	32	7	891	7	...	...	11	21	7	12	9
8	Agra ...	37	8	1,233	15	...	...	4	7	7	6	3
9	Mainpuri ...	22	4	1,368	7	2	2	...	3	..	1	3
10	Etah ...	31	8	1,551	9	1	2	2	6	10	7	6
ROHILKHAND DIVISION.												
11	Bareilly ...	31	10	2,196	10	2	24	18	31	32	13	9
12	Bijnor ...	31	16	2,154	24	5	6	12	24	37	36	8
13	Budaun ...	28	10	1,659	26	14	9	6	10	20	9	2
14	Moradabad ...	34	13	2,657	20	5	18	6	13	10	9	...
15	Shahjahanpur ...	23	6	2,388	12	9	4	18	25	35	25	3
16	Pilibhit ...	15	3	1,094	3	...	...	...	...	3	4	...
ALLAHABAD DIVISION.												
17	Farrukhabad ...	24	6	1,717	9	...	2	...	4	2	5	...
18	Etawah ...	25	5	1,487	6	1	...	3	...	...	...	...
19	Cawnpore ...	28	9	1,972	10	2	2	1	14	2	3	3
20	Fatehpur ...	16	4	1,436	8	...	1	7	13	...	...	...
21	Allahabad ...	36	28	3,864	195	36	60	82	57	87	80	74
JHANSI DIVISION.												
22	Jhansi ...	39	9	1,323	9	6	1	3	3	1	6	1
23	Jalaun ...	15	3	848	3	...	...	1	...	1	...	...
24	Hamirpur ...	24	1	798	1	...	...	2	...	...	...	...
25	Banda ...	24	8	1,231	18	9	17	12	13	7	12	2
BENARES DIVISION.												
26	Benares ...	17	14	2,117	128	48	38	42	49	43	73	55
27	Mirzapur ...	23	16	3,142	98	34	36	44	60	78	77	95
28	Jaunpur ...	22	17	3,169	37	14	25	20	30	30	42	46
29	Ghazipur ...	22	16	2,390	279	35	55	55	76	77	67	89
30	Ballia ...	19	17	1,740	51	12	13	26	22	26	29	56
GORAKHPUR DIVISION.												
31	Gorakhpur ...	47	36	7,208	122	76	85	80	150	206	219	183
32	Basti ...	25	17	6,921	93	16	75	88	72	86	15	15
33	Azamgarh ...	34	30	4,809	250	82	100	139	191	173	146	98
KUMAUN DIVISION.												
34	Naini Tal ...	20	5	1,650	6	...	2	1	1	2	3	4
35	Almora ...	6	3	5,082	11	...	2	5	2	4	3	16
36	Garhwal ...	15	7	3,605	11	...	...	...	2	...	7	11
LUCKNOW DIVISION.												
37	Lucknow ...	15	7	937	15	8	8	15	32	49	59	26
38	Unao ...	19	7	1,715	8	...	3	...	12	16	26	19
39	Rae Bareilly ...	14	7	1,748	14	1	5	3	2	6	8	2
40	Sitapur ...	23	11	2,311	28	1	24	18	7	8	14	7
41	Hardoi ...	25	9	1,897	18	...	9	7	4	12	5	1
42	Kheri ...	16	7	1,731	9	...	...	16	6	5	8	9
FYZABAD DIVISION.												
43	Fyzabad ...	23	14	2,951	146	88	57	93	81	62	35	74
44	Gonda ...	25	12	2,910	25	10	16	22	5	8	11	3
45	Bahraich ...	19	8	1,894	12	14	22	31	20	37	28	41
46	Sultanpur ...	14	6	2,490	78	9	5	4	11	32	23	15
47	Partabgarh ...	16	10	2,188	52	8	11	8	16	16	15	21
48	Bara Banki ...	23	7	2,070	8	1	2	1	8	13	...	...
Total for the Province		1,184	503	106,281	1,989	529	785	939	1,131	1,243	1,191	1,047

## FORM No. VIII.

of the United Provinces during each month of the year 1927.

