Twenty-Fourth

# BIENNIAL REPORT

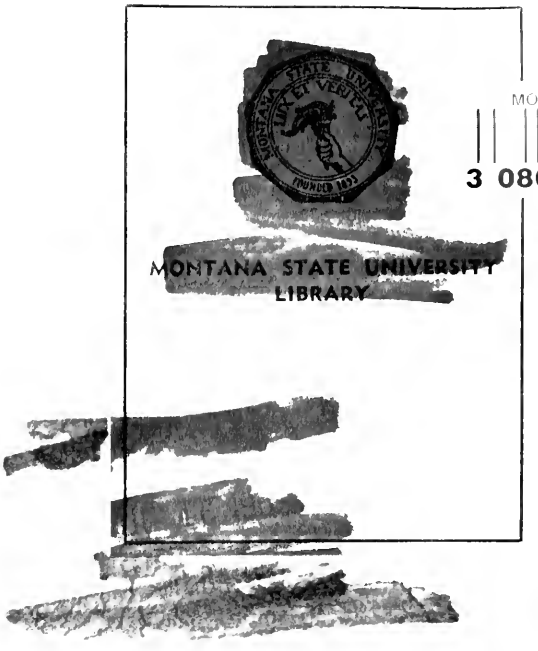
of the

# Montana State Board of Health

For the Years 1947-1948

VITAL STATISTICS FOR THE YEARS

1946 - 1947



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MONTANA RECORD PUBLISHING CO.
HELENA, MONTANA

## STATE OF MONTANA
## STATE BOARD OF HEALTH

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## ADMINISTRATION DIVISION

B. K. Kilbourne, M.D., Executive Officer

Montana during the period covered by this biennial report, has enjoyed the highest degree of physical health in the history of the State. Both maternal mortality and infant mortality have reached new lows each year of this period. Also, the largest number of births have occurred in any like period of the State's history. The State has also been exceptionally free of any widespread epidemics of communicable disease.

At the same time the State Board of Health has been confronted by several increased administrative problems. Several major enactments by the 1947 legislature, viz., Hospital Survey and Construction, Hospital Licensing and Inspection, Premarital Examinations, including a serologic test, Licensing and Inspection of Locker Plants, and others, have added materially to duties of the personnel of the Health Department. Adequate office space for the performance of the various functions has been impossible to obtain. This adds to confusion in the integration of the work of the different divisions and to administrative direction.

Inability to obtain trained personnel, especially in higher technical and professional positions, has made it impossible to adequately carry on or increase essential activities in several divisions.

In order to provide more adequate public health service to all of the people within the State, it is essential that a number of full-time county or district health departments be organized. It seems logical that some State aid be made available to help defray the costs of such services. A careful consideration of these various problems by the next legislative session will be gratefully appreciated in order that the State Board of Health may provide a maximum of Public Health Services to all the people within the State.

It is with deep sorrow we record the passing of Dr. W. J. Butler, ex-Secretary of the Livestock Sanitary Board, who has ever been most cooperative in and a staunch supporter of the development of those activities which might add to a better health for the people of Montana. His kind and helpful advice and cooperation will be sorely missed.

## DIVISION OF COMMUNICABLE DISEASES

**Director, L. J. Lull, M.D.**

Montana laws require that all physicians practicing medicine in the State shall report all observed communicable diseases to their local health officer immediately. Weekly a summary of these reports is forwarded to the State Board of Health.

On the basis of the incidence of communicable diseases as reported to the Board of Health since 1920, we see (Table I) that only two diseases, smallpox and Rocky Mountain spotted fever, are approaching the vanishing point. Of the other controllable diseases, we observe that typhoid fever for approximately eight years has maintained about the same level of incidence, while there is a very definite increase recorded in diphtheria and tuberculosis.

**Tuberculosis** shows a very marked increase from 373 cases reported during the fiscal year 1946-1947 to 701 cases reported during fiscal year 1947-1948. This increase is accounted for by the intensive chest X-ray program conducted by the State Board of Health. This intensive case finding program has brought to record many cases that might have gone to their death without having been previously recognized. Although there is a marked increase in reported cases of tuberculosis there is probably no greater prevalence of cases than in the previous years.

**Typhoid Fever** has remained at approximately the same level for the past eight years. During the two years of this biennium there were reported twenty-three and twenty-two cases of typhoid fever. The incidence of typhoid in any community is an index of its sanitation and, although there is a marked decrease in reported cases from the experience of fifteen years ago, the continued reporting of twenty-two cases of typhoid annually for the State is evidence of need for further sanitation improvements.

**Diphtheria** has shown no decided decrease for the past ten years. In 1948 there were almost three times as many cases reported as for 1947. Most of these cases were reported from the city of Butte. With our present knowledge of preventative measures in diphtheria control, this increase of diphtheria cases in the State is indicative of the need for a more intensive preventative program in all local communities of the State.

**Smallpox**, totally absent from the morbidity reports of Montana for two successive years, is a very striking example of the results of the widespread use of preventative measures in communicable diseases. Fortunately this enviable record of the State of Montana in smallpox control is shared by most of the other states of the United States.

**Spotted Fever** is rapidly disappearing from Montana. In 1941 there were 107 cases of spotted fever reported in the State with four-

teen deaths. There have been successive decreases with each year down to the present biennium where we observe for 1947, seven cases reported with one death and in 1948 two cases reported with one death. This excellent record is without doubt due to intensive programs carried on in local communities in immunizing the population against this disease.

**Trachoma** (Table II) has shown a decided increase during this biennium, with forty-five cases reported in 1947 and 129 cases reported in 1948. Most of these cases have occurred among the Indian population and intensive control programs should be directed toward control of this disease, which too often results in permanent blindness for the victims.

**Poliomyelitis** reached its highest numbers since 1934 in the fiscal year 1947 when a total of 107 cases were reported. In 1948 the reported number dropped to thirty-seven. During 1947 the highest reported incidence of poliomyelitis in the United States per capita was in Idaho, an adjoining state. In 1948 there was again a high prevalence of poliomyelitis in Idaho and also in South Dakota. In spite of the unusually large numbers in the adjoining states Montana has enjoyed a relatively low number of poliomyelitis cases during the last year. Cases reported in 1947 (see Table III) showed a predominance of males under ten years of age while reports for 1948 (see Table IV) show a predominance of females in the under ten age group.

**Gonorrhea** shows reports of 318 cases for the fiscal year 1947 and only 257 cases for the fiscal year 1948. This probably does not indicate a reduced incidence of the disease, but rather the lack of reports from physicians who are diagnosing cases. Previously most diagnosis of gonorrhea was brought to the attention of the Health Department through the examination of laboratory specimens submitted by the practicing physicians. Recently, with the widespread use of penicillin, laboratory facilities are rarely used and the patient is treated on the basis of the physician's observation of symptoms and is cured before there is time to make a laboratory examination.

**Syphilis** shows a very marked increase in prevalence from 491 cases in 1947 to 677 cases in 1948. Unusually large numbers of cases are being reported in the primary or secondary stage, (see Table V) that is, very soon after the patient has acquired the disease. With large numbers of cases being reported in this stage of the disease it is obvious that there are many new cases of syphilis appearing in the State and there is real need apparent for an intensive control program. Especially so with the availability of penicillin which has reduced the total treatment time from one and one-half years to the present standard schedule of ten days.

During the biennium only one clinic has operated in the State, that being located in the Health Unit at Great Falls. In proportion to the reported cases of new infections relatively few field investigations have been made to locate the sources of these infections. Fur-

ther case finding activity should be instituted to divert the reservoirs of infection into clinics or physician's offices for adequate treatment.

During the biennium free drugs for the treatment of syphilis were distributed upon 699 requests from physicians. These drugs were distributed as follows:

| | |
|---|---|
| Arsenicals | 15,769 doses |
| Bismuth | 18,006 doses |
| Penicillin | 1,207,800,000 units |
| Sulfa | 14,000 grams |

The cost of the above drugs was $7,472.05. Biologics for immunization are furnished at cost to local health officers on request. The use of this service shows a marked increase (see Tables VII and VIII) for diphtheria toxoid and pertussis vaccine, and a decrease in typhoid vaccine.

**Cancer.** The State cancer register was established in 1946 with special funds allocated to the State of Montana by the United States Public Health Service. The cancer register represents a stitistical accumulation of factors concerning the prevalence of cancer in Montana. This program is planned in cooperation with the State Medical Society.

During the first two years of operation of the register we have attempted to accumulate records of all known cases of cancer, both living and dead, in the State of Montana. We are preparing statistical studies covering various factors of the disease such as age, race, sex, and geographic distribution. With the accumulation of approximately twenty-five hundred cases of cancer to July 1, 1948, it would appear that the most frequent body site attacked by cancer in Montanans is the digestive tract. Other common sites attacked are the genital tract, breast, and skin. The accumulation of this statistical information will provide the medical profession of the State with important factual material regarding the epidemiology of cancer.

Studies are also being made of patients' time factors in reaching medical advice, and treatment. The results of this portion of the study will be used in directing a state-wide cancer education program.

In future programs of communicable disease control there should be further activities in field investigations for case finding in venereal disease control and more general use of available biologic materials for the prevention of communicable diseases, especially diphtheria, smallpox, and whooping cough.

## TABLE I

### Record of Certain Important Diseases from 1920

**Number of Cases Reported Each Year**

| Year | Tuberculosis | Typhoid | Diphtheria | Smallpox | Scarlet Fever | Meningitis | Poliomyelitis | Spot'd Fever | Measles |
|---|---|---|---|---|---|---|---|---|---|
| 1920 | 863 | 241 | 269 | 1,066 | 891 | 19 | 25 | 26 | 4,491 |
| 1921 | 568 | 187 | 412 | 1,466 | 620 | 12 | 26 | 26 | 2,561 |
| 1922 | 368 | 144 | 426 | 636 | 676 | 23 | 47 | 58 | 67 |
| 1923 | 604 | 159 | 456 | 732 | 843 | 21 | 16 | 51 | 2,535 |
| 1924 | 648 | 130 | 548 | 950 | 1,040 | 16 | 182 | 47 | 6,049 |
| 1925 | 620 | 244 | 329 | 376 | 1,337 | 12 | 41 | 34 | 486 |
| 1926 | 528 | 117 | 208 | 395 | 2,065 | 42 | 12 | 37 | 2,596 |
| 1927 | 463 | 108 | 182 | 575 | 2,209 | 165 | 22 | 38 | 1,372 |
| 1928 | 448 | 133 | 231 | 853 | 846 | 188 | 65 | 32 | 840 |
| 1929 | 536 | 371 | 142 | 547 | 1,139 | 149 | 7 | 23 | 4,308 |
| 1930 | 534 | 120 | 77 | 379 | 1,355 | 62 | 20 | 22 | 664 |
| 1931 | 579 | 137 | 105 | 129 | 1,223 | 31 | 58 | 34 | 1,634 |
| 1932 | 568 | 142 | 32 | 142 | 868 | 18 | 9 | 100 | 5,476 |
| 1933 | 465 | 184 | 106 | 33 | 612 | 10 | 13 | 68 | 2,178 |
| 1934 | 638 | 136 | 178 | 19 | 628 | 22 | 321 | 74 | 2,105 |
| 1935 | 432 | 81 | 145 | 749 | 1,975 | 35 | 7 | 125 | 7,397 |
| 1936 | 497 | 123 | 85 | 762 | 3,579 | 48 | 12 | 65 | 457 |
| 1937 | 486 | 96 | 62 | 898 | 1,328 | 23 | 31 | 31 | 656 |
| 1938 | 515 | 80 | 50 | 314 | 1,000 | 17 | 14 | 12 | 3,405 |
| 1939 | 455 | 57 | 86 | 55 | 1,036 | 6 | 6 | 32 | 7,498 |
| 1940 | 451 | 32 | 117 | 8 | 1,044 | 16 | 108 | 32 | 1,310 |
| 1941 | 466 | 26 | 133 | 4 | 1,047 | 10 | 33 | 107 | 951 |
| 1942 | 402 | 15 | 86 | 3 | 697 | 12 | 13 | 45 | 3,150 |
| 1943 | 386 | 23 | 70 | 7 | 690 | 31 | 26 | 28 | 5,767 |
| 1944 | 508 | 16 | 102 | 12 | 1,399 | 42 | 38 | 6 | 3,798 |
| 1945 | 373 | 45 | 80 | 4 | 698 | 26 | 86 | 2 | 493 |
| 1946-1947 | 453 | 23 | 36 | 0 | 271 | 17 | 107 | 7 | 4,381 |
| 1947-1948 | 701 | 22 | 102 | 0 | 599 | 17 | 37 | 2 | 3,749 |

## TABLE II

### Communicable Diseases Reported in Montana

**Including Deaths from Communicable Diseases Not Previously Reported as Cases**

| Diseases | July 1, 1946 to June 30, 1947 | July 1, 1947 to June 30, 1948 |
|---|---|---|
| Chickenpox | 1,329 | 2,161 |
| Diphtheria | 36 | 102 |
| Dysentery, Amoebic | 1 | 4 |
| Dysentery, Bacilliary | 4 | 3 |
| Dysentery, Unclassified | 4 | .... |
| Encephalitis | 4 | 11 |
| Erysipelas | 18 | 8 |
| Gonorrhea | 318 | 257 |
| Influenza | 3,258 | 499 |
| Measles | 4,381 | 3,749 |
| Measles, (German) | 166 | 143 |
| Meningitis, Epidemic | 17 | 17 |
| Mumps | 1,012 | 3,412 |
| Pneumonia | 386 | 263 |
| Poliomyelitis, Epidemic | 107 | 37 |
| Rocky Mountain Spotted Fever | 7 | 2 |
| Scarlet Fever | 271 | 599 |
| Septic Sore Throat | 74 | 95 |
| Syphilis | 491 | 677 |
| Trachoma | 45 | 129 |
| Tuberculosis | 453 | 701 |
| Tularemia | 6 | 9 |
| Typhoid | 23 | 22 |
| Undulant Fever | 14 | 4 |
| Whooping Cough | 289 | 567 |

## TABLE III

### Poliomyelitis

By Sex and Age Groups and Month of Onset
July 1, 1946 to June 30, 1947

| Month— | 0-9 M | 0-9 F | 10-19 M | 10-19 F | 20-29 M | 20-29 F | 30-39 M | 30-39 F | 40 & Over M | 40 & Over F | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| July | 8 | 4 | 5 | 2 | | | | | | | 19 |
| **(1946)** | | | | | | | | | | | |
| August | 14 | 10 | 4 | 2 | 1 | | 1 | | | | 32 |
| September | 7 | 4 | 8 | 3 | 5 | 3 | 2 | | | | 32 |
| October | 6 | 3 | | 4 | 2 | 1 | 1 | 1 | | | 18 |
| November | | | | 1 | | | | | | | 1 |
| December | | 1 | | | | | | | | | 1 |
| **(1947)** | | | | | | | | | | | |
| January | 1 | | | 1 | | | | | | | 2 |
| February | | | | | | | | | | | 0 |
| March | | | | | | | | | | | 0 |
| April | | | | | | | | | | | 0 |
| May | | | | | | | | | | | 0 |
| June | | 2 | | | | | | | | | 2 |
| | 36 | 24 | 17 | 13 | 8 | 4 | 4 | 1 | 0 | 0 | 107 |

## TABLE IV

### Poliomyelitis

By Sex and Age Groups and Month of Onset
July 1, 1947 to June 30, 1948

| Month— | 0-9 M | 0-9 F | 10-19 M | 10-19 F | 20-29 M | 20-29 F | 30-39 M | 30-39 F | 40 & Over M | 40 & Over F | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **(1947)** | | | | | | | | | | | |
| July | 1 | 1 | | | | | | | | | 2 |
| August | 2 | 3 | 4 | 1 | 2 | | | | | | 12 |
| September | 2 | 1 | | | | 1 | | | | | 4 |
| October | | 1 | | | | 1 | | | 1 | | 3 |
| November | | | 1 | | | | | | | | 1 |
| December | | | | | | | | | | | 0 |
| **(1948)** | | | | | | | | | | | |
| January | | 1 | 1 | | | | | 1 | | | 3 |
| February | 1 | 2 | 2 | | | | | | | | 5 |
| March | 2 | 1 | | | | | | | | | 3 |
| April | | 2 | | | | | | | | | 2 |
| May | | | | | | | | | | | 0 |
| June | | 2 | | | | | | | | | 2 |
| | 8 | 14 | 8 | 1 | 2 | 2 | 0 | 1 | 1 | 0 | 37 |

## TABLE V

### Syphilis

July 1, 1946 to June 30, 1947
By Age Groups, Sex and Stage of Disease

| Age Groups— | MALE Primary & Secondary | MALE Tertiary | MALE Congenital | MALE Unknown | MALE Total | FEMALE Primary & Secondary | FEMALE Tertiary | FEMALE Congenital | FEMALE Unknown | FEMALE Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 0-14 | 0 | 1 | 4 | 2 | 7 | 0 | 1 | 3 | 0 | 4 |
| 15-24 | 25 | 20 | 1 | 1 | 47 | 31 | 33 | 2 | 1 | 67 |
| 25-39 | 55 | 35 | 0 | 4 | 94 | 24 | 33 | 3 | 7 | 67 |
| 40-59 | 12 | 39 | 0 | 3 | 54 | 4 | 14 | 0 | 4 | 22 |
| 60-Over | 0 | 8 | 0 | 2 | 10 | 0 | 7 | 0 | 0 | 7 |
| Age unknown | 17 | 6 | 2 | 26 | 51 | 11 | 23 | 4 | 23 | 61 |
| | 109 | 109 | 7 | 38 | 263 | 70 | 111 | 12 | 35 | 228 |

## TABLE VI

### Syphilis

July 1, 1947 to June 30, 1948
By Age Groups, Sex and Stage of Disease

| Age Groups— | MALE | | | | | FEMALE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Primary & Secondary | Tertiary | Congenital | Unknown | Total | Primary & Secondary | Tertiary | Congenital | Unknown | Total |
| 0-14 | 0 | 0 | 6 | 4 | 10 | 1 | 0 | 9 | 2 | 12 |
| 15-24 | 46 | 18 | 1 | 0 | 65 | 66 | 38 | 1 | 0 | 105 |
| 25-39 | 55 | 41 | 3 | 1 | 100 | 29 | 79 | 1 | 1 | 110 |
| 40-59 | 12 | 68 | 0 | 2 | 82 | 6 | 55 | 3 | 1 | 65 |
| 60-Over | 2 | 18 | 0 | 0 | 20 | 0 | 14 | 1 | 1 | 16 |
| Age unknown | 18 | 23 | 0 | 3 | 44 | 14 | 21 | 2 | 11 | 48 |
| | 133 | 168 | 10 | 10 | 321 | 116 | 207 | 17 | 16 | 356 |

## TABLE VII

### Amount of Various Immunization Materials Distributed By State Board of Health 1946 - 1947

| Month— | Diphtheria Toxoid | Smallpox Vaccine | Typhoid Vaccine | Pertussis Vaccine | Diptussis Vaccine | Scarlet Fever Immuniz |
|---|---|---|---|---|---|---|
| July— 1946 | 210 | 310 | .. | 150 | .. | .. |
| August | 200 | 120 | .. | 170 | .. | .. |
| September | 880 | 420 | 20 | 535 | 530 | .. |
| October | 2,100 | 821 | .. | 175 | .. | 20 |
| November | 120 | 45 | 40 | 35 | 140 | .. |
| December | 1,140 | 30 | .. | .. | 630 | .. |
| January— 1947 | 300 | 940 | .. | 100 | 100 | .. |
| February | 330 | 340 | .. | 25 | 60 | .. |
| March | 300 | 110 | .. | 100 | .. | .. |
| April | 700 | 125 | .. | 50 | .. | .. |
| May | 410 | 280 | 1,240 | 325 | 20 | .. |
| June | 60 | 40 | .. | 50 | .. | .. |
| | 6,750 | 3,581 | 1,300 | 1,705 | 1,480 | 20 |

## TABLE VIII

### Amount of Various Immunization Materials Distributed By State Board of Health 1947 - 1948

| Month— | Diphtheria Toxoid | Smallpox Vaccine | Typhoid Vaccine | Pertussis Vaccine | Diptussis Vaccine | Scarlet Fever Immuniz |
|---|---|---|---|---|---|---|
| July— 1947 | .. | 135 | 1 | 300 | 30 | .. |
| August | 90 | 70 | 20 | 175 | .. | .. |
| September | 170 | 380 | .. | 400 | 10 | .. |
| October | 1,100 | 670 | .. | 125 | 20 | .. |
| November | 180 | 120 | .. | 150 | .. | .. |
| December | 210 | 180 | .. | 225 | 20 | .. |
| January— 1948 | 770 | 315 | .. | 125 | 190 | .. |
| February | 3,100 | 195 | .. | 200 | .. | .. |
| March | 1,320 | 230 | .. | 125 | 150 | .. |
| April | 1,990 | 280 | .. | 400 | 50 | .. |
| May | 510 | 280 | 40 | 150 | .. | .. |
| June | 10 | 155 | 60 | 150 | .. | .. |
| | 9,450 | 3,010 | 121 | 2,525 | 470 | .. |

## TABLE IX

### Site of Cancer

### Living and Dead Cases Reported to State Cancer Register

| | Male | Female |
|---|---|---|
| Mouth | 126 | 25 |
| Digestive Tract | 419 | 269 |
| Respiratory | 99 | 21 |
| Breast | 1 | 265 |
| Genitals | 168 | 301 |
| Urinary | 65 | 37 |
| Skin | 245 | 140 |
| Endocrine | 4 | 14 |
| Lymphosarcoma | 37 | 15 |
| Other | 103 | 70 |
| TOTAL | 1,267 | 1,157 |

## TABLE X

### Reported Cancer Cases

| | Sex | Living | Deaths | Total |
|---|---|---|---|---|
| July 1, 1946 | M | 204 | 73 | 277 |
| to Jan. 1, 1947 | F | 228 | 80 | 308 |
| Jan. 1, 1947 | M | 99 | 208 | 307 |
| to July 1, 1947 | F | 107 | 153 | 260 |
| July 1, 1947 | M | 148 | 188 | 336 |
| to Jan. 1, 1948 | F | 155 | 152 | 307 |
| Jan. 1, 1948 | M | 153 | 194 | 347 |
| to July 1, 1948 | F | 162 | 120 | 282 |
| TOTAL | | 1,256 | 1,168 | 2,424 |

## DIVISION OF MATERNAL AND CHILD HEALTH

To: B. K. Kilbourne, M. D., Executive Officer, State Board of Health.

From: Division of Maternal and Child Health.

Edythe P. Hershey, M. D., Director of this Division for over six years, resigned as of July 15, 1946, to accept a position as Consultant for the Children's Bureau. She was succeeded by Robert M. Mattison, M. D., who served as Director until May 15, 1948, since which time the position has been vacant and as a result of which the activities of this Division have been severely handicapped.

The Maternal and Child Welfare Committee of the Montana State Medical Association has continued to serve in an advisory capacity to the Maternal and Child Health Division of the State Board of Health. This Committee gave approval to a series of postgraduate lectures which were presented to five medical societies in the state on obstetrical and gynecological subjects. This course was delivered by William C. Keettel, M. D., Professor of Obstetrics, University of Iowa.

Standards for the establishment of premature infant nurseries, developed in the Division of Maternal and Child Health, were approved by this Committee. These standards will govern those hospitals receiving aid from the State Board of Health in the care of infants. The Committee also approved the continued study of maternal and infant mortalities which had been previously started.

During the biennial period two dozen Gordon-Armstrong incubators were purchased by the Maternal and Child Health Division and delivered to hospitals throughout the state for use in the care of premature infants. These hospitals agreed to carry out procedures approved by the State Board of Health for such care. A report of the work of Miss Daisy Prentice, Hospital Consultant, in the care of premature infants is attached.

### 1. Literature Distribution

The monthly distribution of prenatal literature has been continued. Also, the Children's Bureau booklet entitled, "Infant Care," is distributed to hospitals of the state so that each mother may receive a copy on her dismissal from the hospital. Other pamphlets giving information concerning maternal, infant, and child care; nutrition; personal hygiene; public health; and hearing and vision, were distributed on request.

### 2. Silver Nitrate

Silver Nitrate ampules have been furnished to hospitals and physicians for prophylactic treatment of the eyes of newborn babies. Approximately 15,000 ampules were distributed during the biennium.

### 3. Well Child Conferences

These conferences are conducted by local physicians assisted by public health nurses. The physicians are remunerated for their serv-

ices. The conferences provide regular health supervision for infants and preschool children as outlined by the Division. Vaccination for smallpox, immunizations against diphtheria and whooping cough, and tuberculin testing are included in the services. This program has been limited due to shortage of physicians and limitation of public health nursing personnel. Such conferences have been conducted in Big Horn, Cascade, Chouteau, Ravalli, Sanders, and Yellowstone Counties through participation by local physicians.

### 4. Maternal and Infant Mortality

The maternal and infant mortality rates have been the lowest for any period for which records are available in Montana. The maternal mortality rate for 1946 was 1.3; for 1947 the rate was 0.9. The infant mortality rate for 1946 was 34.8; for 1947 the rate was 32.3. The infant birth rate during this biennium was the highest ever recorded in the state. See section on Vital Statistics).

### 5. Emergency Maternal and Infant Care Program

This program was continued during the entire biennium but in materially decreasing amounts during the last year. It will be entirely closed for maternal deliveries in October, 1948, and for infant care after May 20, 1949. The following table indicates the amount of care provided during the biennium:

**Cases Approved for Care**

| | Maternity | Infant |
|---|---|---|
| July 1, 1946, to June 30, 1947 | 354 | 421 |
| July 1, 1947, to June 30, 1948 | 54 | 95 |
| Total | 408 | 516 |

**Cases Incomplete**

| | | |
|---|---|---|
| June 30, 1946 | 755 | 674 |
| June 30, 1947 | 339 | 545 |
| June 30, 1948 | 136 | 186 |
| Payments for Medical Care | | $64,073.87 |
| Payments for Hospitalization | | $65,750.76 |

This program has been in the process of liquidation as of June 30, 1947. Closing date for approval of maternity cases—July 1, 1948. Closing date for approval of infant cases—May 20, 1949. No payments for care, even though previously authorized, will be made after June 30, 1949.

### 6. Premarital Examinations

The Maternal and Child Welfare Committee sponsored a bill during the thirtieth legislative session requiring physical examinations, including a Wasserman, of all applicants for marriage licenses before such licenses shall be issued. This bill was enacted into law through the efforts of various interested agencies.

## M. C. H. Nursing Consultant Report

The hospital nursing consultant of the Division of Maternal and Child Health has assumed the responsibility of maintaining satisfactory nursing care of mothers, full term newborn infants and premature infants. For the most part this is accomplished by educational methods in schools of nursing to the graduate nurse staff and in other hospitals to both the permanent staff and part-time workers.

All hospitals within the state boundaries are visited at least once a year, many of them twice and three times. All visits are made by appointment to the administration; this insures that the personnel that the consultant wishes to contact are on duty at that particular time, also, it improves relationships between the state agency and the local areas. A number of hospitals have requested visits because of some existing problem at a particular time. The nature of these requests have been premature infants, quadruplets at Miles City, diarrhea of the new born, revision of nursery techniques and instruction to nurses. Requests relative to building and remodeling are now referred to the Division of Hospital Facilities.

During the biennium, with the approval of the Director of the Division of Maternal and Child Health and the Maternal and Child Health Committee of the Montana State Medical Association, various educational projects have been worked out. The hospitals within the state having average facilities have been used for working out these projects, thus providing material acceptable to all others. These projects have concerned:

1. Satisfactory identification of all newborn infants.
2. Improved methods and techniques of preparing infant formulae.
3. Satisfactory methods of orientation for maternity patients of hospitals on policies and routines.
4. Review of maternity and infancy nursing to those nurses working in areas where they are isolated because of the smallness of their group and the long travel distance to the larger centers of activity.

In the last item mentioned, twenty-six groups in different areas have been contacted. With the assistance of the Maternal and Child Health Nursing Consultant lectures have been given on two consecutive evenings to each group. Mimeographed material, relative to maternity and infancy nursing has been prepared by the hospital nursing consultant for distribution to the nurses attending the lectures. This material was approved by the director of the Division of Maternal and Child Health.

Student nurses of the eleven schools of nursing have had classroom instruction on the nursing care of the premature infant each fiscal year. Students likewise receive a mimeographed outline for their notebooks.

Twenty-five Gordon-Armstrong incubators have been purchased and distributed to certain hospitals on a permanent loan basis. These hospitals were selected by the hospital nursing consultant because of their willingness to co-operate in the State Plan of "Better Care for Premature Infants," because of a need for an incubator which could not be provided by community resources, and because that particular area has a moderately high premature birth incidence.

Throughout all programs and in all hospitals, the theme is to decrease mortality and morbidity of newborn infants.

DAISY PRENTICE, Consultant
Hospital Nursing.

## DIVISION OF SERVICES FOR CRIPPLED CHILDREN

B. K. Kilbourne, M. D., Executive Officer
State Board of Health

Personnel as of June 30, 1948:

| | |
|---|---|
| Vacant | Director |
| Vacant | Assistant Director |
| Thora Baker | Speech Therapist |
| Ruth Hansen | Physical Therapist |
| Margaret Kerns | Medical Social Worker |
| Grace Johnsrud | Senior Stenographer |
| Betty Lumpkin | Medical Stenographer |
| Isobel Peaslee | Intermediate Accountant |
| Stella Schoenborn | Typist |

The following is a biennial report of the activities of the Division of Services for Crippled Children from the period of July 1, 1946, to June 30, 1948:

### Organization and Purpose

The State of Montana has had a program for crippled children since 1921 when the Montana Orthopaedic Commission was created to provide service to children with orthopaedic handicaps. Since that time the program has been expanded and reorganized. It was placed under the State Department of Public Welfare in 1936. In 1941 through State Legislative Enactment the Division of Services for Crippled Children was transferred to the State Board of Health.

Funds for the program are made available through Federal and State appropriations. Federal appropriations are made available through the United States Children's Bureau as outlined in Title V of the Social Security Act. Federal funds are allocated to the State in an amount arrived at by a formula set up by the Children's Bureau and are required to be matched by State funds.

The Division of Services for Crippled Children administers services for handicapped children to every political subdivision of the State. Diagnostic clinic services are available to all children under twenty-one years of age, irrespective of the financial status of the family. The State agency provides medical and surgical treatment to children under twenty-one years of age who have defects requiring orthopaedic or plastic surgery and whose parents after investigation are found to be financially unable to pay for the child's treatment.

A register of all known physically handicapped children in Montana has been maintained since 1938. For the biennium ending June 30, 1946, 2,670 children were on the register. A total of 1,482 children were added for the biennium ending June 30, 1948. There were 500 cases closed for various reasons during the same period leaving a total of 3,652 handicapped children on the case register as of July 1, 1948.

**Type of Service Provided by the Division**

Diagnostic and treatment clinics, medical and surgical care, special consultation service, hospital and convalescent care, physical therapy, braces and artificial limbs, field nursing service, and medical social service are made available through the services of the Division.

**Clinic Service**

Diagnostic clinics are held by an orthopaedic surgeon and a pediatrician twice a year throughout the State in fourteen centers. The centers are so located that children from all sections of the State are given access to clinic service both in the spring and autumn.

The local public health nurses and the local welfare workers are responsible for the organization of the clinics.

Any child in the State under twenty-one years of age with an orthopaedic handicap can attend the clinic for examination, but only those with crippling conditions which can be helped by treatment and whose parents are not financially able to pay for the service are accepted for care. Children are referred to the clinics by local physicians, local public health nurses, and welfare departments. The clinics are for diagnostic purposes, but they also provide the means for the supervision and follow-up care of children who have been previously accepted for care.

A total of 2,952 children were examined at the field clinics during the biennium. Of this number 1,070 were new patients and the remaining 1,882 children returned for follow-up service. In the spring of 1948, a total of 845 children were examined in the fourteen clinics. These clinics average from 20 to 120 patients. Several clinics were of two days' duration, but the majority were one day clinics.

**Medical and Surgical Care**

The Division purchases medical and hospital care on a fee-for-service and per diem basis. Five orthopaedic surgeons in the State participate in the program: L. W. Allard, M. D., Billings; J. K. Colman, M. D., Butte; Walter H. Hagen, M. D., Billings; S. L. Odgers, M. D., Butte; and J. C. Wolgamot, M. D., Great Falls. There are three consultant pediatricians on the staff: O. M. Moore, M. D., Helena; Ellis Adams, M. D., Great Falls; and D. L. Gillespie, M. D., Butte. In addition, other pediatricians, A. L. Gleason, M. D., Great Falls, and E. A. Hagmann, M. D., Billings, participated in the diagnostic clinics on a fee-for-service basis. These pediatricians attended field clinics giving physical examinations to all patients and pediatric consultation service to hospital patients.

The four treatment centers for crippled children were Great Falls, Helena, Butte and Billings. Children were sent into the various treatment centers depending upon the area in which they lived. The hospitals participating in the program were: St. Vincent Hospital, Billings; Billings Deaconess Hospital, Billings; Murray Hospital, Butte;

St. James Hospital, Butte; Montana Deaconess Hospital, Great Falls and Shodair Hospital, Helena.

During the biennium 451 children received medical or surgical service. Of this number 295 children received hospital care. The remaining 156 children received medical services in the physicians' offices, braces, prostheses, or other medical services.

Some of the children receiving hospital care were admitted to the hospital more than once during the biennium. There were 342 hospital admissions for the period. There was a total of 15,040 days' hospitalization provided. This represents an average of approximately forty-four days' hospitalization for each admission. Many of the children were in the hospital for a shorter period and other children were in the hospital many months before their conditions could be corrected.

**Number of Children Receiving Medical Care According to Condition**

| | |
|---|---|
| Congenital defects | 138 |
| Residual deformities due to accidents (burns, amputations, etc.) | 75 |
| Infections of the bone | 62 |
| Cerebral palsy | 45 |
| Rheumatic fever and arthritis | 41 |
| Tuberculosis of the bone | 26 |
| *Poliomyelitis | 26 |
| Conditions of the spine | 21 |
| Other conditions | 17 |

*The number of children receiving medical care for poliomyelitis does not represent the total number of children under care by the National Foundation for Infantile Paralysis. This organization provided care for most of the children who needed medical treatment for poliomyelitis and whose parents were financially unable to pay for such care.

**Cost of Medical Care**

During the biennium the increase in the cost of hospitalization made it necessary to limit the program in order to conserve the rapidly dwindling funds for those children most urgently in need of medical care. It became necessary to place many children in need of surgical correction of deformities upon a waiting list until more funds became available. For the fiscal year 1947, the United States Children's Bureau provided an additional allotment of $9,000 in order that children, otherwise uncared for, could secure medical services.

**Expenditures for Medical and Hospital Service**

| Service Provided | Fiscal Year 1947 | Fiscal Year 1948 |
|---|---|---|
| Hospital care | $52,762.00 | $60,939.00 |
| Appliances | 732.00 | 1,250.00 |
| Professional fees | 13,603.00 | 8,980.00 |
| Other (Convalescent care, etc.) | 1,539.00 | 1,680.00 |

For the fiscal year, 1947, a total of 8,289 days' hospitalization was provided at a cost of $52,760. For the fiscal year, 1948, 6,751 days' hospitalization were provided at a cost of $60,940. This represented

an increase of $3.00 a day in the cost of hospitalization from 1947 to 1948.

### Cerebral Palsy Program

During the biennium a cerebral palsy day school and treatment center were established in Billings. This was a cooperative project between the State Board of Health and the Montana Chapter of the National Society for Crippled Children and Adults, Incorporated The State Board of Health provided the medical services and therapy for the project under the direction of Walter H. Hagen, M. D., Billings. A physical therapist, Miss Ruth Hansen, and a speech therapist, Mrs. Thora Baker, were the therapists on the staff. The Montana Chapter of the National Society for Crippled Children and Adults, Incorporated provided the educational facilities and teachers for the project. The Eastern Montana Normal Schoool provided space for the school and treatment center.

The United States Children's Bureau allocated $25,000 a year to the State Board of Health for a two-year period for the project which was to be used as a demonstration center. No local or State funds were allocated for this proram. Children with cerebral palsy from five counties surrounding Billings are eligible to attend the day school and treatment center. Those children living outside Billings are placed in foster homes so that they can attend the special school.

Montana is one of eight states with a treatment center for children with cerebral palsy. Although plans for the project were established in the summer of 1947, it was not in full operation until January 1948. Forty children from five counties have received treatment and eighteen children have attended the special school. The program will be extended to other children in the State when additional funds and personnel become available.

A limited number of children with cerebral palsy in other areas of the State living outside of the demonstration project area have received treatment and training under the direction of J. K. Colman, M. D., at Shodair Hospital in Helena.

### Rheumatic Fever Program

The Division of Services for Crippled Children has planned for sometime the development of a rheumatic fever program. This has not been possible because of the shortage of funds and lack of personnel. While no specialized rheumatic fever program has been established, twenty-six children with rheumatic fever were accepted for and provided with hospital care at a cost of $16,900 for the biennium.

### Cooperating Agencies

The success of a program to help physically handicapped children depends to a large extent upon the cooperation of all agencies interested in the health and welfare of children. Many agencies have worked in close cooperation with the Division in providing services to handicapped children.

The State and local Departments of Public Welfare assisted in locating crippled children, provided transportation and other services for children in need of medical care, and made financial-social reports on those requesting care. Casework service was provided through Child Welfare Services.

The State Bureau of Vocational Rehabilitation provided a representative at each field clinic to interview adolescents for counselling, training, and placement. One hundred twenty-five children over sixteen years of age were referred to the Bureau of Vocational Rehabilitation for vocational training.

The National Foundation for Infantile Paralysis provided medical services and hospitalization to children with acute and residual poliomyelitis. Many children with poliomyelitis were given follow-up care in the field clinics, but were referred to the local Foundation Chapters when hospitalization or corrective surgery was needed.

The Montana Chapter of the National Society for Crippled Children and Adults, Incorporated, cooperated with the Division in providing services for children with cerebral palsy.

Mental hygiene clinics provided psychological and psychiatric services to children who were referred by the division.

Local health departments and local public health nurses provided case finding and follow-up services. Local public health nurses, through their contact with school, local agencies, and families located many new children with crippling conditions.