August.	September.	October.	November.	December.	6			7		8			9	10
					Total			Number of deaths among children.		Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
					Male.	Female.	Total.	Under one year.	One to 10 years.	Male.	Female.	Total		
..	4	..	..	..	21	12	33	7	5	.16	.14	.15	.09	1
4	1	..	..	..	83	60	143	33	110	.16	.14	.15	.07	2
1	..	1	3	7	11	18	29	16	9	.02	.05	.04	.12	3
..	..	1	..	..	12	4	16	1	10	.01	.01	.01	.10	4
1	3	2	2	1	30	32	62	15	28	.05	.06	.06	.23	5
2	3	3	..	..	15	11	26	6	19	.03	.02	.02	.29	6
2	1	..	2	..	32	33	65	7	58	.09	.12	.10	.15	7
..	1	..	..	..	12	16	28	9	19	.02	.04	.03	.17	8
..	..	..	..	..	6	5	11	2	8	.01	.01	.01	.13	9
3	2	1	..	20	34	26	60	22	25	.07	.07	.07	.10	10
1	..	..	..	1	87	44	131	33	79	.16	.09	.13	.10	11
7	2	..	..	1	63	75	138	81	39	.16	.21	.19	.31	12
1	..	..	..	..	42	29	71	20	51	.08	.06	.07	.23	13
1	..	..	1	..	33	30	63	12	37	.05	.05	.05	.26	14
..	..	..	..	..	60	59	119	27	70	.13	.15	.14	.07	15
..	..	..	..	..	6	1	7	3	4	.03	.01	.02	.06	16
..	1	..	..	1	11	4	15	1	12	.02	.01	.02	.14	17
..	..	2	..	..	3	3	6	3	3	.01	.01	.01	.08	18
..	3	..	6	2	24	14	38	11	20	.04	.03	.03	.08	19
1	2	1	..	..	16	9	25	6	12	.05	.03	.04	.02	20
36	31	9	5	16	296	277	573	133	107	.41	.41	.41	.13	21
2	1	..	..	..	15	9	24	11	6	.05	.03	.04	.13	22
..	1	..	..	..	3	..	3	1	2	.01	..	.01	.03	23
..	..	..	..	..	..	2	2	..	2	..	.01	..	.05	24
..	1	..	..	..	34	39	73	20	53	.11	.14	.12	.04	25
35	9	5	5	15	206	211	417	54	113	.42	.45	.44	.17	26
33	15	..	1	13	235	251	486	149	115	.65	.69	.67	.06	27
36	1	7	3	7	138	123	261	6	204	.24	.21	.22	.08	28
39	14	9	7	15	267	268	535	52	134	.67	.70	.68	.09	29
30	6	..	..	1	123	98	221	27	130	.29	.24	.26	.12	30
91	56	31	12	15	657	547	1,204	215	862	.40	.34	.37	.10	31
2	9	4	8	2	184	158	342	69	99	.19	.17	.18	.03	32
43	19	2	12	22	550	477	1,027	160	233	.71	.63	.67	.08	33
1	..	..	..	..	5	9	14	3	10	.03	.08	.05	.20	34
13	..	..	..	2	29	18	47	7	9	.11	.07	.09	.12	35
13	..	2	4	..	18	21	39	12	11	.08	.08	.08	.03	36
7	..	1	..	..	110	95	205	55	100	.28	.29	.28	.31	37
..	2	4	3	..	43	41	84	14	56	.10	.11	.10	.06	38
..	..	1	..	..	15	13	28	10	10	.03	.03	.03	.15	39
2	..	1	1	..	39	44	83	10	45	.07	.09	.08	.03	40
..	5	1	1	2	28	19	47	17	26	.05	.04	.04	.10	41
4	..	2	..	..	26	24	50	14	21	.05	.06	.05	.06	42
38	21	..	4	..	276	227	503	42	187	.47	.39	.43	.11	43
1	2	..	..	2	41	39	80	41	39	.05	.05	.05	.06	44
11	1	..	2	..	123	84	207	11	..	.22	.16	.19	.04	45
10	5	8	..	..	60	62	122	26	8	.12	.12	.12	.04	46
6	..	4	..	1	54	52	106	17	89	.13	.12	.12	.09	47
..	..	..	..	..	9	16	25	6	19	.02	.03	.02	.02	48
477	222	102	82	146	4,185	3,709	7,894	1,497	3,308	.17	.17	.17	.11	



## Deaths registered from fevers in the districts of the United

1 Number.	2 District.	3 Circles of registration.		4 Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which deaths from fevers were reported.	Number in each district.	Number from which deaths from fevers were reported.					
MEERUT DIVISION.										
1	Dehra Dun	14	14	494	116	227	219	295	304	410
2	Saharanpur	30	30	1,618	1,606	2,802	2,251	2,239	2,430	2,700
3	Muzaffarnagar	26	26	928	928	1,824	1,588	1,365	1,231	1,689
4	Meerut	45	45	1,534	1,534	4,196	3,050	2,382	2,122	2,780
5	Bulandshahr	35	35	1,417	1,417	2,788	2,237	1,658	1,591	1,670
AGRA DIVISION.										
6	Aligarh	37	37	1,748	1,748	2,098	1,663	1,172	1,638	1,745
7	Muttra	32	32	891	891	1,073	707	740	988	873
8	Agra	37	37	1,233	1,220	1,472	1,531	1,400	1,408	1,733
9	Mainpuri	22	22	1,368	934	2,328	1,521	1,344	1,147	1,055
10	Etah	31	31	1,551	1,551	1,549	1,881	1,270	1,265	1,445
ROHILKHAND DIVISION.										
11	Bareilly	31	31	2,196	2,196	2,307	2,039	1,766	2,387	3,183
12	Bijnor	31	31	2,154	1,629	1,853	1,679	1,213	1,456	2,342
13	Budaun	28	28	1,659	1,659	2,445	1,876	1,946	2,622	2,520
14	Moradabad	34	34	2,657	2,399	3,200	2,994	2,756	2,513	2,907
15	Shahjahanpur	23	23	2,388	271	1,602	1,435	1,104	1,485	1,743
16	Pilibhit	15	15	1,094	1,094	1,110	759	689	740	910
ALLAHABAD DIVISION.										
17	Farrukhabad	24	24	1,717	1,140	1,527	1,292	1,304	1,481	1,509
18	Etawah	25	25	1,487	1,198	1,071	1,162	1,036	900	889
19	Cawnpore	28	28	1,972	1,589	999	1,177	1,259	1,393	1,264
20	Fatehpur	16	16	1,436	1,171	582	513	609	561	513
21	Allahabad	36	36	3,864	2,193	1,549	1,216	1,402	1,448	1,481
JHANSI DIVISION.										
22	Jhansi	39	39	1,323	1,323	1,145	994	951	920	1,110
23	Jalaun	15	15	848	848	582	464	570	530	465
24	Hamirpur	24	24	798	694	672	545	421	391	436
25	Banda	24	24	1,231	1,160	849	657	611	612	512
BENARES DIVISION.										
26	Benares	17	17	2,117	1,169	1,080	1,035	1,080	1,369	1,310
27	Mirzapur	23	22	3,142	2,189	942	902	800	867	982
28	Jaunpur	22	22	3,169	2,902	1,039	1,050	801	1,040	1,375
29	Ghazipur	22	19	2,390	2,327	796	542	558	660	706
30	Ballia	19	18	1,740	890	655	453	508	650	694
GORAKHPUR DIVISION.										
31	Gorakhpur	47	47	7,208	6,503	3,129	2,786	2,549	3,501	3,891
32	Basti	25	25	6,921	5,218	2,004	1,831	2,146	2,682	2,770
33	Azamgarh	34	33	4,809	4,076	1,550	1,410	1,505	1,776	2,059
KUMAUN DIVISION.										
34	Naini Tal	20	20	1,650	1,650	681	662	611	538	602
35	Almora	6	5	5,082	2,701	468	516	825	796	993
36	Garhwal	15	15	3,605	2,030	626	672	742	685	996
LUCKNOW DIVISION.										
37	Lucknow	15	15	937	557	769	646	875	743	1,102
38	Unao	19	17	1,715	1,237	1,188	892	927	913	1,437
39	Rae Bareli	14	14	1,748	1,675	961	384	934	1,101	1,099
40	Sitapur	23	23	2,311	2,311	1,934	2,068	1,657	1,635	2,002
41	Hardoi	25	25	1,897	1,897	1,323	1,390	1,406	1,519	1,367
42	Kheri	16	16	1,731	950	1,589	1,123	1,272	1,580	1,488
FYZABAD DIVISION.										
43	Fyzabad	23	23	2,951	2,080	1,327	1,377	1,331	1,251	1,772
44	Gonda	25	25	2,910	2,034	1,693	1,385	1,084	1,107	1,709
45	Bahraich	19	16	1,894	240	1,178	1,247	1,281	1,219	1,115
46	Sultanpur	14	14	2,490	2,067	1,386	1,244	1,301	1,690	1,832
47	Partabgarh	16	16	2,188	895	944	838	907	1,192	1,223
48	Bara Banki	23	23	2,070	1,692	1,570	1,137	996	1,175	1,475
Total for the Province		1,184	1,172	106,281	82,089	70,682	61,540	57,598	63,202	71,833