**State Staff**

During the biennium there were changes in personnel. The director, Robert E. Mattison, M. D., resigned in April, 1948. The position has remained vacant. A speech therapist and a physical therapist were added to the staff in September, 1947, and were assigned to the Cerebral Palsy Project in Billings. The orthopaedic nursing consultant resigned in March, 1948, and the position has remained unfilled. It is planned to secure an orthopaedic nursing consultant, a medical-social worker, and an occupational therapist, in addition to filling the vacant positions.

**Looking Forward**

The Division of Services for Crippled Children in order to best serve the handicapped children of Montana should extend its services. A program for the care of children with rheumatic fever is urgently needed. Convalescent facilities are needed for children who require extended convalescent care. Speech centers are needed for children with serious speech defects due to physical conditions. Treatment services should be provided to all the children in Montana with cerebral palsy who are capable of rehabilitation.

These are a few of the needs of the handicapped children of Montana which the Division hopes to meet during the not-too-distant future.

## Report of Biennial Disbursements
## Division of Services for Crippled Children
**Montana State Board of Health Fiscal Years—1946-1948**

| Diagnosis | No. of Patients Hospitalized | | Total No. of Hospital Days | | No. of Patients Having Out-patient Care | | No. of Patients Fitted with Appliances | | No. of Patients Receiving Other Care | | Unduplicated Count of Patients Receiving Medical Services | | Cost of Hospitalization | | Cost of Medical and Surgical Services | | Cost of Appliances | | Cost of Other Items | | Total Cost | | Total Biennium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | '47 | '48 | '47 | '48 | '47 | '48 | '47 | '48 | '47 | '48 | '47 | '48 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947-1948 |
| Acute Rheumatic Fever, Chronic Heart Disease | 10 | 16 | 819 | 1,181 | 11 | 6 | | | | 1 | 18 | 17 | 4,209.63 | 10,794.14 | 463.73 | 1,088.17 | | | 340.00 | 10.00 | 4,945.86 | 11,959.81 | 16,905.67 |
| Arthritis and Rheumatism, Except Rheumatic Fever | 4 | 1 | 173 | | 2 | 1 | | | | | 4 | 2 | 1,059.48 | 60.72 | 236.08 | 6.00 | 40.00 | | | | 1,335.56 | 66.72 | 1,402.28 |
| Burns | 6 | 1 | 236 | 112 | 1 | 1 | 1 | | | | 6 | 2 | 1,365.82 | 1,424.73 | 420.71 | 202.00 | 35.00 | | | | 1,771.53 | 1,676.73 | 3,448.26 |
| Cerebral Spastic, Infantile Paralysis, Cerebral Palsy | 14 | 13 | 603 | 679 | | 11 | | 2 | | 2 | 20 | 25 | 3,813.74 | 6,538.77 | 716.47 | 641.20 | 50.00 | 147.95 | | 148.81 | 4,585.21 | 7,471.73 | 12,056.94 |
| Cleft Palate and Harelip | 22 | 15 | 644 | 497 | | 1 | | | | | 23 | 14 | 4,139.13 | 4,836.40 | 1,755.00 | 1,598.40 | | | | | 6,069.13 | 6,259.80 | 12,328.93 |
| Club Foot, Congenital or Unspecified | 20 | 9 | 1,039 | 639 | 2 | 3 | 3 | 5 | 3 | 5 | 26 | 17 | 5,237.21 | 4,605.35 | 1,264.32 | 976.00 | 10.90 | 91.93 | 155.42 | 208.08 | 6,757.05 | 5,792.06 | 12,549.11 |
| Congenital Dislocation of Hip | 6 | 9 | 189 | 695 | 6 | 7 | | | 1 | 7 | 8 | 9 | 1,606.62 | 4,512.61 | 657.50 | 710.00 | | | | 303.00 | 2,264.12 | 5,525.61 | 7,789.73 |
| Curvature of Spine Unless Specified As a Late Effect of Poliomyelitis or Tuberculosis | | 1 | | 2 | 8 | 14 | | | | | 7 | 14 | | 21.58 | 93.25 | 264.00 | | | | | 85.75 | 293.08 | 378.83 |
| Other Congenital Malformations | 13 | 4 | 202 | 35 | 5 | 5 | 1 | 1 | 1 | 1 | 20 | 6 | 1,521.59 | 112.95 | 892.85 | 60.50 | 58.00 | 435.00 | 152.63 | 15.00 | 2,561.12 | 387.40 | 2,948.52 |
| Flatfoot, Acquired or Unspecified | 2 | 2 | 21 | 16 | 1 | 3 | | 1 | 1 | 3 | 3 | 5 | 209.64 | 128.94 | 322.50 | 39.16 | | 2.60 | | | 506.72 | 196.12 | 702.84 |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Osteomyelitis & Periostitis, Except Tuberculosis | 13 | 8 | 575 | 395 | 9 | 9 | | | | 14 | 8 | 3,809.08 | 3,887.82 | 1,351.82 | 221.86 | | | | | 6,235.95 | 3,034.63 | 9,270.58 |
| Other Birth Injuries, Except Cerebral Palsy and Epilepsy | 2 | 1 | 31 | 3 | 1 | 1 | | | | 3 | 2 | 249.64 | 18.57 | 64.67 | 5.33 | | | | | 314.31 | 23.90 | 338.21 |
| Other Diagnosed Diseases, Injuries, or Handicapping Conditions, Except Provisional or Deferred Diagnosis | 5 | 2 | 123 | 10 | 4 | 3 | | | | 7 | 6 | 873.01 | 274.95 | 251.00 | 154.50 | | | | | 1,124.01 | 429.45 | 1,553.46 |
| Other Diseases of Bones & Organs of Movement, Except Congenital Malformations | 12 | 7 | 884 | 573 | 13 | 8 | 1 | 4 | | 11 | 22 | 5,045.29 | 5,557.59 | 726.56 | 955.78 | 2.50 | 130.00 | 303.40 | 22.00 | 6,066.30 | 6,676.82 | 12,743.12 |
| Other Diseases of Eye, Except Congenital or Diabetic Cataract | 1 | 1 | 14 | 24 | 1 | 1 | | | | 1 | 1 | 86.66 | 148.56 | 160.00 | 125.00 | 8.00 | | | | 254.66 | 273.56 | 528.22 |
| Other Morbid Conditions Due to Accidents, Poisoning & Violence | 13 | 13 | 772 | 376 | 18 | 7 | 5 | 2 | 2 | 26 | 28 | 6,317.28 | 3,697.49 | 1,196.13 | 555.83 | 418.00 | 150.00 | 523.75 | 551.50 | 8,116.57 | 5,293.41 | 13,409.98 |
| Poliomyelitis | 16 | 2 | 387 | 183 | 14 | 3 | 4 | 1 | 1 | 20 | 6 | 2,397.15 | 1,468.72 | 1,655.52 | 321.00 | 90.00 | 417.50 | 19.50 | | 4,162.17 | 2,207.22 | 6,369.39 |
| Other Diseases of Nervous System & Sense Organs, Except Eye, Ear and Mental Disorders | | 1 | | 110 | | | | | 1 | 1 | | | 874.50 | | | | | | 242.88 | | 1,117.38 | 1,117.38 |
| Provisional or Deferred Diagnosis | 1 | 1 | 8 | 14 | 3 | 1 | | 1 | 1 | 3 | 3 | 203.34 | | 43.95 | 39.00 | | | | 25.00 | 279.29 | 32.00 | 311.29 |
| Rickets | 2 | | 35 | | 2 | 2 | | | | 4 | 3 | 299.67 | | 136.55 | 42.50 | | | | | 436.22 | 42.50 | 478.72 |
| Spina Bifida and Meningocele | 2 | 3 | 43 | 167 | 3 | 3 | 1 | 4 | 1 | 2 | 5 | 5 | 304.02 | 1,358 85 | 133.60 | 364.31 | | 110.00 | 45.00 | 153.77 | 477.62 | 1,991.93 | 2,469.55 |
| Tuberculosis of Bones and Joints | 14 | 7 | 1,501 | 1,040 | 10 | 4 | 1 | 2 | | 15 | 11 | 10,014.68 | 10,616.16 | 1,061.83 | 610.10 | 20.00 | 65.52 | | | 11,152.03 | 11,236.26 | 22,388.29 |
| TOTAL | 178 | 117 | 8,289 | 6,751 | 114 | 94 | 17 | 23 | 8 | 25 | 245 | 206 | 52,762.68 | 60,939.40 | 13,603.94 | 8,980.64 | 732.40 | 1,250.50 | 1,539.70 | 1,680.04 | 69,501.18 | 71,988.12 | 141,489.30 |

## DIVISION OF PUBLIC HEALTH NURSING

Personnel as of June 30, 1948:

Helen M. Murphy, Director
Jeannette E. Potter, General Public Health Nursing Consultant
(Mrs.) Edna M. Kuhn, Maternal and Child Health Nursing Consultant
Mary A. Ivanko, Tuberculosis Nursing Consultant
Daisy Prentice, Hospital Nursing Consultant
Wava L. Dixon, on Educational Leave
Vacant, Orthopedic Nursing Consultant
(Mrs.) Miriam Dougherty, Stenographer

To: B. K. Kilbourne, M. D., Executive Officer, Montana State Board of Health.

It is my privilege to herewith submit the biennial report of the Division of Public Health Nursing for the period beginning July 1, 1946, and ending June 30, 1948.

1. **General Information:**

On July 1, 1946, the Division of Public Health Nursing was established as a separate division of the State Board of Health with a Public Health Nursing Director in charge. This division has responsibility for the supervision of all nurses within the state employed in public health nursing positions. To facilitate this phase of the work, the state was divided into three large districts and assigned to Nursing Consultants for general supervision. (See Map No. 1). These districts are covered by the General Nursing Consultant, the Tuberculosis Nursing Consultant, and the Maternal and Child Health Nursing Consultant. They are responsible for the development of generalized public health nursing programs within their specific areas. The Hospital Nursing Consultant joined our staff in August, 1946 and she covers the entire state, visiting hospitals on a consultation basis to assist them with their nursing problems in relation to maternal and infant care, and to assist them with in-service education programs for their graduate nursing staffs and student nurses.

In addition to carrying generalized programs in their areas, the services of the specialized consultants are utilized to keep all of the public health nurses informed concerning the rapidly changing knowledge of medical science in these fields and its preventive implications. They also function in cooperation with the other divisions of the State Board of Health to aid in integrating their special programs into the public healh nursing service. It is only through the efforts and assistance of the specialized consultants that the public health nurses can maintain a high standard of proficiency in their many fields of endeavor and keep abreast of the times.

The Hospital Nursing Consultant and the Maternal and Child Health Nursing Consultant working together have conducted a series of Seminars and educational talks in the verious hospitals throughout the State at the request of the hospitals. These Seminars were originally planned for only the very small hospitals. However, by popular request have grown to include other hospitals. (See Map No. 2).

In addition to the Maternity and Infancy Seminars, the Hospital Nursing Consultant, with the approval of the Maternal and Child Health Committee of the Montana State Medical Association, set up Infant Formulae Demonstrations in three hospitals having minimum facilities. Under the direct supervision of the Hospital Nursing Consultant the nursing personel in each hospital worked on the demonstration and the results were written up and submitted to the M. C. H. Director. From this material formula making procedures were formulated and mimeographed copies distributed to all hospitals within the State. (See Map No. 2).

Twice during this biennium we had requests from other states for an observation period for Hospital Nursing Consultants to be employed on their staffs. Our Hospital Nursing Consultant planned the programs for these Consultants and the Consultant from Utah spent three weeks with us in the spring of 1947, and the Consultant from Oregon spent two weeks here in April, 1948.

The Tuberculosis Nursing Consultant in addition to her work with the Public Health Nurses in the field, worked very closely with the Montana Tuberculosis Association and the Division of Tuberculosis Control in developing state-wide survey plans for the Mobile X-ray unit. She also worked with the Nursing Instructor at Galen on Nursing Techniques in a Tuberculosis Sanitorium. On request she has also given classes in Tuberculosis Nursing to student nurses in the hospitals.

The General Public Health Nursing Consultant has worked closely with the Director of Health Education in the various phases of School Health programs. She was assigned as Nursing representative on the Teacher Training Committee and participated in all of its meetings. She also assisted at the summer workshop for teachers at the Eastern Montana Normal School in Billings and the workshop in Bozeman for lay health committee members. The General Nursing Consultant has also assumed office responsibility when the Director has had to be out of the office.

The Maternity and Child Health Consultant in addition to her general duties has assisted the Hospital Nursing Consultant with the Seminars. She also worked out policies and procedures for the establishment of well-child conferences and guides for the public health nurses in making visits to Maternity and Infant cases. These were approved by the M.C.H. Committee of the Medical Association.

**In-Service Training and Staff Development**

An in-service training program is carried on for the public health nurses by means of institutes. In this biennium, institutes on Tuber-

culosis Nursing, Social and Health Concepts of Nursing, Maternal and Child Health, and Nutrition were given. The Consultant staff assists with the planning and conducting of the institutes and the public health nurses feel that they are an invaluable means of keeping informed.

In addition to the institutes, the Consultant staff offers guidance in the planning and conducting of local staff programs. Monthly staff meetings are held in two areas of the state and other areas are urged to develop these programs. The Consultant staff through the supervisory service also aids in staff development through individual conferences with the public health nurses.

**Stipends for Study**

Five nurses were given stipends for study in Public Health Nursing Courses. One nurse was given a stipend for a full year's study, and the four others were granted stipends for shorter courses. Four of these were expenditures from U. S. Children's Bureau monies and one from U. S. Public Health Service monies granted to the State of Montana.

**Statistical Report of Services**

Communicable Disease Control:

| | |
|---|---|
| Field Visits to Communicable Disease | 15,028 |
| Vaccinations for Smallpox | 8,175 |
| Immunizations for Diphtheria | |
| Under 1 year of age | 1,640 |
| 2-5 years of age | 3,068 |
| Immunizations for Whooping Cough | |
| Under 1 year of age | 2,350 |
| 2-5 years of age | 4,296 |
| Immunizations Rocky Mountain Spotted Fever | 42,580 |
| Venereal Disease Visits | 384 |
| Tuberculosis Control: | |
| Nursing Visits | 2,812 |
| Tuberculin Tests | 14,888 |
| X-rays (including mass survey films) | 45,414 |
| Maternity Service: | |
| Antepartal Nursing Visits | 2,615 |
| Postpartal Nursing Visits | 4,420 |
| Infant Service: | |
| Field Visits (under 1 month of age) | 4,342 |
| Field visits (1 mo. - 1 yr. of age) | 7,643 |
| Office Visits | 2,213 |
| Pre-School Service: | |
| Field Visits | 10,981 |
| Office Visits | 4,194 |

| | |
|---|---|
| School Health Service: | |
| Examinations by physicians | 10,832 |
| Examinations by physicians (parents present) | 2,561 |
| Health appraisals by Nurses | 53,511 |
| Field Visits by Nurses | 13,463 |
| Office Visits to Nurses | 11,811 |
| Crippled Children's Service: | |
| Field Visits by Nurses | 3,996 |
| Office Visits to Nurses | 505 |
| Morbidity Service: | |
| Field Visits by Nurses | 3,006 |
| Adult Health Supervision | |
| Field Visits by Nurses | 2,608 |

**Other Services:**

In addition to their other duties, the services of the Nursing Consultants have been made available to the schools of Nursing for assistance with the content for the basic curriculum for students and for in-service education for the professional staff. However, it is hoped that our services can be extended to hospitals to a greater extent in the next biennium.

We appreciate the cooperation and assistance given this Division by the other divisions of the State Board of Health. Also, the invaluable assistance give nby the Consultant Staff from the U. S. Public Health Service and the U. S. Children's Bureau. We acknowledge the cooperation given by the Montana Tuberculosis Association, the State and local departments of Public Welfare, the U. S. Indian Service and all other agencies.

Respectfully submitted,

(s) JEANNETTE E. POTTER,
Acting Director,
Public Health Nursing.

## BUREAU OF VITAL STATISTICS 1946-1947

To B. K. Kilbourne, M.D., Executive Officer, Montana State Board of Health:

Sir: It is my privilege and honor to submit the Biennial Report of the Bureau of Vital Statistics for your consideration. This report covers the calendar years 1946 and 1947.

### Superlatives for the Biennium

#### Highs

| | | |
|---|---|---|
| Highest birth rate ever experienced | 29.5 | in 1947 |
| Highest marriage rate ever experienced | 25.9 | in 1946 |
| Highest divorce rate ever experienced | 6.4 | in 1946 |
| More adoption decrees recorded | 420 | in 1947 |
| Most illegitimate births ever reported | 292 | in 1946 |
| First quadruplets ever registered | 1 set | in 1947 |
| Highest death rate from heart disease | 344.4 | in 1947 |
| More marriages in June 1947 than any one month (Premarital blood test effective July 1, 1947) | 1,627 | in 1947 |

Highest Birth-Death ratio: 260 births to 100 deaths in 1947.

#### Lows

| | | |
|---|---|---|
| Lowest Tuberculosis death rate ever experienced | 27.0 | in 1947 |
| Lowest Infant Mortality rate ever experienced | 32.3 | in 1947 |
| Lowest Maternal Mortality rate ever experienced | 0.9 | in 1947 |
| No smallpox deaths reported either year | 0.0 | tie |
| No scarlet fever deaths reported either year | 0.0 | tie |
| Lowest total communicable disease death rate | 51.2 | in 1947 |

### Hi-Lites 1946-1947

| | 1946 | | | 1947 | | |
|---|---|---|---|---|---|---|
| Year— | Montana | Rate | U.S. Rate | Montana | Rate | U.S. Rate |
| Births | 12,661 | 25.3 | 23.3 | 14,770 | 29.5 | 24.6 |
| Deaths | 5,544 | 11.1 | 10.0 | 5,687 | 11.4 | 10.1 |
| Marriages | 12,974 | 25.9 | 16.5 | 9,769 | 19.5 | 14.1 |
| Divorces | 3,212 | 6.4 | ... | 2,439 | 4.9 | ... |
| Infant Deaths | 440 | 34.8 | 34.0 | 477 | 32.3 | 33.0 |
| Maternal Deaths | 16 | 1.3 | 1.5 | 13 | 0.9 | 1.3 |

Montana experienced its highest marriage rate, 25.9 per 1,000 of population, in 1946, and second high in 1947, with a rate of 19.5. These compare with the United States rates for those years of 16.5 and 14.1. The unusually high marriage rates are attributed to the aftermath of the war, when large groups of soldiers were returned to the civilian population.

The divorce rate of 6.4 per 1,000 in 1946 was also the highest ever experienced. The marriage-divorce ratio was slightly over 4 to 1 in both 1946 and 1947.

In 1947 the 14,770 births registered, with a birth rate of 29.5 per 1,000 of population, was the highest ever experienced, while 1946, with

12,666 births and a rate of 25.3 was second highest. Montana's 1946 birth rate was 2.0 per 1,000 higher than the National rate and 4.9 higher in 1947.

The death rates of 11.1 and 11.4 were average of the past few years. They were higher by 1.1 and 1.3 than the National average for those years. Due to the exceptionally large number of births in both these years, the birth-death ratio increased from 228 births to 100 deaths in 1946, to the unprecedented height of 260 births to 100 deaths in 1947.

Continued decreases show in both the Infant and Maternal Mortality rates. The infant death rate (deaths under one year per 1,000 live births) in 1946 was 34.8, which was 0.8 higher than the National average, while the 1947 rate of 32.3 was 0.7 under the National rate.

The Maternal Mortality rate was 1.3 per 1,000 live births in 1946, and dropped to 0.9 in 1947, an all time low. These compare very favorably with the National figure of those years of 1.5 and 1.3.

### Purpose

The Bureau of Vital Statistics was created by the Legislature of 1907, and became effective June 1st of that year. It was created for the "Complete and proper registration of births and deaths for legal, sanitary and statistical purposes," and placed under the superintendance of the Executive Officer of the State Board of Health.

The legislature of 1943 repealed the Act of 1907 and reenacted the present law which includes, not only the central registration of births and deaths, but also stillbirths, legitimations, adoptions, marriages, divorces and annulments. There is now in a central office a complete history of the principal events in the lives of the citizens of the state from the "cradle to the grave." Legislation was also passed in 1943 allowing any citizen, regardless of where he was born, to place his birth on record in Montana by court order. The law further regulates the use of Vital Statistics records as evidence, defines terms, provides penalties for violations and authorizes the State Board of Health to make and promulgate regulations for enforcement of the Act.

Through June 30, 1948, forty-two years, there are on file in this office 452,351 birth certificates (including 46,175 delayed registrations, those placed on record one year or more subsequent to date of birth) 211,301 deaths, 44,041 marriages and 11,684 divorces, or a grand total of 719,377 records. These are preserved in steel cabinets, or in bound volumes in a fireproof vault.

### The Field

There are at the present time 78 Local Registrars of births and deaths in the state. At least one in each county seat, usually the Health Officer, and where necessary for convenience and to prevent undue delay in filing their records, there are additional Local Registrars at strategic points for other districts within a county. The Local Registrars are appointed by the State Registrar with approval of the Board of Health.

The attendant at birth must report the birth to the Local Registrar within ten days after the birth occurs. The mortician who handles a dead body must present a completed death certificate to the Local Registrar and receive a burial or removal permit before the body may be in anyway disposed. The Local Registrar must send all original birth, death and stillbirth certificates to the State Board of Health by the 10th of each month for the preceding month, and a duplicate record must be filed with the Clerk and Recorder of the county in which the event occurred.

Clerks of the District Courts must report, on forms furnished by the State Registrar, all marriage licenses returned to him by marriage officiants, and the divorces or annulments and adoptions granted in his court, by the 15th of the following month.

### Accuracy

Death reporting became accurate and complete much more rapidly than did birth reporting. Montana was admitted to the United States Death Registration Area in 1910, when it was proved to the Federal Census Bureau, that we were registering over 90% of the deaths occurring in the state. Satisfactory birth reporting was not reached until late in the 1910 decade. In 1921 the Census Bureau tested our accuracy of birth reporting and found we were recording 93% of the births occurring and we were accordingly admitted as the 24th state to the Birth Registration Area on January 1, 1922. The last check on birth reporting, made in conjunction with the Federal Census of 1940, revealed that 97% of the births were being properly recorded. Another nation-wide birth check is contemplated at the time of the 1950 Census.

### Population

It is extremely difficult to arrive at conclusive population figures by minor civil divisions of the state. On the assumption that the school population remains in proportion to the whole population, an estimate of our 1947 population was made from the Federal Census of 1940, the School Census of 1940 and the School Census of 1947, by counties. The total population of the state from these figures was 497,716. There was a loss of 1800 to 6900 each year in school children from 1941 through 1945. Gains in school population show for the first time in 1946 and 1947, but there were still 17,066 fewer children on the school census in 1947 than in 1940. For all practical purposes, 500,000 population is used as a basis for all rate calculations in 1946 and 1947.

### Research

Total requests received at the office for information, corrections, or certified copies, and the filing of delayed birth records, amounted to 19,241 in 1946 and 11,768 in 1947.

### Certified Copies Issued

| Type— | 1946 | 1947 |
|---|---|---|
| Free Birth Certificates | 1,284 | 600 |
| Birth Certificates, short form | 3,339 | 2,746 |
| Birth Certificates, long form | 34 | 28 |
| Death Certificates | 479 | 461 |
| Total Certificates issued | 5,136 | 3,835 |
| Money deposited | $3,764.59 | $3,173.50 |

All money is deposited in the State General Fund. The state law requires that a copy of any record must be issued free of charge to the Veterans Administration, or to anyone acting for it. There was a decided decrease in both the free and payable certificates in 1947 compared to 1946.

### Index Revision

The large number of delayed birth records placed on file during the war years made it necessary to revise the birth index volumes for years from 1925 back as far as registration extends. In addition to the current index of births, deaths, marriages and divorces during the biennium, revised indexes for births were completed for the years 1916, 1915, 1914 and 1913. Previous revisions have been made for 1917 through 1924.

### Birth Notification

From 1925 to July 1, 1945, the Federal Census Bureau furnished the states with Certificates of Birth Notifications to be sent to all parents. They were mailed under the franking privilege. July 1, 1945 these were discontinued and an unverified copy of the complete birth certificate was sent in its place, to be signed and returned. This necessitated an unusual amount of clerical work. As 96% of Montana births occur in hospitals, a regulation was passed by the Board of Health requiring the Hospital Superintendent to present a completed birth certificate for the mother's review and signature before leaving the hospital. This regulation went into effect July 1, 1946. The unverified copy was discontinued and a postcard notification sent by the state. The National Office of Vital Statistics has, since February 1948, reinstituted the Birth Notification and allowed the states the frank for sending it out. The corrections on birth certificates have dropped from 35% to 5% since the regulation for mother's review in the hospital was instituted.

### Reports to Other Agencies

Reports at regular intervals to other departments or agencies are: Births, deaths, stillbirths and marriages to the National Office of Vital Statistics. All deaths over 21 years of age, to the State Board of Equalization. All deaths over 65 years, to the State Public Welfare Department. Tuberculosis deaths to Tuberculosis Division and to the State Tuberculosis Association. Cancer deaths to Epidemiologist and to the

Woman's Field Army. All automobile deaths are checked with the State Highway Patrol, then sent to the National Office of Vital Statistics, and reported to the National Safety Council. All communicable deaths to the Director of Epidemiology, the infant deaths, the maternal deaths and the stillbirths to the Maternal Child Health Division. Silicosis deaths to the Division of Industrial Hygiene. The total deaths to the National Funeral Director's Association. Special studies are made on request for various agencies.

**Principal Causes of Death 1946-1947 Compared to 1910**

**1910**

| Order | Cause | No. | Rate |
|---|---|---|---|
| 1. | Accidents | 514 | 135.9 |
| 2. | Tuberculosis | 340 | 89.9 |
| 3. | Pneumonia | 280 | 74.0 |
| 4. | Heart | 257 | 67.9 |
| 5. | Early Infancy | 247 | 65.3 |
| 6. | Diarrhea & Enteritis, 2 yr. | 225 | 60.1 |
| 7. | Nephritis | 209 | 55.7 |
| 8. | Cancer | 157 | 41.5 |
| 9. | Typhoid | 151 | 39.9 |
| 10. | Apoplexy | 112 | 29.6 |
| Total | | 2,506 | 62.7% |
| All Deaths | | 3,999 | 10.6 |

**1946**

| Order | Cause | No. | Rate |
|---|---|---|---|
| 1. | Heart | 1,636 | 327.2 |
| 2. | Cancer | 637 | 127.4 |
| 3. | Accidents | 530 | 106.0 |
| 4. | Apoplexy | 499 | 99.8 |
| 5. | Early Infancy | 319 | 63.6 |
| 6. | Nephritis | 266 | 53.2 |
| 7. | Pneumonia | 225 | 45.0 |
| 8. | Tuberculosis | 151 | 30.2 |
| 9. | Diabetes | 141 | 28.2 |
| 10. | Arterio Sclerosis | 80 | 16.0 |
| Total | | 4,484 | 80.9% |
| All Deaths | | 5,544 | 11.1 |

**1947**

| Order | Cause | No. | Rate |
|---|---|---|---|
| 1. | Heart | 1,722 | 344.4 |
| 2. | Cancer | 683 | 136.6 |
| 3. | Accidents | 550 | 110.0 |
| 4. | Apoplexy | 493 | 98.6 |
| 5. | Early Infancy | 337 | 67.4 |
| 6. | Nephritis | 259 | 51.8 |
| 7. | Pneumonia | 218 | 43.6 |
| 8. | Tuberculosis | 135 | 27.0 |
| 9. | Diabetes | 128 | 25.6 |
| 10. | Arterio Sclerosis | 104 | 20.8 |
| Total | | 4,622 | 81.4% |
| All Deaths | | 5,687 | 11.4 |

The ten leading causes of death were identical in order of importance in both 1946 and 1947, with only slight variation in the rates. The year 1910 is inserted for comparison in the principal death causes over a period of 38 years. These causes accounted for 62.7% of the total deaths in 1910, while in 1947 they amounted to 81.4%, or four out of five deaths.

In 1947 heart conditions alone caused one out of three deaths in the state. It was the leading cause, while in 1910 it held fourth place. Cancer was second and caused every eighth death in 1947, while it held eighth place in 1910.

Accidents had dropped from first place in 1910 to third in 1947. The actual number of accidental deaths has changed very little, but the rate has dropped markedly. They caused every tenth death.

Apoplexy jumped from tenth in 1910 to fourth in 1947. Early infant deaths, which include the titles: Congenital malformations, Congenital debility, Prematurity, Birth injuries and peculiar to early infancy deaths, have continued to hold fifth place through the years. Nephritis is up from 7th to 6th place. Pneumonia has dropped from 3rd to 7th. Tuberculosis from 2nd to 8th. Diabetes was 9th and Arterio-

sclerosis 10th in 1947. Neither of these showed as a leading cause of death 38 years ago. Diarrhea and enteritis, under 2 years, was 6th cause of death in 1910. Last year it caused 24 deaths, with a rate of 4.8. Typhoid Fever, which was 9th cause in 1910, caused two deaths in 1947, with a rate of 0.4. With the single exception of Early Infancy deaths, all the other leading causes of 1947 occur in the adult or old age groups.

## TABLE I

### 1946

The births and deaths by place of occurrence and residence, and the infant deaths, marriages, divorces and adoptions by place of occurrence, Montana 1946.

| | BIRTHS | | DEATHS | | | | | |
|---|---|---|---|---|---|---|---|---|
| County— | Occurrence | Residence | Occurrence | Residence | Infant Deaths | Marriages | Divorces | Adoptions |
| Beaverhead | 77 | 101 | 63 | 75 | 2 | 494 | 50 | 3 |
| Big Horn | 212 | 253 | 80 | 88 | 12 | 423 | 52 | 5 |
| Blaine | 107 | 212 | 57 | 89 | 14 | 112 | 33 | 6 |
| Broadwater | 123 | 79 | 33 | 18 | 2 | 46 | 127 | |
| Carbon | 56 | 236 | 102 | 140 | 1 | 254 | 35 | |
| Carter | 18 | 48 | 14 | 20 | | 24 | 7 | 1 |
| Cascade | 1,454 | 1,126 | 535 | 476 | 35 | 895 | 347 | 50 |
| Chouteau | 58 | 155 | 38 | 51 | | 134 | 1 | 4 |
| Custer | 444 | 270 | 121 | 75 | 8 | 366 | 94 | 15 |
| Daniels | 92 | 89 | 22 | 27 | 2 | 59 | 7 | |
| Dawson | 296 | 234 | 86 | 70 | 8 | 271 | 26 | 5 |
| Deer Lodge | 294 | 311 | 362 | 163 | 8 | 194 | 56 | 5 |
| Fallon | 131 | 89 | 29 | 24 | 3 | 187 | 9 | 2 |
| Fergus | 391 | 339 | 159 | 147 | 16 | 209 | 90 | 7 |
| Flathead | 648 | 622 | 262 | 256 | 24 | 453 | 133 | 10 |
| Gallatin | 456 | 452 | 175 | 168 | 10 | 381 | 26 | 7 |
| Garfield | 45 | 48 | 23 | 29 | 1 | 10 | | |
| Glacier | 279 | 263 | 94 | 98 | 25 | 129 | 52 | 4 |
| Golden Valley | 1 | 30 | 7 | 14 | | 9 | | |
| Granite | 4 | 54 | 18 | 30 | | 37 | 17 | |
| Hill | 568 | 366 | 149 | 108 | 17 | 229 | 84 | 5 |
| Jefferson | 71 | 71 | 43 | 50 | 3 | 79 | 3 | |
| Judith Basin | | 63 | 8 | 32 | | 32 | 22 | 1 |
| Lake | 225 | 258 | 115 | 128 | 13 | 185 | 82 | 3 |
| Lewis & Clark | 551 | 510 | 332 | 308 | 24 | 467 | 234 | 76 |
| Liberty | 4 | 44 | 9 | 19 | 1 | 13 | | |
| Lincoln | 145 | 160 | 74 | 78 | 8 | 207 | 16 | 3 |
| McCone | 9 | 68 | 10 | 21 | | 23 | 7 | 1 |
| Madison | 22 | 94 | 23 | 44 | | 58 | 10 | 2 |
| Meagher | 4 | 33 | 17 | 19 | | 20 | 8 | 1 |
| Mineral | 27 | 44 | 16 | 23 | | 513 | 7 | |
| Missoula | 983 | 741 | 391 | 303 | 34 | 1,003 | 268 | 35 |
| Musselshell | 80 | 125 | 44 | 44 | 1 | 103 | 23 | 2 |
| Park | 238 | 226 | 126 | 126 | 2 | 288 | 54 | 4 |
| Petroleum | | 9 | 6 | 16 | | 4 | | |
| Phillips | 66 | 156 | 34 | 45 | 2 | 91 | 38 | 1 |
| Pondera | 156 | 174 | 59 | 54 | 12 | 75 | 61 | 8 |
| Powder River | 1 | 46 | 4 | 14 | | 279 | | |
| Powell | 115 | 128 | 74 | 64 | 5 | 110 | 28 | 11 |
| Prairie | 42 | 52 | 14 | 16 | 2 | 30 | 6 | 2 |
| Ravalli | 212 | 265 | 113 | 123 | 10 | 263 | 63 | 9 |
| Richland | 256 | 252 | 60 | 60 | 11 | 432 | 36 | 6 |
| Roosevelt | 244 | 175 | 69 | 71 | 6 | 212 | 38 | 4 |
| Rosebud | 126 | 153 | 67 | 87 | 10 | 99 | 31 | |
| Sanders | 34 | 116 | 41 | 63 | 2 | 277 | 19 | 1 |
| Sheridan | 124 | 121 | 49 | 55 | 2 | 257 | 22 | 4 |
| Silver Bow | 990 | 909 | 583 | 620 | 37 | 809 | 331 | 24 |
| Stillwater | 43 | 109 | 37 | 44 | 1 | 170 | 20 | 1 |
| Sweet Grass | 36 | 62 | 38 | 39 | 3 | 42 | 10 | |
| Teton | 22 | 155 | 35 | 54 | 1 | 83 | 1 | 3 |
| Toole | 110 | 152 | 38 | 57 | 2 | 121 | 45 | 6 |
| Treasure | 5 | 28 | 4 | 7 | | 7 | 6 | 1 |
| Valley | 314 | 289 | 86 | 85 | 4 | 191 | 39 | 7 |
| Wheatland | 17 | 75 | 18 | 37 | | 28 | 15 | 1 |
| Wibaux | 1 | 19 | 7 | 10 | | 205 | 1 | |
| Yellowstone | 1,634 | 1,166 | 471 | 362 | 56 | 1,282 | 422 | 30 |
| TOTAL | 12,661 | 12,425 | 5,544 | 5,344 | 440 | 12,974 | 3,212 | 376 |

## TABLE II

### 1947

The births, deaths and infant deaths by place of occurrence and residence, and the marriages, divorces and adoptions by place of occurrence, Montana 1947.

| County | BIRTHS | | DEATHS | | INFANT DEATHS | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Occurrence | Residence | Occurrence | Residence | Occurrence | Residence | Marriages | Divorces | Adoptions |
| Beaverhead | 120 | 136 | 68 | 80 | 5 | 6 | 262 | 36 | ... |
| Big Horn | 257 | 274 | 82 | 88 | 19 | 20 | 252 | 37 | 8 |
| Blaine | 129 | 158 | 57 | 94 | 14 | 17 | 84 | 19 | 3 |
| Broadwater | 133 | 79 | 45 | 36 | 7 | 6 | 44 | 88 | ... |
| Carbon | 51 | 74 | 65 | 89 | | 3 | 186 | 32 | 5 |
| Carter | 22 | 59 | 16 | 20 | 1 | 1 | 11 | 8 | ..... |
| Cascade | 1,675 | 1,365 | 517 | 479 | 32 | 25 | 748 | 240 | 54 |
| Chouteau | 71 | 166 | 34 | 47 | 4 | 5 | 95 | 19 | 2 |
| Custer | 520 | 318 | 151 | 122 | 8 | 3 | 317 | 70 | 24 |
| Daniels | 103 | 107 | 31 | 30 | 9 | 9 | 50 | 5 | ..... |
| Dawson | 336 | 259 | 88 | 80 | 6 | 6 | 158 | 23 | 5 |
| Deer Lodge | 330 | 337 | 346 | 191 | 6 | 7 | 177 | 73 | 7 |
| Fallon | 107 | 83 | 32 | 27 | 6 | 6 | 97 | 7 | 1 |
| Fergus | 431 | 354 | 141 | 120 | 11 | 7 | 189 | 79 | 6 |
| Flathead | 851 | 770 | 302 | 289 | 25 | 21 | 380 | 95 | 16 |
| Gallatin | 603 | 602 | 177 | 186 | 14 | 16 | 295 | 37 | 11 |
| Garfield | 83 | 83 | 21 | 26 | 4 | 3 | 6 | 1 | ..... |
| Glacier | 278 | 264 | 92 | 104 | 13 | 16 | 92 | 41 | 2 |
| Golden Valley | 4 | 31 | 7 | 8 | | | 15 | 1 | ..... |
| Granite | 18 | 69 | 16 | 30 | | | 32 | 13 | ..... |
| Hill | 627 | 401 | 177 | 134 | 32 | 25 | 211 | 56 | 9 |
| Jefferson | 71 | 73 | 49 | 63 | 2 | 1 | 64 | 3 | ... |
| Judith Basin | ... | 51 | 7 | 28 | ... | 2 | 26 | 19 | ..... |
| Lake | 327 | 339 | 132 | 129 | 7 | 7 | 145 | 63 | 6 |
| Lewis & Clark | 647 | 628 | 332 | 282 | 24 | 23 | 369 | 181 | 80 |
| Liberty | 6 | 56 | 10 | 13 | ... | 2 | 9 | 4 | 1 |
| Lincoln | 147 | 194 | 71 | 75 | 4 | 6 | 133 | 28 | 3 |
| McCone | 1 | 86 | 5 | 13 | ... | 1 | 22 | ... | ... |
| Madison | 57 | 122 | 49 | 59 | ... | 1 | 43 | 7 | 2 |
| Meagher | 4 | 44 | 8 | 19 | ... | ... | 12 | 3 | ... |
| Mineral | 22 | 38 | 11 | 14 | ... | ... | 299 | 15 | 1 |
| Missoula | 1,040 | 854 | 331 | 262 | 27 | 23 | 808 | 177 | 36 |
| Musselshell | 76 | 119 | 55 | 63 | 2 | 5 | 72 | 23 | ... |
| Park | 330 | 287 | 138 | 131 | 8 | 6 | 213 | 47 | 3 |
| Petroleum | ... | 21 | ... | 4 | ... | 1 | 4 | ..... | ..... |
| Phillips | 94 | 147 | 49 | 59 | 1 | 3 | 62 | 25 | 5 |
| Pondera | 201 | 187 | 55 | 48 | 7 | 5 | 65 | 43 | 3 |
| Powder River | 1 | 55 | 5 | 17 | ... | 2 | 114 | ... | ..... |
| Powell | 148 | 147 | 68 | 63 | 6 | 7 | 83 | 13 | 11 |
| Prairie | 45 | 64 | 24 | 26 | 3 | 3 | 26 | 3 | 1 |
| Ravalli | 278 | 310 | 111 | 120 | 8 | 10 | 151 | 45 | 7 |
| Richland | 305 | 298 | 59 | 56 | 7 | 6 | 260 | 19 | 7 |
| Roosevelt | 260 | 206 | 90 | 91 | 7 | 7 | 154 | 26 | 5 |
| Rosebud | 149 | 205 | 83 | 83 | 16 | 18 | 84 | 29 | 1 |
| Sanders | 42 | 140 | 45 | 67 | 4 | 6 | 139 | 34 | 1 |
| Sheridan | 116 | 123 | 34 | 33 | 2 | 2 | 188 | 18 | 4 |
| Silver Bow | 1,137 | 1,053 | 614 | 643 | 50 | 48 | 781 | 268 | 30 |
| Stillwater | 70 | 140 | 52 | 60 | 4 | 4 | 105 | 13 | 2 |
| Sweet Grass | 34 | 89 | 32 | 37 | ... | 1 | 26 | 6 | ..... |
| Teton | 21 | 199 | 29 | 41 | ... | 3 | 74 | 15 | ..... |
| Toole | 107 | 156 | 52 | 60 | ... | 1 | 114 | 38 | 3 |
| Treasure | 7 | 42 | 3 | 13 | ..... | ..... | 9 | 1 | ..... |
| Valley | 349 | 311 | 83 | 82 | 6 | 6 | 145 | 28 | 6 |
| Wheatland | 18 | 80 | 19 | 31 | 1 | 2 | 37 | 8 | 1 |
| Wibaux | 1 | 19 | 4 | 6 | ... | ... | 123 | 1 | ..... |
| Yellowstone | 1,912 | 1,424 | 513 | 426 | 65 | 54 | 1,109 | 256 | 48 |
| TOTAL | 14,770 | 14,527 | 5,687 | 5,467 | 477 | 468 | 9,769 | 2,439 | 420 |