## FORM No. IX.

Provinces during each month of the year 1927.

5							6			7			8	9
June.	July.	August.	Sep-tem-ber.	Octo-ber.	Novem-ber.	Decem-ber.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
406	373	262	275	223	213	185	1,783	1,608	3,391	13.91	19.13	15.98	13.88	1
2,869	1,967	1,451	1,694	1,938	1,858	1,720	13,713	12,206	25,919	26.58	28.95	27.65	26.69	2
1,568	1,363	983	1,369	1,290	1,289	1,519	9,203	7,825	17,028	21.19	21.74	21.44	21.39	3
3,124	2,852	2,197	2,654	2,948	2,728	3,042	18,205	15,870	34,075	22.47	23.03	22.73	24.51	4
2,132	1,907	1,583	2,027	2,445	2,123	2,073	12,634	11,600	24,234	22.46	23.02	22.72	28.99	5
2,283	1,758	1,547	1,681	1,875	1,607	1,375	10,860	9,582	20,442	18.87	19.70	19.25	22.67	6
860	737	500	619	587	662	854	5,023	4,127	9,150	14.72	14.84	14.78	17.30	7
1,898	1,389	1,036	1,088	1,326	1,081	1,241	8,849	7,754	16,603	17.41	18.64	17.96	19.38	8
1,415	1,233	703	863	1,209	902	1,105	8,663	6,162	14,825	21.03	18.34	19.82	24.00	9
1,432	1,267	1,118	1,376	1,261	1,196	1,132	8,974	7,218	16,192	19.98	18.96	19.51	19.99	10
3,001	2,642	2,207	2,296	2,402	2,181	2,249	15,177	13,483	28,660	27.85	28.75	28.27	23.59	11
2,197	1,433	1,195	1,218	1,885	1,482	1,563	10,277	9,239	19,516	26.37	26.36	26.37	24.53	12
2,178	2,313	1,988	2,183	2,071	1,663	2,169	14,074	11,900	25,974	26.66	26.59	26.63	25.52	13
2,899	1,978	2,011	2,660	3,264	3,144	2,889	17,325	15,890	33,215	27.11	28.39	27.71	26.89	14
2,334	2,053	1,765	1,750	1,915	1,266	1,673	10,895	9,230	20,125	24.06	23.89	23.98	24.36	15
1,340	1,081	889	926	1,134	1,060	1,102	6,366	5,374	11,740	27.78	26.54	27.20	24.99	16
1,649	1,449	1,147	1,151	1,062	1,197	1,285	8,941	7,112	16,053	19.06	18.35	18.74	28.20	17
944	730	682	793	868	880	800	6,192	4,563	10,755	15.31	13.86	14.66	20.56	18
1,417	1,222	1,043	1,139	985	1,087	1,022	7,826	6,181	14,007	12.30	12.09	12.19	17.39	19
538	637	628	486	608	470	467	3,726	2,886	6,612	10.91	9.28	10.13	13.92	20
2,068	1,865	1,608	1,696	1,317	1,271	1,435	10,122	8,234	18,356	14.01	12.07	13.07	15.77	21
1,426	978	1,010	1,085	1,184	1,231	921	6,921	6,034	12,955	21.93	20.74	21.36	24.63	22
501	554	535	522	473	443	341	3,365	2,615	5,980	15.82	13.61	14.75	21.24	23
612	552	528	623	661	654	533	3,621	3,007	6,628	15.27	13.17	14.24	25.11	24
640	719	509	572	534	533	480	4,039	3,189	7,228	13.42	11.11	12.29	20.21	25
1,354	1,355	1,309	1,395	1,299	1,331	1,235	7,850	7,302	15,152	16.11	15.71	15.91	18.12	26
1,305	1,132	1,093	1,156	1,029	920	1,048	6,268	5,908	12,176	17.33	16.29	16.81	19.73	27
1,485	1,188	1,020	934	910	1,263	1,155	7,425	5,835	13,260	12.92	10.05	11.48	14.85	28
887	1,023	908	860	754	995	850	5,123	4,416	9,539	12.83	11.55	12.20	16.45	29
774	1,207	975	1,042	985	716	726	5,164	4,221	9,385	12.11	10.43	11.29	14.53	30
4,277	4,876	4,502	4,077	4,107	4,005	3,931	24,638	20,993	45,631	14.85	13.05	13.97	13.28	31
3,114	2,940	2,108	1,787	2,630	2,312	2,007	15,146	13,185	28,331	15.38	14.02	14.71	15.32	32
2,314	1,828	1,556	1,431	1,396	1,479	1,491	1,0647	9,148	19,795	13.72	12.16	12.95	17.67	33
659	418	372	415	503	687	715	3,671	3,192	6,863	22.83	27.50	24.79	27.06	34
1,407	1,346	1,017	576	653	586	610	4,857	4,936	9,793	18.31	18.62	18.46	21.79	35
1,309	1,373	1,073	718	704	607	497	5,065	4,937	10,002	21.75	19.57	20.61	20.88	36
1,192	969	929	1,096	666	658	726	5,638	4,733	10,371	14.36	14.26	14.32	14.71	37
1,124	1,493	1,181	1,123	1,071	899	991	7,492	5,747	13,239	17.28	14.91	16.16	18.13	38
1,497	1,258	1,008	855	762	610	845	6,423	5,391	11,814	13.51	11.68	12.62	15.07	39
1,845	1,881	1,555	1,513	1,518	1,305	1,519	11,047	9,385	20,432	18.99	18.48	18.75	18.87	40
1,721	1,792	1,569	1,931	1,396	1,318	1,422	10,005	8,149	18,154	17.07	16.35	16.74	19.95	41
1,516	2,027	1,580	1,390	1,182	1,221	1,274	9,479	7,763	17,242	19.54	18.12	18.87	19.67	42
1,945	1,892	1,775	1,237	1,139	1,202	1,248	9,536	7,960	17,496	16.19	13.64	14.92	16.20	43
1,465	1,689	1,579	1,647	1,582	1,385	1,708	9,882	8,151	18,033	13.12	11.32	12.24	11.91	44
1,946	1,322	1,293	1,334	1,101	1,393	1,362	8,432	7,359	15,791	15.20	14.40	14.82	14.98	45
2,048	1,686	1,142	1,306	1,204	1,008	985	9,164	7,668	16,832	18.53	15.05	16.77	19.84	46
1,380	1,256	932	884	727	835	869	6,613	5,374	11,987	15.84	12.27	14.02	17.52	47
1,711	1,635	1,245	1,300	1,132	1,027	1,108	8,526	7,045	15,571	15.88	14.29	15.12	18.04	48
80,006	72,697	60,846	62,753	63,915	59,933	61,497	424,865	361,687	786,552	17.86	16.75	17.33	19.31	49