# TABLE III

## EVENTS AND RATES MONTANA 1946 and 1947

| Year / Event | 1946 Number | 1946 Rate | 1947 Number | 1947 Rate |
|---|---|---|---|---|
| *Births | 12,661 | 25.3 | 14,770 | 29.5 |
| *Marriages | 12,974 | 25.9 | 9,769 | 19.5 |
| *Divorces | 3,212 | 6.4 | 2,439 | 4.9 |
| *Deaths | 5,544 | 11.1 | 5,687 | 11.4 |
| **Infant Deaths | 440 | 34.6 | 477 | 32.3 |
| **Maternal Deaths | 16 | 1.3 | 13 | 0.9 |
| **INTERNATIONAL CLASSIFICATION DEATHS** | **1946** | | **1947** | |
| **Code No. Cause** | **Number** | **Rate** | **Number** | **Rate** |
| I- TOTAL INFECTIOUS DISEASES | 267 | 53.4 | 256 | 51.2 |
| 1 Typhoid Fever | 2 | 0.4 | 1 | 0.2 |
| 3 Epidemic Meningitis | 2 | 0.4 | 2 | 0.4 |
| 9 Whooping Cough | 3 | 0.6 | 5 | 1.0 |
| 10 Diphtheria | 5 | 1.0 | 2 | 0.4 |
| 11 Erysipelas | 1 | 0.2 | | ... |
| 12 Tetanus | 1 | 0.2 | | |
| TUBERCULOSIS, Total | 152 | 30.2 | 135 | 27.0 |
| 13 Tuberculosis pulmonary | 123 | 24.6 | 112 | 22.4 |
| 14 Tuberculosis abdominal | 9 | 1.8 | 11 | 2.2 |
| 15 Tuberculosis abdominal | 4 | 0.8 | 4 | 0.8 |
| 16 Tuberculosis spine | 2 | 0.4 | 1 | 0.2 |
| 17 Tuberculosis bones & joints | 1 | 0.2 | | ... |
| 18 Tuberculosis skin | 1 | 0.2 | | ... |
| 19 Tuberculosis lymphatic | 3 | 0.6 | 2 | 0.4 |
| 20 Tuberculosis genitourinary | 2 | 0.4 | 1 | 0.2 |
| 22 Tuberculosis disseminated | 6 | 1.2 | 4 | 0.8 |
| 24 Septicemia | 3 | 0.6 | | ... |
| 26 Tularemia | 1 | 0.2 | | ... |
| 27 Dysentary | 4 | 0.8 | 1 | 0.2 |
| 28 Malaria | 1 | 0.2 | | ... |
| 30 Syphilis | 42 | 8.4 | 48 | 9.6 |
| 32 Infective Hepatitis | 1 | 0.2 | | |
| 33 Influenza | 26 | 5.2 | 36 | 7.2 |
| 35 Measles | 3 | 0.6 | 13 | 2.6 |
| 36 Poliomyelitis | 7 | 1.4 | 3 | 0.6 |
| 37 Lethargic encephalitis | 2 | 0.4 | 4 | 0.8 |
| 38e Chicken Pox | 1 | 0.2 | | ... |
| 38b Rabies | 0 | 0 | 1 | 0.2 |
| 39 Spotted Fever | 5 | 1.0 | 1 | 0.2 |
| 43 Mycoses | 2 | 0.4 | | ... |
| 44c Mumps | 1 | 0.2 | | ... |
| 44b Hodgkins | 3 | 0.6 | 4 | 0.8 |
| II—CANCER AND OTHER TUMORS TOTAL CANCER | 637 | 127.4 | 683 | 136.6 |
| 45 Cancer buccal cavity | 19 | 3.8 | 16 | 3.2 |
| 46 Cancer digestive tract | 290 | 58.0 | 333 | 66.6 |
| 47 Cancer respiratory system | 72 | 14.4 | 66 | 13.2 |
| 48 Cancer uterus | 57 | 11.4 | 58 | 11.6 |
| 49 Cancer other female genitals | 17 | 3.4 | 23 | 4.6 |
| 50 Cancer breast | 52 | 10.4 | 43 | 8.6 |
| 51 Cancer male genitals | 31 | 6.2 | 46 | 9.2 |
| 52 Cancer urinary, Male & Female | 37 | 7.4 | 29 | 5.8 |
| 53 Cancer skin | 9 | 1.8 | 12 | 2.4 |
| 54 Cancer brain | 7 | 1.4 | 7 | 1.4 |
| 55 Cancer other organs | 46 | 9.2 | 50 | 10.0 |
| 56 Tumors non-malignant | 6 | 1.2 | 8 | 1.6 |
| 57 Tumors not specified | 12 | 2.4 | 6 | 1.2 |
| III -GENERAL DISEASES | | | | |
| 58 Rheumatism acute | 4 | 0.8 | 5 | 1.0 |
| 59 Rheumatism chronic | 11 | 2.2 | 5 | 1.0 |
| 61 Diabetes mellitus | 141 | 28.2 | 128 | 25.6 |
| 62 Pituitary diseases | 1 | 0.2 | 1 | 0.2 |
| 63 Thyroid diseases | 15 | 3.0 | 8 | 1.6 |
| 64 Thymus diseases | 3 | 0.6 | 1 | 0.2 |
| 65 Adrenal diseases | 1 | 0.2 | 2 | 0.4 |
| 71 Other vitamin-deficiency diseases | 0 | 0 | 1 | 0.2 |

| | | | | | |
|---|---|---|---|---|---|
| IV—BLOOD AND BLOOD MAKING ORGAN DISEASES | | | | | |
| 72 | Hemorrhagic conditions | 3 | 0.6 | 1 | 0.2 |
| 73 | Anemias | 12 | 2.4 | 14 | 2.8 |
| 74 | Lukemias | 19 | 3.8 | 42 | 8.1 |
| 75 | Spleen diseases | 2 | 0.4 | 2 | 0.4 |
| 76 | Other blood diseases | 2 | 0.4 | 4 | 0.8 |
| V—CHRONIC POISONS AND INTOXICATIONS | | | | | |
| 77 | Alcoholism | 15 | 3.0 | 20 | 4.0 |
| 79 | Mineral or organic poisonings | 1 | 0.2 | | |
| VI—NERVOUS SYSTEM | | | | | |
| 80 | Encephalitis | 2 | 0.4 | 14 | 2.8 |
| 81 | Meningitis (simple) | 6 | 1.2 | 3 | 0.6 |
| 82 | Other diseases spinal cord | 8 | 1.6 | 10 | 2.0 |
| 83 | Cerebral hemorrhage | 499 | 99.8 | 493 | 98.6 |
| 84 | Dementia precox | 4 | 0.8 | 11 | 2.2 |
| 85 | Epilepsy | 12 | 2.4 | 6 | 1.2 |
| 86 | Convulsions (under 5 years) | 4 | 0.8 | 3 | 0.6 |
| 87 | Other nervous diseases | 19 | 3.8 | 25 | 5.0 |
| 89 | Diseases of ears | 4 | 0.8 | 1 | 0.2 |
| VII—CIRCULATORY SYSTEM | | | | | |
| | TOTAL HEART | 1,636 | 327.2 | 1,722 | 344.4 |
| 90 | Pericarditis | 1 | 0.2 | 3 | 0.6 |
| 91 | Endocarditis acute | 10 | 2.0 | 9 | 1.8 |
| 92 | Endocarditis chronic | 157 | 31.4 | 154 | 30.8 |
| 93 | Myocardium diseases | 655 | 131.0 | 627 | 125.4 |
| 94 | Coronary arteries | 623 | 124.6 | 674 | 134.8 |
| 95 | Other heart diseases | 190 | 38.0 | 255 | 51.0 |
| 96 | Aneurysm | 3 | 0.6 | | |
| 97 | Arteriosclerosis | 80 | 16.0 | 104 | 20.8 |
| 98 | Gangrene | 15 | 3.0 | 4 | 0.8 |
| 99 | Other artery diseases | 13 | 2.6 | 8 | 1.6 |
| 100 | Vein diseases | 6 | 1.2 | 8 | 1.6 |
| 101 | Lymphatic diseases | 1 | 0.2 | 0 | 0 |
| 102 | Blood pressure | 11 | 2.2 | 10 | 2.0 |
| 103 | Other Circulatory | 1 | 0.2 | | |
| VIII—RESPIRATORY SYSTEM | | | | | |
| 104 | Diseases nasal fossae | 1 | 0.2 | 0 | 0 |
| 105 | Diseases larynx | 3 | 0.6 | 2 | 0.4 |
| 106 | Bronchitis | 20 | 4.0 | 10 | 2.0 |
| | Pneumonia all forms | 225 | 45.0 | 218 | 43.6 |
| 107 | Broncho pneumonia | 99 | 19.8 | 97 | 19.4 |
| 108 | Lobar pneumonia | 73 | 14.6 | 67 | 13.4 |
| 109 | Unspecified pneumonia | 53 | 10.6 | 54 | 10.8 |
| 110 | Pleurisy | 3 | 0.6 | 4 | 0.8 |
| 111 | Congestion lungs | 26 | 5.2 | 20 | 4.0 |
| 112 | Asthma | 12 | 2.4 | 11 | 2.2 |
| 113 | Pulmonary emphysema | 7 | 1.4 | 5 | 1.0 |
| 114 | Other respiratory | 23 | 4.6 | 21 | 4.2 |
| IX—DIGESTIVE SYSTEM | | | | | |
| 115 | Diseases buccal cavity | 11 | 2.2 | 6 | 1.2 |
| 116 | Diseases oesophagus | 1 | 0.2 | | |
| 117 | Ulcer stomach | 37 | 7.4 | 39 | 7.8 |
| 118 | Other stomach | 8 | 1.6 | 4 | 0.8 |
| 119 | Diarrhea and enteritis (—2-yr.) | 24 | 4.8 | 18 | 3.6 |
| 120 | Diarrhea and enteritis (+2-yr.) | 8 | 1.6 | 10 | 2.0 |
| 121 | Appendicitis | 30 | 6.0 | 22 | 4.4 |
| 122 | Intestinal obstruction | 66 | 13.2 | 65 | 13.0 |
| 123 | Other intestinal | 9 | 1.8 | 8 | 1.6 |
| 124 | Cirrhosis liver | 40 | 8.0 | 43 | 8.6 |
| 125 | Other liver | 6 | 1.2 | 9 | 1.8 |
| 126 | Biliary calculi | 14 | 2.8 | 25 | 5.0 |
| 127 | Other gall bladder | 16 | 3.2 | 16 | 3.2 |
| 128 | Diseases Pancreas | 4 | 0.8 | 2 | 0.4 |
| 129 | Peritonitis not specified | 2 | 0.4 | 2 | 0.4 |

| | | | | | |
|---|---|---|---|---|---|
| X—GENITOURINARY SYSTEM | | | | | |
| | Nephritis All Forms | 266 | 53.2 | 259 | 51.8 |
| 130 | Nephritis acute | 17 | 3.4 | 17 | 3.4 |
| 131 | Nephritis chronic | 233 | 46.6 | 222 | 44.4 |
| 132 | Nephritis unspecified | 16 | 3.2 | 20 | 4.0 |
| 133 | Other kidney | 12 | 2.4 | 8 | 1.6 |
| 134 | Urinary calculi | 1 | 0.2 | 1 | 0.2 |
| 135 | Diseases bladder | 2 | 0.4 | 5 | 1.0 |
| 137 | Diseases prostate | 27 | 5.4 | 30 | 6.0 |
| 138 | Male genitals | 0 | 0 | 1 | 0.2 |
| 139 | Female genitals | 5 | 1.0 | 2 | 0.4 |
| XI—PUERPERAL STATE | | | | | |
| | All Puerperal | 16 | **1.3 | 13 | **0.9 |
| 140 | Abortion septic | 3 | ** | 0 | 0 |
| 141 | Abortion Aseptic | 1 | ** | 2 | ** |
| 142 | Ectopic gestation | 2 | ** | 1 | ** |
| 144 | Toxaemias of pregnancy | 1 | ** | 1 | ** |
| 145 | Other diseases & accidents | 2 | ** | 0 | 0 |
| 146 | Hemorrhage of childbirth | 4 | ** | 2 | ** |
| 147 | Infection during childbirth | 2 | ** | 3 | ** |
| 148 | Puerperal toxaenias | 1 | ** | 1 | ** |
| 149 | Other accidents | 0 | 0 | 2 | ** |
| 150 | Other puerperal | 0 | 0 | 1 | ** |
| XII—SKIN AND CELLULAR | | | | | |
| 151 | Furuncle, carbuncle | 0 | 0 | 2 | 0.4 |
| 152 | Acute Abscess | 0 | 0 | 1 | 0.2 |
| 153 | Other skin | 1 | 0.2 | 2 | 0.4 |
| XIII—BONES and LOCOMOTION | | | | | |
| 154 | Osteomyelitis | 0 | 0 | 1 | 0.2 |
| 155 | Other bone | 0 | 0 | 1 | 0.2 |
| 156 | Joints and locomotion | 1 | 0.2 | 2 | 0.4 |
| XIV—CONGENITAL MALFORMATIONS | | | | | |
| 157 | Congenital malformations | 62 | 12.4 | 61 | 12.2 |
| XV—EARLY INFANCY | | | | | |
| 158 | Congenital debility | 6 | 1.2 | 8 | 1.6 |
| 159 | Premature birth | 152 | 30.4 | 171 | 34.2 |
| 160 | Injury at birth | 58 | 11.6 | 60 | 12.0 |
| 161 | Peculiar to early infancy | 41 | 8.2 | 37 | 7.4 |
| XVI—OLD AGE | | | | | |
| 162 | Senility | 70 | 14.0 | 83 | 16.6 |
| XVII—EXTERNAL VIOLENCE | | | | | |
| | Suicides, Total | 94 | 18.8 | 98 | 19.6 |
| 163 | Suicides by poison | 10 | 2.0 | 11 | 2.2 |
| 164 | Suicides other | 84 | 16.8 | 87 | 17.4 |
| | Homicides total | 27 | 5.4 | 13 | 2.6 |
| 166 | Homicides by firearms | 17 | 3.4 | 8 | 1.6 |
| 167 | Homicides by cutting or piercing | 1 | 0.2 | 0 | 0 |
| 168 | Homicides by other means | 9 | 1.8 | 5 | 1.0 |
| | Accidents total | 530 | 106.0 | 550 | 110.0 |
| 169 | Railway accidents | 20 | 4.0 | 26 | 5.2 |
| 170 | Motor vehicles | 172 | 34.4 | 169 | 33.8 |
| 172 | Water transportation | 2 | 0.4 | 2 | 0.4 |
| 173 | Air transportation | 18 | 3.6 | 12 | 2.4 |
| 174 | Mines and quarries | 16 | 3.2 | 15 | 3.0 |
| 175 | Agricultural and forests | 21 | 4.2 | 37 | 7.4 |
| 176 | Other machinery | 2 | 0.4 | 3 | 0.6 |
| 177 | Food poisoning | 1 | 0.2 | 1 | 0.2 |
| 178 | Absorption of poisonous gases | 5 | 1.0 | 9 | 1.8 |
| 179 | Other solid or liquid poisonings | 3 | 0.6 | 5 | 1.0 |
| 180 | Conflagration | 19 | 3.8 | 22 | 4.4 |
| 181 | Other burns | 19 | 3.8 | 26 | 5.2 |
| 182 | Mechanical suffocation | 7 | 1.4 | 9 | 1.8 |
| 183 | Drowning | 37 | 7.4 | 45 | 9.0 |
| 184 | Firearms | 30 | 6.0 | 18 | 3.6 |
| 185 | Cutting and piercing | 1 | 0.2 | 0 | 0 |
| 186 | By fall | 117 | 23.4 | 110 | 22.0 |
| 187 | Cataclysms | 1 | 0.2 | 0 | 0 |
| 188 | Injury by animals | 11 | 2.2 | 4 | 0.8 |

| | | | | | |
|---|---|---|---|---|---|
| 190 | Excessive cold | 4 | 0.8 | 10 | 2.0 |
| 191 | Excessive heat | 1 | 0.2 | 1 | 0.2 |
| 192 | Lightning | 6 | 1.2 | 2 | 0.4 |
| 193 | Electric shocks | 3 | 0.6 | 4 | 0.8 |
| 194 | Venomous animals | 1 | 0.2 | 1 | 0.2 |
| 195 | Other accidents | 13 | 2.6 | 19 | 3.8 |
| XVIII—ILL DEFINED | | | | | |
| 199 | Sudden Death | 3 | 0.6 | 2 | 0.4 |
| 200 | Not specified | 98 | 19.6 | 107 | 21.4 |

*—Per thousand population.
**—Per thousand live births.
All others 100,000 population.

## Table IV.

**The population, births, deaths, infant and maternal deaths, communicable diseases and principal causes of death, with their rates by years 1910 - 1947.**

| Year— | Population | DEATHS Number | DEATHS Rate | BIRTHS Number | BIRTHS Rate | INF. MORT. Deaths | INF. MORT. Rate | MAT. MORT. D | MAT. MORT. R | T. B. D | T. B. R | SMALLPOX D | SMALLPOX R | TYPHOID D | TYPHOID R | DIPH D | DIPH R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910 | 376,053 | 3,994 | 10.6 | 6,124 | 16.2 | 714 | 116.6 | 62 | 10.1 | 340 | 89.9 | 2 | 0.5 | 151 | 39.9 | 61 | 16.1 |
| 1911 | 396,224 | 4,009 | 10.1 | 7,542 | 19.0 | 717 | 95.1 | 78 | 10.3 | 420 | 106.0 | 0 | 0.0 | 80 | 20.2 | 30 | 7.6 |
| 1912 | 414,184 | 4,063 | 9.9 | 8,133 | 19.6 | 660 | 81.2 | 75 | 9.2 | 468 | 113.0 | 2 | 0.5 | 57 | 13.8 | 13 | 3.1 |
| 1913 | 432,145 | 5,033 | 11.6 | 8,682 | 20.1 | 812 | 93.5 | 80 | 9.2 | 456 | 105.5 | 3 | 0.7 | 95 | 22.0 | 23 | 5.3 |
| 1914 | 450,106 | 4,846 | 10.8 | 9,969 | 22.1 | 834 | 83.7 | 100 | 10.0 | 472 | 104.9 | 5 | 1.1 | 66 | 14.7 | 36 | 8.0 |
| 1915 | 468,067 | 5,072 | 10.8 | 11,132 | 23.8 | 816 | 73.3 | 91 | 8.2 | 530 | 113.2 | 1 | 0.2 | 57 | 12.2 | 21 | 4.5 |
| 1916 | 486,028 | 5,791 | 11.9 | 11,300 | 23.2 | 970 | 85.8 | 108 | 9.6 | 521 | 107.2 | 2 | 0.4 | 53 | 10.9 | 38 | 7.8 |
| 1917 | 503,989 | 6,589 | 13.1 | 11,600 | 23.0 | 1,090 | 94.0 | 143 | 12.3 | 549 | 108.9 | 6 | 1.2 | 79 | 15.7 | 40 | 7.9 |
| 1918 | 521,950 | 8,985 | 17.2 | 11,800 | 22.6 | 1,027 | 87.0 | 184 | 15.6 | 504 | 96.6 | 6 | 1.1 | 53 | 10.2 | 45 | 8.6 |
| 1919 | 539,911 | 5,786 | 10.7 | 12,017 | 22.3 | 962 | 80.1 | 141 | 11.7 | 480 | 88.9 | 9 | 1.7 | 39 | 7.2 | 41 | 7.6 |
| 1920 | 543,333 | 5,289 | 9.6 | 11,862 | 21.6 | 862 | 72.7 | 104 | 8.8 | 419 | 76.3 | 2 | 0.4 | 27 | 4.9 | 32 | 5.8 |
| 1921 | 547,238 | 4,693 | 8.6 | 12,127 | 22.2 | 805 | 66.4 | 89 | 7.4 | 356 | 65.1 | 3 | 0.5 | 20 | 3.7 | 47 | 8.6 |
| 1922 | 546,137 | 5,083 | 9.3 | 11,060 | 20.3 | 763 | 69.0 | 86 | 7.8 | 383 | 70.1 | 2 | 0.4 | 21 | 3.8 | 61 | 11.2 |
| 1923 | 545,036 | 4,893 | 9.0 | 10,524 | 19.3 | 748 | 71.1 | 79 | 7.5 | 395 | 72.5 | 3 | 0.6 | 16 | 2.9 | 51 | 9.4 |
| 1924 | 543,935 | 4,970 | 9.1 | 10,283 | 18.9 | 683 | 66.4 | 67 | 6.5 | 434 | 79.8 | 3 | 0.6 | 16 | 2.9 | 56 | 10.3 |
| 1925 | 542,834 | 5,188 | 9.6 | 10,302 | 19.0 | 726 | 70.5 | 83 | 8.1 | 396 | 73.0 | 0 | 0.0 | 24 | 4.4 | 34 | 6.3 |
| 1926 | 541,732 | 5,395 | 10.0 | 10,008 | 18.5 | 757 | 75.6 | 79 | 7.9 | 377 | 69.6 | 1 | 0.2 | 14 | 2.6 | 18 | 3.3 |
| 1927 | 540,632 | 5,342 | 9.9 | 9,875 | 18.3 | 651 | 65.9 | 65 | 6.6 | 373 | 69.0 | 1 | 0.2 | 15 | 2.8 | 20 | 3.7 |
| 1928 | 539,531 | 5,780 | 10.7 | 10,072 | 18.7 | 612 | 60.8 | 75 | 7.4 | 357 | 66.2 | 4 | 0.7 | 16 | 3.0 | 20 | 3.7 |
| 1929 | 538,430 | 5,748 | 10.7 | 10,080 | 18.7 | 640 | 63.5 | 84 | 8.3 | 357 | 66.3 | 1 | 0.2 | 32 | 5.9 | 12 | 2.2 |
| 1930 | 537,606 | 5,435 | 10.1 | 10,004 | 18.6 | 569 | 57.0 | 67 | 6.7 | 337 | 62.7 | 1 | 0.2 | 16 | 3.0 | 4 | 0.7 |
| 1931 | 540,337 | 5,280 | 9.8 | 9,638 | 17.8 | 583 | 60.5 | 70 | 7.3 | 329 | 60.9 | 0 | 0.0 | 12 | 2.2 | 7 | 1.3 |
| 1932 | 542,522 | 5,294 | 9.8 | 9,091 | 16.8 | 467 | 51.4 | 60 | 6.6 | 307 | 56.6 | 0 | 0.0 | 13 | 2.4 | 2 | 0.4 |
| 1933 | 544,707 | 5,212 | 9.6 | 8,953 | 16.4 | 461 | 51.5 | 51 | 5.7 | 282 | 51.8 | 0 | 0.0 | 14 | 2.6 | 17 | 3.1 |
| 1934 | 546,892 | 5,617 | 10.3 | 9,949 | 18.2 | 532 | 53.5 | 57 | 5.7 | 265 | 48.5 | 0 | 0.0 | 17 | 3.1 | 10 | 1.8 |
| 1935 | 549,077 | 6,291 | 11.5 | 10,029 | 18.3 | 602 | 60.0 | 52 | 5.2 | 257 | 46.8 | 1 | 0.2 | 12 | 2.2 | 14 | 2.5 |
| 1936 | 551,262 | 6,255 | 11.3 | 10,400 | 18.9 | 593 | 57.0 | 57 | 5.5 | 221 | 40.1 | 3 | 0.5 | 8 | 1.5 | 10 | 1.8 |
| 1937 | 553,447 | 6,128 | 11.1 | 10,248 | 18.5 | 518 | 50.5 | 38 | 3.7 | 241 | 43.5 | 2 | 0.4 | 11 | 2.0 | 10 | 1.8 |
| 1938 | 555,632 | 5,684 | 10.2 | 10,673 | 19.2 | 486 | 45.5 | 35 | 3.3 | 241 | 43.4 | 1 | 0.2 | 5 | 0.9 | 9 | 1.4 |
| 1939 | 557,817 | 5,901 | 10.6 | 10,897 | 19.5 | 534 | 49.0 | 35 | 3.2 | 248 | 44.5 | 0 | 0.0 | 11 | 2.0 | 9 | 1.6 |
| 1940 | 560,002 | 5,722 | 10.2 | 11,468 | 20.5 | 527 | 46.0 | 39 | 3.4 | 225 | 40.2 | 0 | 0.0 | 4 | 0.7 | 6 | 1.1 |
| 1941 | 562,187 | 5,627 | 10.0 | 11,513 | 20.5 | 427 | 37.1 | 22 | 1.9 | 201 | 35.8 | 0 | 0.0 | 2 | 0.4 | 14 | 2.5 |
| 1942 | 560,002 | 5,491 | 9.8 | 11,588 | 20.7 | 397 | 34.3 | 27 | 2.3 | 195 | 34.8 | 0 | 0.0 | 0 | 0.0 | 5 | 0.9 |
| 1943 | 484,000 | 5,585 | 11.5 | 11,258 | 23.3 | 440 | 39.1 | 21 | 1.9 | 199 | 41.1 | 0 | 0.0 | 4 | 0.8 | 5 | 1.0 |
| 1944 | 465,000 | 5,615 | 12.1 | 10,765 | 23.1 | 391 | 36.3 | 19 | 1.8 | 167 | 35.9 | 0 | 0.0 | 1 | 0.2 | 7 | 1.5 |
| 1945 | 500,000 | 5,378 | 10.8 | 10,403 | 20.8 | 357 | 34.3 | 15 | 1.4 | 166 | 33.2 | 0 | 0.0 | 2 | 0.4 | 4 | 0.8 |
| 1946 | 500,000 | 5,544 | 11.1 | 12,661 | 25.3 | 440 | 34.8 | 16 | 1.3 | 151 | 30.2 | 0 | 0.0 | 2 | 0.4 | 5 | 1.0 |
| 1947 | 500,000 | 5,687 | 11.4 | 14,770 | 29.5 | 477 | 32.3 | 13 | 0.9 | 135 | 27.0 | 0 | 0.0 | 1 | 0.2 | 2 | 0.4 |

## Table IV.—(Continued)

| Year— | SCARLET | | MEASLES | | W. C. | | INFLUENZA | | MEN'GTS | | POLIO | | AUTOS | | CANCER | | HEART | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | D | R | D | R | D | R | D | R | D | R | D | R | D | R | D | R | D | R |
| 1910 | 61 | 16.1 | 16 | 4.2 | 41 | 10.8 | 24 | 6.3 | 1 | 0.3 | 17 | 4.5 | 5 | 1.3 | 157 | 41.5 | 257 | 67.9 |
| 1911 | 37 | 9.3 | 49 | 12.4 | 27 | 6.8 | 15 | 3.8 | 3 | 0.8 | 5 | 1.3 | 3 | 0.8 | 157 | 39.6 | 317 | 80.0 |
| 1912 | 26 | 6.3 | 6 | 1.4 | 56 | 13.5 | 17 | 4.1 | 0 | 0.0 | 11 | 2.7 | 3 | 0.7 | 164 | 39.6 | 305 | 73.6 |
| 1913 | 119 | 27.5 | 54 | 12.5 | 46 | 10.6 | 30 | 6.9 | 15 | 3.5 | 8 | 1.9 | 15 | 3.5 | 207 | 47.9 | 381 | 88.2 |
| 1914 | 33 | 7.3 | 27 | 6.0 | 18 | 4.0 | 22 | 4.9 | 10 | 2.2 | 4 | 0.9 | 26 | 5.8 | 223 | 49.5 | 387 | 86.0 |
| 1915 | 16 | 3.4 | 7 | 1.5 | 36 | 7.7 | 41 | 8.8 | 7 | 1.5 | 1 | 0.2 | 31 | 6.6 | 223 | 47.6 | 407 | 87.0 |
| 1916 | 19 | 3.9 | 36 | 7.4 | 79 | 16.3 | 58 | 11.9 | 20 | 4.1 | 24 | 4.9 | 42 | 8.6 | 247 | 50.8 | 469 | 96.5 |
| 1917 | 85 | 16.9 | 46 | 9.1 | 43 | 8.5 | 43 | 8.5 | 6 | 1.2 | 8 | 1.6 | 59 | 11.7 | 278 | 55.2 | 477 | 94.6 |
| 1918 | 71 | 13.6 | 18 | 3.4 | 64 | 12.3 | 2,654 | 508.5 | 16 | 3.1 | 7 | 1.3 | 64 | 12.3 | 279 | 53.5 | 476 | 91.2 |
| 1919 | 57 | 10.6 | 16 | 3.0 | 13 | 2.4 | 687 | 127.2 | 15 | 2.8 | 3 | 0.6 | 44 | 8.1 | 302 | 55.9 | 448 | 83.0 |
| 1920 | 22 | 4.0 | 27 | 4.9 | 51 | 9.3 | 304 | 55.4 | 15 | 2.7 | 5 | 0.9 | 45 | 8.2 | 282 | 51.4 | 428 | 78.0 |
| 1921 | 10 | 1.8 | 35 | 6.4 | 69 | 12.6 | 49 | 9.0 | 7 | 1.3 | 2 | 0.4 | 48 | 8.8 | 315 | 57.6 | 523 | 95.6 |
| 1922 | 19 | 3.5 | 0 | 0.0 | 8 | 1.5 | 239 | 43.8 | 8 | 1.5 | 7 | 1.3 | 48 | 8.8 | 343 | 62.8 | 595 | 108.9 |
| 1923 | 17 | 3.1 | 19 | 3.5 | 23 | 4.2 | 158 | 29.0 | 7 | 1.3 | 6 | 1.1 | 49 | 9.0 | 333 | 61.1 | 575 | 105.5 |
| 1924 | 32 | 5.9 | 73 | 13.4 | 26 | 4.8 | 64 | 11.8 | 5 | 0.9 | 23 | 4.2 | 70 | 12.9 | 363 | 66.7 | 645 | 118.6 |
| 1925 | 21 | 3.9 | 5 | 0.9 | 63 | 11.6 | 109 | 20.1 | 5 | 0.9 | 6 | 1.1 | 98 | 18.1 | 379 | 69.8 | 672 | 123.8 |
| 1926 | 25 | 4.6 | 21 | 3.9 | 45 | 8.3 | 241 | 44.5 | 20 | 3.7 | 5 | 0.9 | 101 | 18.6 | 401 | 74.0 | 695 | 128.3 |
| 1927 | 32 | 5.9 | 30 | 5.5 | 15 | 2.8 | 147 | 27.2 | 66 | 12.2 | 4 | 0.7 | 77 | 14.2 | 414 | 76.6 | 815 | 150.8 |
| 1928 | 10 | 1.9 | 8 | 1.5 | 49 | 9.1 | 366 | 67.8 | 65 | 12.0 | 10 | 1.9 | 139 | 25.8 | 449 | 83.2 | 864 | 160.1 |
| 1929 | 16 | 3.0 | 46 | 8.5 | 21 | 3.9 | 212 | 39.4 | 60 | 11.1 | 0 | 0.0 | 126 | 23.4 | 467 | 86.7 | 809 | 150.3 |
| 1930 | 15 | 2.8 | 12 | 2.2 | 16 | 3.0 | 102 | 19.0 | 22 | 4.1 | 6 | 1.1 | 106 | 19.7 | 424 | 78.9 | 759 | 141.2 |
| 1931 | 11 | 2.3 | 3 | 0.5 | 46 | 8.5 | 152 | 28.1 | 13 | 2.4 | 15 | 2.8 | 127 | 23.5 | 420 | 77.7 | 915 | 169.3 |
| 1932 | 7 | 1.3 | 12 | 2.2 | 22 | 4.1 | 190 | 35.0 | 5 | 0.9 | 4 | 0.7 | 98 | 18.1 | 513 | 94.6 | 1,065 | 196.3 |
| 1933 | 12 | 2.2 | 15 | 2.8 | 15 | 2.8 | 173 | 31.7 | 3 | 0.6 | 2 | 0.4 | 119 | 21.8 | 508 | 93.3 | 1,087 | 199.6 |
| 1934 | 11 | 2.0 | 30 | 5.5 | 24 | 4.4 | 122 | 22.3 | 7 | 1.3 | 14 | 2.6 | 209 | 38.2 | 477 | 87.2 | 1,117 | 204.2 |
| 1935 | 22 | 4.0 | 49 | 8.9 | 22 | 4.0 | 173 | 31.5 | 15 | 2.7 | 1 | 0.2 | 161 | 29.3 | 528 | 96.2 | 1,299 | 236.6 |
| 1936 | 44 | 8.0 | 3 | 0.5 | 16 | 2.9 | 101 | 18.3 | 23 | 4.2 | 5 | 0.9 | 174 | 31.5 | 567 | 102.9 | 1,248 | 226.4 |
| 1937 | 12 | 2.2 | 2 | 0.4 | 14 | 2.5 | 244 | 44.1 | 7 | 1.3 | 6 | 1.1 | 177 | 32.0 | 566 | 102.3 | 1,395 | 252.1 |
| 1938 | 9 | 1.6 | 12 | 2.2 | 47 | 8.5 | 81 | 14.6 | 9 | 1.6 | 3 | 0.5 | 143 | 25.7 | 557 | 100.2 | 1,308 | 235.4 |
| 1939 | 8 | 1.4 | 16 | 2.9 | 16 | 2.9 | 99 | 17.7 | 4 | 0.7 | 1 | 0.2 | 149 | 26.7 | 643 | 115.3 | 1,486 | 266.4 |
| 1940 | 9 | 1.6 | 5 | 0.9 | 5 | 0.9 | 77 | 13.7 | 7 | 1.2 | 8 | 1.4 | 153 | 27.3 | 618 | 110.4 | 1,349 | 240.9 |
| 1941 | 8 | 1.4 | 1 | 0.2 | 6 | 1.1 | 91 | 16.2 | 4 | 0.7 | 10 | 1.8 | 197 | 35.0 | 631 | 112.2 | 1,371 | 243.9 |
| 1942 | 3 | 0.5 | 0 | 0.0 | 12 | 2.1 | 31 | 5.5 | 7 | 1.2 | 0 | 0.0 | 109 | 19.5 | 644 | 115.0 | 1,466 | 261.8 |
| 1943 | 3 | 0.6 | 8 | 1.7 | 18 | 3.7 | 67 | 13.8 | 6 | 1.2 | 5 | 1.0 | 100 | 20.7 | 604 | 124.8 | 1,522 | 314.5 |
| 1944 | 1 | 0.2 | 14 | 3.0 | 9 | 1.9 | 53 | 11.4 | 3 | 0.6 | 6 | 1.3 | 109 | 23.4 | 665 | 143.0 | 1,687 | 362.9 |
| 1945 | 1 | 0.2 | 1 | 0.2 | 3 | 0.6 | 43 | 9.4 | 2 | 0.4 | 10 | 2.0 | 121 | 24.2 | 640 | 128.0 | 1,606 | 321.2 |
| 1946 | 0 | 0.0 | 3 | 0.6 | 3 | 0.6 | 26 | 5.2 | 2 | 0.4 | 7 | 1.4 | 172 | 34.4 | 637 | 127.4 | 1,636 | 327.2 |
| 1947 | 0 | 0.0 | 13 | 2.6 | 5 | 1.0 | 36 | 7.2 | 2 | 0.4 | 3 | 0.6 | 169 | 33.3 | 683 | 136.6 | 1,722 | 344.4 |