Paragraph 52.]

ANNUAL

Deaths registered from *dysentery and diarrhoea* in the districts

1 Number.	2 District.	3 Circles of registration.		4 Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.	Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.					
MEERUT DIVISION.										
1	Dehra Dun ...	14	8	494	13	20	6	6	12	30
2	Saharanpur ...	30	16	1,618	16	19	8	9	30	35
3	Muzaffarnagar ...	26	14	928	14	9	5	7	11	31
4	Meerut ...	45	19	1,534	30	9	7	10	7	35
5	Bulandshahr ...	35	24	1,417	33	25	16	24	27	36
AGRA DIVISION.										
6	Aligarh ...	37	11	1,748	11	31	32	37	51	70
7	Muttra ...	32	14	891	14	21	13	18	28	20
8	Agra ...	37	9	1,233	10	35	20	27	45	48
9	Mainpuri ...	22	3	1,308	3	...	1	1	...	...
10	Etah ...	31	21	1,551	31	25	12	12	21	16
ROHILKHAND DIVISION.										
11	Baroilly ...	31	16	2,196	16	11	10	10	20	22
12	Bijnor ...	31	20	2,154	22	15	9	13	15	53
13	Budaun ...	28	12	1,659	15	18	7	7	21	23
14	Moradabad ...	34	23	2,657	31	45	27	45	64	81
15	Shahjahanpur ...	23	8	2,388	8	12	21	21	20	27
16	Pilibhit ...	15	6	1,094	6	6	1	2	12	7
ALLAHABAD DIVISION.										
17	Farrukhabad ...	24	9	1,717	11	17	7	5	14	26
18	Etawah ...	25	5	1,437	5	7	2	3	11	20
19	Cawnpore ...	28	6	1,972	6	19	23	16	43	40
20	Fatehpur ...	16	10	1,436	10	3	1	...	2	1
21	Allahabad ...	36	13	3,864	34	24	14	17	27	32
JHANSI DIVISION.										
22	Jhansi ...	39	16	1,323	18	8	5	10	17	27
23	Jalaun ...	15	5	848	7	3	2	3	2	...
24	Hamirpur ...	24	8	798	8	1	...	1	4	5
25	Banda ...	24	6	1,231	6	2	...	4	2	...
BENARES DIVISION.										
26	Benares ...	17	9	2,117	12	35	26	37	74	85
27	Mirzapur ...	23	8	3,142	10	10	4	4	10	11
28	Jaunpur ...	22	7	3,169	9	3	-2	1	...	9
29	Ghazipur ...	22	3	2,390	4	1	1	4	5	6
30	Ballia ...	19	17	1,740	56	19	23	25	22	20
GORAKHPUR DIVISION.										
31	Gorakhpur ...	47	29	7,208	66	12	12	7	13	10
32	Basti ...	25	11	6,921	27	1	2	5	11	18
33	Azamgarh ...	34	12	4,809	15	3	5	1	14	24
KUMAUN DIVISION.										
34	Naini Tal ...	20	13	1,650	49	9	5	2	11	20
35	Almora ...	6	6	5,082	239	26	19	19	31	102
36	Garhwal ...	15	14	3,605	357	44	93	59	97	318
LUCKNOW DIVISION.										
37	Lucknow ...	15	10	937	13	35	28	34	30	37
38	Unao ...	19	8	1,715	16	1	3	3	2	1
39	Rae Bareilly ...	14	6	1,748	17	2	2	2	6	2
40	Sitapur ...	23	10	2,311	12	2	1	1	16	19
41	Hardoi ...	25	11	1,897	13	3	9	3	8	11
42	Kheri ...	16	3	1,731	3	1	...	...	3	4
FYZABAD DIVISION.										
43	Fyzabad ...	23	14	2,951	28	14	12	13	30	35
44	Gonda ...	25	5	2,910	7	5	...	...	6	3
45	Bahraich ...	19	4	1,894	5	2	1	3	8	8
46	Sultanpur ...	14	9	2,490	25	3	6	5	3	9
47	Partabgarh ...	16	7	2,188	8	3	1	2	4	1
48	Bara Banki ...	23	11	2,070	11	6	2	3	8	18
Total for the Province..		1,184	529	106,281	1,380	625	506	541	922	1,456

## FORM No. X.

of the United Provinces during each month of the year 1927.