## Table IV.—(Continued)

| Year— | NEPH. D | NEPH. R | PNEUMONIA D | PNEUMONIA R | SUICIDE D | SUICIDE R | HOMICIDE D | HOMICIDE R | ACCIDENTS D | ACCIDENTS R | APOPLEXY D | APOPLEXY R | ALCOHOL D | ALCOHOL R | ALL. COMM. D | ALL. COMM. R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910 | 222 | 58.7 | 282 | 74.6 | 81 | 21.4 | 37 | 9.8 | 514 | 135.9 | 112 | 29.6 | 56 | 14.7 | 800 | 211.5 |
| 1911 | 204 | 51.5 | 354 | 89.3 | 109 | 27.5 | 51 | 12.9 | 447 | 112.8 | 126 | 31.8 | 40 | 10.1 | 725 | 183.0 |
| 1912 | 246 | 59.4 | 387 | 93.4 | 83 | 20.0 | 59 | 14.2 | 475 | 114.7 | 155 | 37.4 | 63 | 15.2 | 711 | 171.7 |
| 1913 | 247 | 57.2 | 508 | 117.6 | 115 | 26.6 | 44 | 10.2 | 564 | 130.5 | 152 | 35.2 | 74 | 17.1 | 921 | 213.1 |
| 1914 | 249 | 55.3 | 464 | 103.1 | 125 | 27.8 | 58 | 12.9 | 498 | 110.6 | 170 | 37.8 | 66 | 14.6 | 777 | 172.6 |
| 1915 | 339 | 73.4 | 511 | 109.2 | 103 | 22.0 | 53 | 11.3 | 556 | 118.8 | 196 | 41.9 | 66 | 14.1 | 790 | 168.8 |
| 1916 | 359 | 73.9 | 536 | 110.3 | 113 | 23.2 | 86 | 17.7 | 695 | 143.0 | 210 | 43.2 | 86 | 17.7 | 949 | 195.3 |
| 1917 | 358 | 71.0 | 690 | 136.9 | 113 | 22.4 | 92 | 18.3 | 870 | 172.6 | 212 | 42.1 | 124 | 24.6 | 1,032 | 204.8 |
| 1918 | 322 | 61.7 | 1,298 | 248.7 | 97 | 18.6 | 58 | 11.1 | 625 | 119.7 | 213 | 40.8 | 60 | 11.5 | 3,536 | 677.5 |
| 1919 | 265 | 49.1 | 530 | 98.2 | 86 | 15.9 | 43 | 8.0 | 509 | 94.3 | 243 | 45.0 | 10 | 1.9 | 1,442 | 267.1 |
| 1920 | 273 | 49.7 | 576 | 104.9 | 86 | 15.7 | 46 | 8.4 | 473 | 86.2 | 246 | 44.8 | 10 | 1.8 | 924 | 168.3 |
| 1921 | 279 | 51.0 | 412 | 75.3 | 94 | 17.2 | 41 | 7.5 | 388 | 70.9 | 242 | 44.2 | 19 | 3.4 | 689 | 125.9 |
| 1922 | 298 | 54.6 | 482 | 88.3 | 88 | 16.1 | 42 | 7.7 | 433 | 79.3 | 255 | 46.7 | 22 | 4.0 | 830 | 152.0 |
| 1923 | 267 | 49.0 | 399 | 73.2 | 77 | 14.1 | 26 | 4.8 | 470 | 86.2 | 263 | 48.3 | 25 | 4.6 | 815 | 149.5 |
| 1924 | 295 | 54.2 | 364 | 66.9 | 79 | 14.5 | 37 | 6.8 | 519 | 95.4 | 272 | 50.0 | 15 | 2.8 | 806 | 148.2 |
| 1925 | 301 | 55.5 | 437 | 80.5 | 102 | 18.8 | 51 | 9.4 | 505 | 93.0 | 322 | 59.3 | 41 | 7.6 | 753 | 138.7 |
| 1926 | 236 | 43.6 | 501 | 92.5 | 92 | 17.0 | 45 | 8.3 | 477 | 88.0 | 327 | 60.4 | 27 | 5.0 | 862 | 159.1 |
| 1927 | 325 | 60.1 | 372 | 68.8 | 113 | 20.9 | 37 | 6.8 | 506 | 93.6 | 290 | 53.6 | 58 | 10.7 | 795 | 147.1 |
| 1928 | 333 | 61.7 | 458 | 84.9 | 110 | 20.4 | 44 | 8.2 | 568 | 105.3 | 336 | 62.3 | 48 | 8.9 | 997 | 184.8 |
| 1929 | 395 | 73.4 | 439 | 81.5 | 116 | 21.5 | 54 | 10.0 | 526 | 97.7 | 320 | 59.4 | 60 | 11.1 | 863 | 160.3 |
| 1930 | 395 | 73.5 | 425 | 79.1 | 136 | 25.3 | 57 | 10.6 | 498 | 92.6 | 357 | 66.4 | 69 | 12.8 | 635 | 118.1 |
| 1931 | 336 | 62.2 | 384 | 71.1 | 126 | 23.1 | 39 | 7.2 | 510 | 94.4 | 346 | 64.0 | 33 | 6.1 | 683 | 126.4 |
| 1932 | 348 | 64.1 | 348 | 64.1 | 125 | 23.0 | 45 | 8.3 | 442 | 81.5 | 358 | 66.0 | 15 | 2.8 | 658 | 121.3 |
| 1933 | 315 | 57.8 | 321 | 58.9 | 114 | 20.9 | 30 | 5.5 | 508 | 93.3 | 354 | 65.0 | 24 | 4.4 | 611 | 112.2 |
| 1934 | 350 | 64.0 | 416 | 76.1 | 104 | 19.0 | 39 | 7.1 | 576 | 105.3 | 379 | 69.3 | 20 | 3.7 | 601 | 109.9 |
| 1935 | 355 | 64.7 | 674 | 122.8 | 96 | 17.5 | 34 | 6.2 | 552 | 100.5 | 450 | 82.0 | 14 | 2.5 | 689 | 125.5 |
| 1936 | 347 | 62.9 | 631 | 114.5 | 102 | 18.5 | 26 | 4.7 | 660 | 119.7 | 447 | 81.1 | 25 | 4.5 | 524 | 95.1 |
| 1937 | 305 | 55.1 | 528 | 95.4 | 101 | 18.2 | 27 | 4.9 | 599 | 108.2 | 416 | 75.2 | 32 | 5.8 | 646 | 116.7 |
| 1938 | 314 | 56.5 | 355 | 63.9 | 103 | 18.5 | 26 | 4.7 | 587 | 105.6 | 437 | 78.6 | 27 | 4.9 | 514 | 92.5 |
| 1939 | 327 | 58.6 | 310 | 55.6 | 106 | 19.0 | 27 | 4.8 | 531 | 95.2 | 438 | 78.5 | 23 | 4.1 | 528 | 94.7 |
| 1940 | 318 | 56.8 | 321 | 57.3 | 114 | 20.4 | 25 | 4.5 | 528 | 94.3 | 539 | 96.2 | 41 | 7.3 | 434 | 77.5 |
| 1941 | 326 | 58.0 | 248 | 44.1 | 98 | 17.4 | 16 | 2.8 | 565 | 100.5 | 540 | 96.1 | 38 | 6.8 | 452 | 80.4 |
| 1942 | 321 | 57.6 | 255 | 45.5 | 97 | 17.0 | 21 | 3.7 | 480 | 85.5 | 539 | 96.2 | 42 | 7.5 | 360 | 64.3 |
| 1943 | 320 | 66.1 | 261 | 53.9 | 67 | 13.8 | 15 | 3.1 | 619 | 127.9 | 477 | 98.6 | 29 | 6.0 | 398 | 82.2 |
| 1944 | 308 | 66.3 | 246 | 52.9 | 51 | 11.0 | 12 | 2.6 | 491 | 105.6 | 546 | 117.4 | 11 | 2.4 | 358 | 77.0 |
| 1945 | 270 | 54.0 | 198 | 39.6 | 74 | 14.8 | 19 | 3.8 | 524 | 104.8 | 484 | 96.8 | 17 | 3.4 | 307 | 61.4 |
| 1946 | 233 | 46.6 | 225 | 45.0 | 94 | 18.8 | 27 | 5.4 | 530 | 106.0 | 499 | 99.8 | 15 | 3.0 | 267 | 53.4 |
| 1947 | 259 | 51.8 | 218 | 43.6 | 98 | 19.6 | 13 | 2.6 | 550 | 110.0 | 493 | 98.6 | 20 | 4.0 | 256 | 51.2 |

## General Summary of the Births, Deaths, Marriages & Divorces 1946 and 1947

### BIRTHS

| Year— | 1946 | 1947 |
|---|---|---|
| Total | 12,661 | 14,770 |
| January | 827 | 1,281 |
| February | 778 | 1,217 |
| March | 854 | 1,335 |
| April | 899 | 1,253 |
| May | 965 | 1,279 |
| June | 965 | 1,207 |
| July | 1,126 | 1,309 |
| August | 1,125 | 1,192 |
| September | 1,232 | 1,215 |
| October | 1,360 | 1,224 |
| November | 1,267 | 1,118 |
| December | 1,263 | 1,140 |
| Males | 6,485 | 7,625 |
| Females | 6,176 | 7,145 |
| Sex Ratio | 105 males to 100 females | 107 males to 100 females |
| White | 11,894 | 13,935 |
| Indian | 632 | 670 |
| Mexican | 115 | 129 |
| Yellow | 8 | 14 |
| Brown | 7 | 8 |
| Black | 5 | 14 |
| Illegitimate | 292 | 246 |
| Stillbirths | 222 | 235 |
| Twins | 181 | 178 |
| Triplets | 1 | 2 |
| Quadruplets | 0 | 1 |

From July 1, 1946 on, the births reported never fell below 1,100 each month, compared to 900 as the monthly average in past experience. The white birth rate in 1946 was 24.8 and the Indian 31.6, while in 1947 they were 29.0 and 33.5.

The illegitimates were 2.3% of the total in 1946 and 1.7% in 1947. In 1946, 236 nonresident mothers had their babies in Montana. In 1947 there were 243 nonresident births, while 455 Montana mothers were confined outside the state. There were 17.5 stillbirths per 1,000 live births in 1946 and 15.9 in 1947.

## DEATHS

| Year— | 1946 | | 1947 | |
|---|---|---|---|---|
| Total | 5,544 | | 5,687 | |
| January | 472 | | 487 | |
| February | 507 | | 460 | |
| March | 468 | | 565 | |
| April | 415 | | 472 | |
| May | 501 | | 473 | |
| June | 424 | | 477 | |
| July | 493 | | 465 | |
| August | 440 | | 470 | |
| September | 424 | | 429 | |
| October | 491 | | 449 | |
| November | 445 | | 442 | |
| December | 465 | | 498 | |
| Males | 3,547 | | 3,657 | |
| Females | 1,997 | | 2,030 | |
| Sex Ratio | 178 males to 100 females | | 180 males to 100 females | |
| Single | 1,510 | 27.2% | 1,566 | 27.5% |
| Married | 2,317 | 41.8% | 2,341 | 41.2% |
| Widowed | 1,386 | 25.0% | 1,409 | 24.8% |
| Divorced | 185 | 3.3% | 234 | 4.1% |
| Unknown | 146 | 2.6% | 137 | 2.4% |
| White | 5,245 | | 5,357 | |
| Indian | 235 | | 270 | |
| Black | 26 | | 17 | |
| Mexican | 25 | | 28 | |
| Yellow | 13 | | 15 | |

The general death rate for the two years was 11.1 and 11.4 per 1,000 of population. The white death rate for 1946 was 10.9 and the Indian 11.8, and for 1947 the white was 11.2 compared to 13.5 for the Indians. The sex ratio shows that 9 males died to 5 females for the biennium. Over two out of five of the deceased were married; slightly over one-fourth were single, and one-fourth were widowed and 6% were divorced or unknown.

## MARRIAGES

| Year— | 1946 | | 1947 | |
|---|---|---|---|---|
| Total | 12,974 | | 9,769 | |
| January | 872 | | 763 | |
| February | 841 | | 730 | |
| March | 944 | | 727 | |
| April | 886 | | 824 | |
| May | 985 | | 953 | |
| June | 1,489 | | 1,627 | |
| July | 1,124 | | 537 | |
| August | 1,324 | | 725 | |
| September | 1,307 | | 812 | |
| October | 1,138 | | 687 | |
| November | 1,066 | | 729 | |
| December | 998 | | 655 | |
| Civil Ceremony | 5,180 | 40% | 3,462 | 35.5% |
| Religious | 7,794 | 60% | 6,236 | 63.8% |
| By declaration | 0 | | 71 | 0.7% |

| Color— | Groom | Bride | Groom | Bride |
|---|---|---|---|---|
| White | 12,683 | 12,688 | 9,601 | 9,605 |
| Indian | 219 | 223 | 112 | 120 |
| Mexican | 39 | 37 | 43 | 33 |
| Black | 23 | 23 | 7 | 5 |
| Yellow | 4 | 3 | 5 | 5 |
| Brown | 6 | 0 | 1 | 1 |
| Single | 9,292 | 8,449 | 7,039 | 6,557 |
| Divorced | 3,132 | 3,596 | 2,322 | 2,571 |
| Widowed | 550 | 929 | 408 | 641 |
| Nonresident | 5,236 | 5,036 | 3,013 | 2,956 |

The highest marriage rate in history was experienced in 1946, 12,974 marriages, with a rate of 25.9 per 1,000 of population. The nonresident marriages were over 5,000 for both brides and grooms, due to the people from the adjoining states coming here to marry and evade the premarital blood test in their home states. The Montana blood test law became effective July 1, 1947. As a consequence we experienced the greatest number of marriages ever for one month in June 1947. The total marriages dropped by 24.7%, or one-fourth in 1947. Ninety-eight percent of the marriages were among the whites and 2% among other races. Two civil ceremonies to three religious were performed in 1946. The civils dropped to 35.5% in 1947, while the religious increased to 63.8%, and there were 71 declarations of marriage for the last six months of that year.

## DIVORCES

| Year— | 1946 | 1947 |
|---|---|---|
| Total | 3,212 | 2,439 |
| January | 334 | 198 |
| February | 286 | 183 |
| March | 307 | 208 |
| April | 264 | 220 |
| May | 297 | 187 |
| June | 300 | 194 |
| July | 252 | 223 |
| August | 248 | 199 |
| September | 269 | 220 |
| October | 247 | 228 |
| November | 208 | 180 |
| December | 200 | 199 |
| **Plaintiff** | | |
| Husband | 955 | 678 |
| Wife | 2,234 | 1,745 |
| Other | 23 | 16 |
| **Grounds for Divorce** | | |
| Cruelty | 2,074 | 1,502 |
| Desertion | 524 | 426 |
| Neglect | 294 | 291 |
| Other | 174 | 86 |
| Annulment | 146 | 134 |

The divorce rate of 6.4 per 1,000 of population for 1946 was the highest in history. The rate dropped to 4.9 in 1947. The marriage-divorce ratio remained the same, 4 marriages to 1 divorce, both years. Seven times the wife was plaintiff to three times for husbands. Cruelty is by far the outstanding cause for divorce.

There were 376 substitute certificates filed for adoptions in 1946. This increased to 420 in 1947.

A breakdown of events and rates for any county will be made on request.

We wish to thank the local registrars and district court clerks for their prompt reporting each month and for their courteous replies to our querries.

The personnel of the Bureau for the biennium included the State Registrar, one senior stenographer, one intermediate stenographer, one junior stenographer and one senior clerk.

Respectfully submitted,

L. L. BENEPE
State Registrar

# REPORT OF THE DIVISION OF SANITARY ENGINEERING

Biennial Period Ending June 30, 1948

**H. B. Foote, C. E., Director.**

**W. M. Cobleigh, E. M., A. M., Dean (Emeritus) School of Engineering, State College, Bozeman, Consulting Engineer.**

**C. W. Brinck, M. S., Chemical Engineer and Assistant Director.**

**Milton Brown, B. S., Bacteriologist.**

**Henry Garber, Sanitary Engineer.**

**Grace Taylor, Stenographer.**

To: B. K. Kilbourne, M. D., Executive Officer, Montana State Board of Health:

I have the honor to report to you the work of the Division of Sanitary Engineering of the State Board of Health for the biennial period ending June 30, 1948.

The principal work of the Division of Sanitary Engineering is comprised of the following activities:

1. Bacteriological and chemical examination of water samples of both public and private supplies and for various Federal Agencies.
2. Field inspections of public and private water supplies.
3. Field inspections of sewage disposal systems.
4. Field inspections and examination of samples in stream pollution problems.
5. Field inspections of public swimming pools.
6. Inspection of plans for public water supplies.
7. Inspection of plans for public buildings.
8. Inspection of plans for public sewage disposal systems and for waste disposal from industrial plants.
9. Inspection of plans for public swimming pools.

## Laboratory Testing of Water

The testing of samples of water makes up the bulk of the laboratory work. A check upon the condition and operation of public water supplies is obtained by frequent routine bacteriological tests. In order that each supply will receive proper attention at regular intervals, a calendar is used which lists for each week the cities to which sampling equipment is to be sent. By this calendar, plants giving the water relatively complete treatment, such as filtration and softening, are sampled twice a month. Plants in which chlorination is the only treatment are sampled once a month. Other plants are sampled from four to six times a year, the frequency depending upon the character of the supply or more particularly the source of the water.

Those ground waters which appear to be the most constant in quality are sampled less frequently. We have in Montana several public water supplies which are given no treatment, although taken from surface sources. These are watched carefully and the sampling is consequently somewhat more frequent.

The standards of the U. S. Public Health Service, which are applied particularly to waters used in interstate traffic, promulgated by the Surgeon General of the U. S. Public Health Service on February 19, 1946, call for a minimum of one sample each month from each water supply. The total number of samples from each supply per month depends not upon the source and type of treatment, but upon the population served. This requires, therefore, an acceleration of sampling of those particular supplies.

In view of the fact that the American Water Works Association has adopted the U. S. Public Health Service standards for country-wide application, poses a question as to how it may be possible to increase our sampling and water testing to bring the schedules into conformity.

The State Board of Health owns a considerable number of insulated shipping cases and bottles which are used for the collection and shipment of samples. These are sent by express, properly sealed, to the collector who, after the collection of samples, packs them with ice, seals and returns them to the laboratory by express, charges collect. The collector is usually the local water superintendent or the health officer, who is carefully instructed in the matter. For the sealing, a self-locking tin seal is used on which is stamped the name of the State Board of Health, and a number for identification. The standard sample bottle formerly used was of 125 ml. (approximately 4.4 oz.) capacity, with a $^3/_4$-inch mouth, and provided with a bakelite screw cap $^3/_4$-inch long. A thin gasket is placed in each cap. Because of difficulty in securing this type of bottle, one with a glass stopper has been used also.

This system fits very satisfactorily into our extensive territory where the visiting of supplies is attended by considerable expense. The local collectors co-operate excellently so that little delay due to their failure to collect is experienced.

In view of the requirements for larger numbers of samples, it is probable that we will be obliged to test many public water supplies by transmitting samples through the mails.

In the testing of water from the many private supplies, samples are transmitted by mail in mailing tubes, a stock of which is kept on hand. In the laboratory such samples are tested only for bacteria of the coliform group, although they are also observed as to their physical quality, turbidity in comparison with silica standards being measured and recorded.

In the case of the Indian and National Park Service work, as well as other government work, the samples have been sent to the laboratory under Government frank or bill of lading.

There are now in Montana 115 cities, towns, and other communities, and seven state-owned institutions with public water systems. Of the total of 149 water sources furnishing water to these systems, 92 are from ground sources and 57 from surface sources. The population served in these communities and state institutions is approximately 303,500, or 55 per cent of the total population of 554,136 as shown by the 1940 census for the State of Montana.