5							6			7			8	9
June.	July.	August	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
46	52	24	23	18	14	17	140	128	268	1.09	1.52	1.26	.99	1
22	15	22	25	29	24	25	131	132	263	.25	.31	.23	.33	2
14	12	19	15	13	11	12	94	65	159	.22	.18	.20	.09	3
30	15	24	25	29	30	24	127	118	245	.16	.17	.16	.25	4
32	37	80	52	53	60	37	246	233	479	.44	.46	.45	.23	5
91	79	92	117	89	56	45	381	409	790	.66	.84	.74	.66	6
12	23	20	35	25	24	25	135	129	264	.39	.46	.43	.46	7
37	41	61	51	34	36	28	259	204	463	.51	.49	.50	.45	8
1	1	1	2	1	...	...	3	5	8	.01	.01	.01	.02	9
26	13	27	21	33	17	15	142	96	238	.32	.25	.29	.28	10
25	12	19	25	19	16	18	119	88	207	.22	.19	.20	.15	11
45	29	41	33	33	35	31	180	176	356	.46	.50	.48	.34	12
18	16	21	21	27	16	14	110	99	209	.21	.22	.21	.16	13
69	60	85	122	98	81	69	447	399	846	.70	.71	.70	.55	14
30	21	21	9	14	19	13	132	126	228	.22	.33	.27	.27	15
16	9	12	8	18	13	9	58	55	113	.25	.27	.26	.16	16
34	24	37	26	19	38	29	163	113	276	.35	.29	.32	.28	17
5	5	28	21	12	8	12	77	57	134	.19	.17	.18	.18	18
27	21	34	35	23	14	16	173	138	311	.27	.27	.27	.30	19
...	...	...	6	7	2	8	14	16	30	.04	.05	.04	.03	20
29	27	50	41	16	24	17	167	151	318	.23	.22	.23	.20	21
19	13	29	26	18	17	16	104	101	205	.33	.35	.34	.36	22
...	2	7	3	3	6	3	16	18	34	.07	.09	.08	.18	23
5	3	2	3	3	3	...	15	15	30	.06	.06	.06	.11	24
...	1	1	1	...	1	1	6	7	13	.02	.02	.02	.07	25
68	59	127	67	66	63	76	429	354	783	.88	.76	.82	.89	26
10	20	11	17	6	10	12	70	55	125	.19	.15	.17	.16	27
3	3	4	13	1	2	4	26	19	45	.04	.03	.04	.08	28
2	3	3	5	2	5	8	27	18	45	.07	.05	.06	.04	29
37	45	49	39	32	35	37	231	152	383	.54	.37	.46	.31	30
17	13	16	24	11	7	7	84	65	149	.05	.04	.04	.05	31
11	5	5	11	4	8	12	49	44	93	.05	.05	.05	.04	32
16	11	10	11	17	6	8	70	56	126	.09	.07	.08	.10	33
12	10	9	11	12	11	10	75	47	122	.47	.40	.44	.45	34
126	132	74	35	38	20	13	333	302	635	1.25	1.14	1.20	1.31	35
400	404	243	99	84	96	84	1,022	999	2,021	4.39	3.96	4.16	3.87	36
62	42	60	36	21	37	29	229	222	451	.58	.67	.62	.75	37
2	2	1	5	17	4	14	28	27	55	.06	.07	.07	.04	38
2	3	3	9	3	...	1	23	12	35	.04	.02	.04	.05	39
8	2	10	10	4	2	7	45	37	82	.08	.07	.07	.10	40
8	11	18	7	7	5	5	45	50	95	.08	.10	.09	.09	41
2	2	6	3	2	2	4	16	13	29	.03	.03	.03	.02	42
15	12	19	16	12	19	20	119	98	217	.20	.17	.18	.16	43
3	...	2	...	...	...	...	11	8	19	.01	.01	.01	.03	44
3	1	3	4	4	...	3	17	23	40	.03	.04	.04	.04	45
6	1	1	4	9	1	2	38	12	50	.08	.02	.05	.02	46
1	...	...	...	2	4	...	10	8	18	.02	.02	.02	.01	47
8	8	7	4	2	5	10	44	37	81	.08	.07	.08	.04	48
1,455	1,320	1,438	1,176	920	907	850	6,450	5,736	12,186	.27	.26	.27	.25	

Deaths registered from *respiratory diseases* in the districts

1 Number.	2 District.	3 Circles of registration.		4 Villages.		5					
		Number in each district.	Number from which deaths from respiratory diseases were reported.	Number in each district.	Number from which deaths from respiratory diseases were reported.	January.	February.	March.	April.	May.	June.
<b>MEERUT DIVISION.</b>											
1	Dehra Dun ...	14	8	494	14	67	54	66	73	59	57
2	Saharanpur ...	30	17	1,618	19	99	63	73	116	74	48
3	Muzaffarnagar ...	26	19	928	22	23	18	16	7	10	8
4	Meerut ...	45	23	1,534	28	105	95	108	81	102	65
5	Bulandshahr ...	35	23	1,417	29	82	96	82	82	75	72
<b>AGRA DIVISION.</b>											
6	Aligarh ...	37	18	1,748	18	115	99	110	78	81	87
7	Muttra ...	32	14	891	14	117	79	81	104	63	44
8	Agra ...	37	16	1,233	19	253	292	253	204	190	171
9	Mainpuri ...	22	7	1,368	7	6	2	4	4	2	3
10	Etah ...	31	24	1,551	33	50	23	13	18	19	21
<b>ROHILKHAND DIVISION.</b>											
11	Bareilly ...	31	20	2,196	20	127	106	93	103	92	68
12	Bijnor ...	31	16	2,154	19	65	28	22	23	42	30
13	Budaun ...	28	18	1,659	24	43	32	32	26	23	15
14	Moradabad ...	34	27	2,657	35	197	167	165	123	126	104
15	Shahjahanpur ...	23	11	2,388	13	77	63	53	82	85	78
16	Pilibhit ...	15	7	1,094	7	40	31	29	48	52	36
<b>ALLAHABAD DIVISION.</b>											
17	Farrukhabad ...	24	14	1,717	17	78	78	75	78	75	65
18	Etawah ...	25	9	1,487	10	85	56	56	47	49	39
19	Cawnpore ...	28	12	1,972	12	234	181	216	181	224	181
20	Fatehpur ...	16	12	1,436	18	3	5	4	6	6	7
21	Allahabad ...	36	24	3,864	67	113	94	131	98	119	88
<b>JHANSI DIVISION.</b>											
22	Jhansi ...	39	20	1,323	31	36	35	52	56	43	36
23	Jalaun ...	15	9	848	21	30	33	16	22	19	26
24	Hamirpur ...	24	23	798	540	269	196	155	135	147	197
25	Banda ...	24	10	1,231	89	22	19	17	16	13	16
<b>BENARES DIVISION.</b>											
26	Benares ...	17	9	2,117	17	109	93	93	120	129	143
27	Mirzapur ...	23	12	3,142	21	38	10	15	10	8	12
28	Jaunpur ...	22	9	3,169	10	5	2	7	5	12	5
29	Ghazipur ...	22	2	2,390	2	3	3	4	9	12	9
30	Ballia ...	19	13	1,740	20	10	13	23	12	15	9
<b>GORAKHPUR DIVISION.</b>											
31	Gorakhpur ...	47	28	7,208	42	17	17	16	24	17	27
32	Basti ...	25	16	6,921	28	5	7	8	6	12	11
33	Azamgarh ...	34	13	4,809	15	22	29	20	29	26	31
<b>KUMAUN DIVISION.</b>											
34	Naini Tal ...	20	13	1,650	53	35	40	29	48	44	27
35	Almora ...	6	6	5,082	239	48	54	56	45	61	81
36	Garhwal ...	15	13	3,605	38	6	47	12	35	36	51
<b>LUCKNOW DIVISION.</b>											
37	Lucknow ...	15	10	937	14	234	198	227	269	239	209
38	Unao ...	19	9	1,715	26	10	16	6	9	12	3
39	Rae Bareilly ...	14	10	1,748	34	6	7	7	1	2	2
40	Sitapur ...	23	15	2,311	19	11	14	9	10	5	4
41	Hardoi ...	25	17	1,897	23	15	8	13	6	12	8
42	Kheri ...	16	4	1,731	4	3	7	3	2	8	9
<b>FYZABAD DIVISION.</b>											
43	Fyzabad ...	23	16	2,951	24	23	19	26	28	39	22
44	Gonda ...	25	7	2,910	9	11	18	3	13	10	9
45	Bahraich ...	19	5	1,894	6	..	3	11	7	6	1
46	Sultanpur ...	14	9	2,490	17	13	6	11	1	12	7
47	Partabgarh ...	16	12	2,188	21	6	5	4	10	6	11
48	Bara Banki ...	23	15	2,070	15	13	9	11	14	13	5
Total for the Province		1,184	669	106,281	1,826	3,024	2,570	2,536	2,524	2,526	2,258

## FORM No. XI.

of the United Provinces during each month of the year 1927.

July.	August.	September.	October.	November.	December.	6			7			8	9
						Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
						Male.	Female.	Total.	Male.	Female.	Total.		
46	35	20	46	51	51	363	262	625	2·83	3·12	2·94	2·39	1
19	32	24	26	30	39	373	270	643	·72	·64	·68	·51	2
4	19	11	17	15	31	89	95	184	·20	·26	·23	·10	3
61	61	71	62	94	89	461	533	994	·57	·77	·66	·78	4
47	47	61	51	71	65	441	390	831	·78	·77	·78	·36	5
63	68	58	70	59	121	440	569	1,009	·78	1·17	·95	·67	6
45	40	58	44	81	79	451	384	835	1·32	1·38	1·35	1·10	7
131	138	130	136	194	264	1,287	1,169	2,456	2·53	2·81	2·66	2·28	8
5	4	1	6	4	1	23	19	42	·05	·06	·06	·03	9
6	21	15	19	17	20	140	102	242	·31	·27	·29	·26	10
54	55	63	71	85	160	564	513	1,077	1·03	1·09	1·06	·70	11
21	22	23	26	28	40	196	174	370	·50	·49	·50	·32	12
9	8	9	8	15	26	153	93	246	·29	·21	·25	·21	13
107	125	114	126	145	232	875	856	1,731	1·36	1·53	1·44	1·07	14
72	76	101	76	33	88	495	449	944	1·10	1·16	1·12	·89	15
39	66	48	32	29	62	301	211	512	1·31	1·04	1·19	·99	16
44	57	38	34	73	82	389	383	772	·83	·99	·90	·89	17
16	35	31	25	27	34	254	246	500	·63	·75	·68	·50	18
148	163	162	162	149	208	1,046	1,163	2,209	1·64	2·27	1·92	1·95	19
1	9	7	10	14	23	55	40	95	·16	·13	·14	·06	20
92	94	127	87	128	146	638	679	1,317	·88	·99	·94	·86	21
27	24	17	17	34	35	252	160	412	·80	·55	·68	·73	22
20	39	52	26	33	12	180	148	328	·84	·77	·81	·89	23
185	248	337	265	247	217	1,402	1,136	2,538	5·91	4·98	5·45	8·04	24
32	25	20	13	30	34	150	107	257	·50	·37	·44	·22	25
82	119	147	127	145	125	711	721	1,432	1·46	1·55	1·50	2·15	26
13	9	1	7	6	7	91	45	136	·25	·12	·19	·17	27
6	6	11	4	1	7	39	32	71	·07	·05	·06	·06	28
12	14	9	9	4	11	58	41	99	·14	·11	·13	·07	29
9	10	8	10	7	9	91	44	135	·21	·11	·16	·08	30
17	17	22	16	21	19	102	128	230	·06	·08	·07	·10	31
6	10	6	5	10	11	57	40	97	·06	·04	·05	·03	32
18	25	25	26	15	18	151	133	284	·19	·18	·18	·14	33
25	27	18	34	40	67	245	189	434	1·52	1·63	1·57	1·18	34
66	51	45	32	38	20	300	297	597	1·13	1·12	1·12	1·04	35
50	27	9	37	21	33	222	142	364	·95	·56	·75	·71	36
190	238	213	187	260	203	1,265	1,402	2,667	3·22	4·22	3·68	3·85	37
8	4	6	10	28	28	98	42	140	·23	·11	·17	·08	38
3	4	6	8	5	7	33	25	58	·07	·05	·06	·04	39
3	8	4	9	6	11	58	36	94	·10	·07	·09	·09	40
8	10	6	7	8	19	68	52	120	·12	·10	·11	·09	41
1	5	2	4	6	6	36	20	56	·07	·05	·06	·02	42
16	36	38	14	35	45	194	152	346	·33	·26	·29	·29	43
9	16	16	10	3	17	67	68	135	·09	·09	·09	·07	44
6	6	9	4	5	11	41	28	69	·07	·05	·06	·06	45
10	8	13	6	6	8	55	46	101	·11	·09	·10	·08	46
6	13	4	8	5	6	45	39	84	·11	·09	·10	·05	47
4	10	11	2	7	11	56	54	110	·10	·11	·11	·07	48
1,862	2,184	2,227	2,031	2,428	2,858	15,101	13,927	29,028	·63	·64	·64	·60	

Deaths registered from **plague** in the districts

1 Number.	2 District.	3 Circles of registration.		4 Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from deaths from plague which were reported.	Number in each district.	Number from deaths from plague which were reported.					
<b>MEERUT DIVISION.</b>										
1	Dehra Dun ..	14		494		..	..	..	..	..
2	Saharanpur ..	30	13	1,618	71	20	7	31	41	47
3	Muzaffarnagar ..	26	13	928	36	19	88	263	191	70
4	Meerut ..	45	12	1,534	36	4	..	52	111	99
5	Bulandshahr ..	35	11	1,417	13	13	6	31	39	21
<b>AGRA DIVISION.</b>										
6	Aligarh ..	37	1	1,748	2	1	1	..	2	..
7	Muttra ..	32	5	891	6	1	1	23	19	..
8	Agra ..	37	1	1,233	7	12	21	27	16	1
9	Mainpuri ..	22	..	1,368	..	..	..	..	..	..
10	Etah ..	31	..	1,551	..	..	..	..	..	..
<b>ROHILKHAND DIVISION.</b>										
11	Bareilly ..	31	13	2,196	19	95	79	125	123	39
12	Bijnor ..	31	9	2,154	16	45	23	22	23	7
13	Budaun ..	28	12	1,659	59	65	57	94	99	57
14	Moradabad ..	34	19	2,657	27	110	42	44	72	67
15	Shahjahanpur ..	23	7	2,383	9	2	..	44	30	11
16	Pilibhit ..	15	2	1,094	2	..	..	..	..	..
<b>ALLAHABAD DIVISION.</b>										
17	Farrukhabad ..	24	..	1,717	..	..	..	..	..	..
18	Etawah ..	25	..	1,487	..	..	..	..	..	..
19	Cawnpore ..	28	12	1,972	19	11	37	85	72	8
20	Fatehpur ..	16	2	1,436	4	..	24	4	..	..
21	Allahabad ..	36	8	3,864	63	56	38	136	64	11
<b>JHANSI DIVISION.</b>										
22	Jhansi ..	39	..	1,323	..	..	..	..	..	..
23	Jalaun ..	15	..	848	..	..	..	..	..	..
24	Hamirpur ..	24	1	798	1	..	..	5	..	..
25	Banda ..	24	..	1,231	..	..	..	..	..	..
<b>BENARES DIVISION.</b>										
26	Benares ..	17	..	2,117	..	4	13	7	..	..
27	Mirzapur ..	23	1	3,142	6	19	5	10	3	..
28	Jatpur ..	22	5	3,169	16	35	41	52	39	..
29	Ghazipur ..	22	12	2,390	343	188	362	618	515	118
30	Ballia ..	19	4	1,740	101	88	109	207	134	26
<b>GORAKHPUR DIVISION.</b>										
31	Gorakhpur ..	47	16	7,208	54	133	192	342	215	25
32	Basti ..	25	12	6,921	164	124	222	203	95	14
33	Azamgarh ..	34	27	4,809	448	449	805	1,065	468	30
<b>KUMAUN DIVISION.</b>										
34	Naini Tal ..	20	3	1,650	3	35	33	15	10	..
35	Almora ..	6	2	5,082	3	..	..	2	1	..
36	Garhwal ..	15	..	3,605	..	..	..	..	..	..
<b>LUCKNOW DIVISION.</b>										
37	Lucknow ..	15	4	937	9	11	16	33	11	41
38	Unao ..	19	8	1,715	26	29	42	51	43	19
39	Rae Bareli ..	14	4	1,748	28	52	50	21	53	20
40	Sitapur ..	23	8	2,311	37	35	33	82	63	26
41	Hardoi ..	25	9	1,897	21	52	60	76	83	38
42	Kheri ..	16	8	1,731	18	37	18	60	93	36
<b>FYZABAD DIVISION.</b>										
43	Fyzabad ..	23	11	2,951	69	61	170	118	70	4
44	Gonda ..	25	1	2,910	6	..	..	2	..	..
45	Bahraich ..	19	..	1,894	..	..	..	..	..	..
46	Sultanpur ..	14	3	2,490	13	3	14	9	5	3
47	Partabgarh ..	16	..	2,168	..	..	..	1	..	..
48	Bara Banki ..	23	11	2,070	38	52	67	102	60	16
Total for the Province...		1,184	290	106,281	1,793	1,871	2,676	4,062	2,863	654

## FORM No. XII.

of the United Provinces during each month of the year 1927.

5							6			7			8	9
June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
...	...	2	3	5	58	121	155	183	338	.30	.43	.36	.53	1
3	...	1	...	1	32	119	350	437	787	.80	1.21	.99	1.11	2
3	9	7	...	...	...	13	145	177	322	.18	.26	.21	4.16	3
27	...	...	...	...	...	...	56	54	110	.10	.11	.10	4.80	4
...	...	...	...	...	...	...	2	2	4	...	...	...	.89	5
...	...	...	...	...	...	...	22	22	44	.06	.08	.07	2.74	6
...	...	...	...	...	...	...	34	43	77	.07	.10	.08	.48	7
...	...	...	...	...	...	...	...	...	...	...	...	...	.05	8
...	...	...	...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	...	...	...	...	...	...	...	...	...	10
3	...	1	28	28	110	380	453	558	1,011	.83	1.19	1.00	.04	11
...	...	...	...	3	19	75	92	125	217	.24	.36	.29	.25	12
3	4	2	...	5	22	142	221	329	550	.42	.73	.56	.25	13
11	3	...	5	4	33	143	231	303	534	.36	.54	.44	.78	14
...	...	...	...	...	23	59	71	98	169	.16	.25	.20	.13	15
...	...	...	...	...	...	12	6	6	12	.03	.03	.03	.15	16
...	...	...	...	...	...	...	...	...	...	...	...	...	.21	17
...	...	...	...	...	...	...	106	108	214	.17	.21	.19	1.46	18
...	...	4	6	...	1	22	31	30	61	.09	.09	.09	1.18	19
5	...	...	...	...	8	8	156	170	326	.22	.25	.23	.61	20
...	...	...	...	...	...	...	...	...	...	...	...	...	.07	21
...	...	...	...	...	...	...	...	...	...	...	...	...	.12	22
...	...	...	...	...	...	...	4	1	5	.02	...	.01	.25	23
...	...	...	...	...	...	...	...	...	...	...	...	...	.52	24
...	...	...	...	...	...	...	8	16	24	.02	.03	.02	.93	25
...	...	...	...	...	...	...	15	22	37	.04	.06	.05	.08	26
1	...	1	...	...	...	2	68	103	171	.12	.18	.15	.64	27
15	...	...	...	...	3	62	831	1,050	1,881	2.08	2.74	2.41	5.63	28
...	...	2	2	...	26	48	284	358	642	.66	.88	.77	3.42	29
...	...	2	15	13	61	209	518	689	1,207	.31	.43	.37	1.10	30
4	15	...	5	...	27	153	369	493	862	.37	.52	.45	1.92	31
1	2	4	18	16	38	163	1,310	1,749	3,059	1.69	2.32	2.00	5.82	32
...	...	...	...	2	12	42	84	65	149	.52	.56	.54	.01	33
...	...	...	...	...	...	4	5	2	7	.02	...	.01	...	34
...	...	...	...	...	...	...	...	...	...	...	...	...	...	35
...	...	...	...	...	...	...	...	...	...	...	...	...	...	36
3	...	...	...	...	...	...	59	56	115	.15	.17	.16	.06	37
5	...	...	2	6	10	24	107	124	231	.25	.32	.28	1.19	38
...	...	...	...	...	19	44	114	145	259	.24	.31	.28	.40	39
2	...	...	7	32	10	34	144	180	324	.25	.35	.30	.62	40
4	...	...	...	...	26	74	183	240	423	.31	.48	.39	.12	41
...	...	...	4	5	9	54	144	172	316	.30	.40	.34	.14	42
...	3	1	...	7	21	105	258	302	560	.44	.52	.48	1.57	43
...	...	...	...	...	1	25	10	18	28	.01	.02	.02	.07	44
...	...	...	...	...	...	...	...	...	...	...	...	...	.12	45
...	...	...	...	...	...	...	15	19	34	.03	.03	.03	.34	46
...	...	...	...	...	...	...	...	1	1	...	...	...	.03	47
...	...	3	...	...	33	123	188	271	459	.35	.55	.44	.46	48
90	86	80	95	127	603	2,263	6,849	8,721	15,570	.29	.40	.34	1.14	



No.	Name	Age	Sex	Religion	Marital Status	Occupation	Income		Assets	Liabilities	Total
							Annual	Monthly			
1	John Doe	35	M	Protestant	Married	Teacher	1200	100	5000	1000	1800
2	Jane Smith	30	F	Catholic	Single	Nurse	1500	120	3000	500	2000
3	Robert Brown	45	M	Methodist	Married	Engineer	2000	150	8000	1200	2800
4	Mary White	25	F	Baptist	Single	Student	500	40	1000	200	700
5	James Black	55	M	Presbyterian	Married	Retired	800	60	4000	800	1200
6	Sarah Green	40	F	Anglican	Married	Homemaker	0	0	2000	400	800
7	William Grey	60	M	Quaker	Married	Farmer	1000	80	6000	1000	1800
8	Elizabeth King	38	F	Episcopal	Married	Librarian	700	50	3000	600	1200
9	Thomas Lee	50	M	Presbyterian	Married	Accountant	1100	90	5000	900	2000
10	Anna Hall	28	F	Catholic	Single	Teacher	900	70	2000	400	1300

*[Handwritten signature]*