Through an arrangement with the State College, Bozeman, the data obtained from chemical analyses of water samples have been sent to them for interpretation from the standpoint of the suitability of such waters for irrigation, in cases where such information is requested. Inasmuch as the same analytical data can be used for interpretation from the standpoint of domestic use and irrigation use, this arrangement eliminates much dupilcation of analyses. The same may be said of arrangements with Dr. Wilkins, of the Livestock Sanitary Board, relative to the suitability of waters for stock watering purposes.

In any bacterial testing of water, the laboratory follows the standard methods of the U. S. Public Health Service. In the chemical analyses, either these standards or those of the Association of Official Agricultural Chemists are followed. Our laboratories are well provided with both equipment and supplies. Brilliant Green Bile confirmatory media is employed, all lactose broth tubes showing any percentage of gas being inoculated into the confirmatory medium.

The following tabulation shows the amount of laboratory work done during the past twenty-four months:

| | Bacteriological | Chemical | Percent of Total |
|---|---|---|---|
| Samples from Public Water Supplies | 8,167 | 118 | 75.9 |
| Samples from Private Water Supplies | 1,308 | 576 | 17.3 |
| Samples from Tourist Camp Water Supplies | 77 | 4 | 0.7 |
| Samples from School Water Supplies | 174 | 6 | 1.6 |
| Samples from United States Government | 196 | 13 | 1.9 |
| Samples from Miscellaneous Sources (including those from stream pollution studies) | 174 | 105 | 2.6 |
| Total | 10,096 | 822 | 100.0 |
| GRAND TOTAL | | | 10,918 |

**Field Activities**

The field work is done by railway, bus and automobile travel, mostly the latter. It is the intention and endeavor of this Division to see each public water supply once a year, and the larger ones—especially the purification plants—oftener. Frequently it is necessary to return to a given city to make follow-up investigations or to

investigate special conditions where they may arise. When investigating these public water supplies, the city or water company officials are interviewed and the trips and inspections are made in their company. The owners and operators of public water supplies in Montana are aware of the necessity of maintaining proper sanitary conditions, and excellent cooperation is usually found. In this way the maximum benefits to be derived from inspections are obtained. For the most part, too, the men in charge of the public water supplies in this State are awake to the modern trends in water treatment and water quality.

When in a given city, private water supplies, swimming pools, and ice fields are visisted and inspected as required, in addition to other public structures, including the municipal sewer system.

### Public Water Supply Improvements

There have been some improvements in public water supply systems in Montana during the past two years. In perhaps sixteen of our communities the distribution systems have been extended. In some instances the extensions have been of an appreciable amount.

In Hardin, a new standpipe is being constructed to augment the present storage.

At Glendive, also, a large settling basin is under construction, and will be ready for use when the high turbid river water must be used next spring.

At Plentywood, the city has installed a water softening plant.

Plans were reviewed during the past two years for new water supply systems at Broadus, Froid, Drummond and Charlo. At Charlo the water supply system has been constructed, as has that at Broadus. The other two plans are still in abeyance. This increases by approximately 1,200 people those who have water supplied them from public water supply systems.

During the biennial period, water supply systems have been built for the Government Camps, at the Canyon Ferry Project, at the Hungry Horse Dam Project and one also for the civilian community of Martin City adjacent to that camp. Plans have been reviewed for a water supply system at the Moorhead Dam project. The U. S. Bureau of Reclamation has kept in touch with this office relative to water supply and sewage disposal facilities for the Government camps at the various projects.

The source of the water for the new supply at Broadus is a drilled well which has an artesian pressure. The water for the supply at Charlo is a drilled well, water from which is pumped.

An improvement at White Sulphur Springs is a new intake, a new pipe line connecting from that to the system, and a new reservoir, while that at St. Ignatius is a new intake structure, as is that at Ronan. A new well to augment the city supply has been drilled

at Dillon. Other improvements planned for that community cannot be financed as yet, because a bond issue for the purpose did not pass.

The plans for a new water supply at Froid have not been followed as yet, due to difficulty in financing. At Drummond, a certain and assured source of water has not yet been developed.

It is probable that further extension of public water supply systems would have been made had pipe been more readily obtainable.

### Emergencies

Several emergency conditions confronted the Sanitary Engineering Division during the past biennium.

At Joliet an emergency disinfection plant was installed to take care of the situation while the regular chlorine plant was out of commission. At Belt, due to some unaccounted pollution or contamination of the water, disinfection was instituted. This was true also at Malta.

The water supply system installed at Charlo was, in the distribution system, of wood pipe which had been exposed to the weather for a considerable length of time. It was difficult to get this properly cleaned up, and chlorination was instituted there to take care of the situation. It is anticipated that this may be discontinued after the system has been in service for a time.

In 1948 we had emergency conditions on both slopes of the Continental Divide. Several situations arose on the west side due to the high waters. At Superior, a local flood on a creek washed out a part of the main flow line. The same condition happened at Plains and also at Troy, Montana. At Missoula, the public water supply was not in any way affected, except that it was quite turbid, and it was necessary to increase the distinfection dose beyond that ordinarily carried. In 1947 an earth fill dam, which forms a reservoir for the city supply at Whitefish, gave way.

At Shelby, on the Marias River, the area on which are located the city wells was inundated, so that for a time the pumps could not be operated. Apparently, little damage was done to the wells, but the reservoir was emptied and water had to be hauled into the community from neighboring towns.

At Trident the Missouri River rose to the point where it covered the area about the Cement Factory, thus putting the wells commonly used out of service. Resort was had to the standby pump which draws water from a well on the river bank. While this was in use, disinfection was practiced.

We have one water purification unit, loaned to the Department by the American Red Cross, located in Helena, and one located at Forsyth on the Lower Yellowstone River. These have not, as yet, been used.

### Sewer Systems

A considerable volume of construction, looking toward extension of existing sewer systems, has been possible during the past biennium. In several of our communities the extension has been considerable. In some of them, but a few blocks have been built. A new sewer system has been built at Dutton, at Ekalaka and at Culbertson. New systems are under construction at Harlem and at Chester.

An encouraging feature is the advance made in sewage treatment. At Culbertson an activated sludge plant of the package type (Yoemans) was put into operation. Progress is reported on the construction of a similar plant at Dutton (Yoemans) and Ekalaka (Chicago Pump). The sewage treating plant at Bozeman is under construction, and the one at Chinook should be in operation very shortly.

The community of Harlem is now constructing a sewer system, and a package type activated sludge plant will be installed by the time the system is completed.

Plans have been submitted for a new sewer system with Imhoff tank and sprinkling filter for the community of St. Ignatius. This has been postponed, however, for the present, due to difficulty in financing.

During the biennium, bids were called for the construction of an interceptor sewer and a treating plant for the City of Havre. The money available, which was voted some two years ago, is found to be inadequate at this time. It is the intention of the City of Billings to call for bids on a sewage treating plant the first of 1949. The increase in construction costs may make it necessary to curtail the construction from that originally planned when the bond issue was passed. A new outfall has been built at Billings, however, and contracts have been let for the construction of a new sewer on Ninth Avenue, which will, when built, relieve the present sewers of a considerable volume of drainage water.

Imhoff tanks have been planned for sewage treatment at the Canyon Ferry Project, at the Yellowtail Dam Project and at the Moorhead Project, also at the Hungry Horse Project, all being projects of the U. S. Bureau of Reclamation. At the Canyon Ferry Project on the Missouri River, it appears necessary to build an oxidation bed following the Imhoff tank, in order to produce proper conditions before discharge of the sewage. In the other situations, soil disposal is resorted to.

### Stream Pollution Studies

Our studies of stream pollution problems have continued much as they were conducted during the previous biennium. There have not been the number of intensive studies as were conducted in the previous biennium. However, we have started studies of the Clark Fork of the Columbia River from Butte, where it originates, to Missoula, where an input of domestic sewage is found. The profound affect of the mine and smelter wastes in the upper reaches of the river

is under study. No report of this particular work has been written as yet.

Many conferences have been held with leaders of industry and the attitudes shown by these men have been very cooperative. We see much improvement in the industrial waste disposal situation at various places.

Especially interesting are the developments in the methods of disposal from beet sugar manufacture and from oil processing.

There has been little expansion in industrial activity which pertains to stream pollution. There is indication, however, that industrial expansion is contemplated and, especially in the Billings area, the oil industry is expanding. In this area there are two large oil refineries under construction. In order to protect the waters of the Yellowstone River, much thought and planning is being done in connection with the disposal of wastes.

The passage of Public Law 845 by the Federal Congress in June 1948 has given rise to much study of our laws and our programs as part of the Sanitary Engineering Division of the State Board of Health. Time is being given to the Missouri Basin Health Council, and two meetings have been held with Federal and State Agencies in Montana who might be considered as being affected by the provisions of this Stream Pollution Control Law. The Missouri Basin Health Council has been organized to effect a close cooperation between the state health departments of the ten states lying wholly or in part in this basin. The membership consists of the State Health executive officers and chief sanitary engineers in these states.

The State's Attorney General has ruled that under Montana Statutes the State Board of Health is the Stream Pollution Control Agency here. Thus, it is anticipated that the operation of the Federal Law will involve the State Board of Health, especially the Sanitary Engineering Division, in much added work as money becomes available through appropriations anticipated to be made by the Congress.

### Miscellaneous Activities

The Director and members of the staff have been called upon to take part in various conferences and meetings.

Three talks have been given to groups of student nurses. Two meetings of the Montana Academy of Science have been attended, and talks were given at these sessions. A talk was given before the Science Club of the Faculty at the State College in Bozeman. This was a discussion of sewage treatment as it relates specifically to the problem at Bozeman.

A talk was given at the Montana Public Health Association, and one address was made to the Montana Municipal League. One also was made to the Billings Rod and Gun Club.

Mr. Brinck attended a meeting of the North Dakota Water and Sewage Conference. In December, 1947, Mr. Brinck talked to the Billings Lions' Club on the subject of rural Sanitation.

Dean W. M. Cobleigh met with the Montana Section, American Chemical Society in Billings to discuss the chemistry of water and sewage treatment.

One ambitious project was the construction of a model homestead, to be used to demonstrate to all groups interested in health the basic underlying principles of sanitation with which home owners should be familiar. This has been used to a large extent, the first use being as a part of exhibits made for a caravan, a project of the Montana State College in Bozeman. This was set up by that institution as a caravan of labor saving devices.

In March 1948, Mr. Brinck attended a meeting of the Well Drillers' Association in Billings, and spoke on the subjects of mutual interest to well drillers and the State Board of Health—proper location and construction of wells, disinfection of new wells and well drillers' reports of construction as required by the State Board of Health.

The Eastern Montana Normal School Summer Workshop was addressed by Mr. Brinck in July, 1948, on the subject of School Sanitation.

Mr. Brinck attended the annual meeting of the American Public Health Association in Cleveland, Ohio, in November 1946. He represented the State Sanitary Engineer at the Conference of State Sanitary Engineers at their annual meeting.

Mr. Foote attended the annual meeting of this group in Washington, D. C. in April of 1948.

It was our privilege also to attend the annual conferences of the American Water Works Association and Federation of Sewage Works Associations in San Francisco in July, 1947.

### Certification of Water Supplies

The U. S. Public Health Service has assisted the State Board of Health in inspections necessary for certification of waters used on inter-state carriers. The work of these officials has largely been in the inspection of watering point sanitation. We have made the water supply inspections. In 1946, 21 reports and recommendations were made, calling for 16 approved and 5 provisional certificates. In 1947 we made reports and recommendations covering 18 supplies, 13 of which were approved and 5 of which were provisional. The work for 1948 is not yet completed.

### Tabulation of Field Work

The following tabulation shows the amount of field work done during the past twenty-four months:

| | No. | Percent Of Total |
|---|---|---|
| Inspection of Public Water Supplies | 286 | 38.4 |
| Inspection of Private Water Supplies | 33 | 4.4 |
| Inspection of Sewage Disposal Systems | 172 | 23.0 |
| Inspection of Swimming Pools | 12 | 1.6 |
| Miscellaneous Inspections | 243 | 32.6 |
| Total | 746 | 100.0 |

### For the State Planning Board

Work on the water supply and sewage disposal situations at the State Training School at Boulder and the State Orphans' Home at Twin Bridges has continued. At the former institution, two new wells have been drilled for water supply. These have not, as yet, been brought into full production, awaiting the necessary pumping equipment. The water appears to be satisfactory in chemical quality. It is anticipated that there will be no difficulty with the sanitary quality of the water.

At the State Orphans' Home at Twin Bridges, our recommendations to apply metaphosphates to the water were carried out. The full value of this treatment has not as yet been experienced. Indications are, however, that it is a beneficial treatment. The waters furnished from the supply to the institution laundry, according to the supervisor in the laundry, are better than formerly. There is a considerable amount of iron in the distribution system yet. Further studies will be made on this situation as time goes on.

Some studies were made at the State Hospital at Warm Springs, looking toward improvement in the quality of the water furnished on the grounds. Much difficulty is experienced, especially where the water is heated, with the deposition of chemicals in heating coils. We have recommended to the State Board of Examiners that a firm be engaged to make a study, looking toward the possibility of chemical treatment to alleviate this difficulty.

We have recommended to the State Board of Examiners that, to the extent money is available, they plan to gather the sewage from the State Training School at Boulder at one point, preparatory to building a treating plant at that place. Further studies are under way at the State Orphans' Home at Twin Bridges, looking toward the final treatment of the sewage for that institution. A drain ditch has recently been completed which, it is said, lowers the ground water table, and the results of this drainage have been awaited before final plans for sewage treatment are drawn. Now that this drainage ditch is completed and functioning, more definite conclusions can be reached as to the proper plant to construct for this place.

### Office Work

The office work consists of the writing of reports on all laboratory work done, or field investigations made, and in replying to letters of inquiry relative to matters which concern this Division. It also in-

cludes the inspection of plans which are submitted for various public water supply and sewage disposal systems, school buildings and swimming pools.

### Fees

The only source of income collectable by this Division is the annual fees levied against public water supplies.

By July 1, 1947, (fiscal year 1946-1947) $3,700.00 had thus been collected, and by July 1, 1948, (fiscal year 1947-1948) $3,053.50 were collected.

This money has been deposited with the State Treasurer as received.

### Examination of Plans

A total of 167 plans were examined during the past 24 months, classified according to the following tabulation:

| | |
|---|---|
| New (Public) Water Supplies, Improvements and Extensions to Existing Systems | 39 |
| New (Public) Sewer Systems and Extensions (Including Treatment Plants) | 67 |
| New School Buildings and Additions to Existing Buildings | 49 |
| Miscellaneous (Public Buildings--Industrial Wastes) | 12 |
| Total | 167 |

### Study of Nitrates in Water

For many years previous to the development of the bacteriological technique for water examination, nitrates were sought in our water supplies for the significance which they held in the sanitary situation. No consideration was given the nitrates during those years so far as their significance in the production of cyanosis in infants was concerned. The relationship between nitrates and cyanosis was not known at the time. During the years following those early examinations, the bacteriological technique was perfected and this was practically the sole examination of waters, so far as the sanitary features were concerned.

Since the knowledge of relationship between nitrates in water and cyanosis, due to methemoglobinemia, has been brought to our attention, we are making a routine examination for nitrates.

No cases of cyanosis have been brought to our attention as having occurred in Montana. We, however, make a practice of calling attention to the possibilities where nitrates are found in excess, when we make our reports to the owners or to the physicians who are interested in the water. It is anticipated that work will continue on this basis.

### Schools for Water and Sewage Plant Operators

Previous to the full activities due to the War, short schools were held for water and sewage plant operators. These were generally

held in connection with the meetings of the American Water Works Association, Montana Section. They were, however, discontinued during the war because of the shortage of personnel and heavy schedule due to the war activities. These schools were a cooperative activity between the Montana State Board of Health and the State College at Bozeman. The engineering divisions of each were involved.

Following the cessation of hostilities, the Montana Section, American Works Association, and the Montana Sewage Works Association voiced their desire that the schools be resumed. In conference with the State Board of Health officials and members of the teaching staff and administrative officers of the State College, it was determined that the school would be resumed. As a consequence, Dean W. M. Cobleigh was reqeusted to take charge of the organization and details.

The first school was held in February, 1948, at the State College Engineering Building. The school was held during four days, at a time when it was felt that the larger number could be in attendance. While the attendance was not as large as anticiated or hoped for, the interest exhibited was satisfactory in the extreme. The faculty of the State College cooperated with enthusiasm, and the administrative officers were convinced that it was a very worthwhile project for that institution. Plans are underway for the second school, and this is to be held again at the State College on February, 8, 9, 10 and 11, 1949. Dean Schilling, of the Engineering Division at the State College, and your Director are the heads of the divisions involved. Dean W. M. Cobleigh is the organizer and will be the leader when the school is in session. It is planned to contact all of the managers and operators of the public water and sewage system facilities in Montana, in the expectation of securing a strong support for this school. We hope to have at least fifty in attendance this coming winter.

### Montana Section, American Water Works Association

Our Section of this National Association is active. Its 22nd and 23rd annual sessions were held in Havre, Montana, in 1947, and in Livingston, Montana, in 1948. The next meeting is to be held in Great Falls in 1949. Mr. C. W. Brinck, of this staff, is the active and efficient secretary.

### Montana Sewage Works Association

This Association, formed in 1944, held its third annual meeting in Havre, Montana, in 1947, and its fourth meeting in Livingston, Montana, in 1948. Its fifth meeting will be held in Great Falls in the spring of 1949. Our membership numbers, at this time, approximately 45. We are a member of the Federation of Sewage Works Associations, a nation-wide organization. The Director of this Division is Secretary-Treasurer.

### Personnel

There has been no change in the personnel during the past biennium. It has been possible, however, to secure substitute steno-

graphic service during vacation periods, and some extra assistance for the bacteriological laboratory. The personnel is listed at the beginning of this report.

All members of the staff have given full measure of service during this period. There is ample work for an enlarged personnel.

### For the Future

During the coming years it is anticipated that this Division will continue the activities so far found by experience to be fully justified and should be ready to extend its activities as demanded by conditions in the state as they develop and change.

Such activities as the sanitary surveys, work on fluorine content of waters, the testing of sewage treatment plants to determine their efficiencies, the technical instruction of water and sewage plant operators and the assisting of the general public through circulars of information concerning sanitation are among the more important activities seen at this time.

The present staff is kept constantly busy and is the minimum which should be maintained if the services for which we are called upon are to be satisfactorily performed.

During the past two years there have been examined chemically 822 samples, 582 of which have been for individuals who desired the information for their own home use. Increased information concerning fluorine contents of waters and the affect of this material in conjunction with other mineral ingredients on the health of young children is resulting in more demands for this type of work. The increased use of electricity in rural areas and the desire of our rural population for softer and better water supplies have resulted in a marked increase. The work is greater than possible for the one chemist now employed for all analytical work of the Food and Drug and the Sanitary Engineering Divisions. An assistant chemist was employed during the past two summers. An additional full-time chemist is needed.

At least one more sanitary engineer should be employed full-time to adequately meet the expanding work of this division.

### Conclusion

In concluding this report, it is our pleasure to express appreciation for the cooperation given this Division by the other divisions of the State Board of Health, and also the valuable assistance given us by W. M. Cobleigh, Dean Emeritus of the State College at Bozeman. The engineers of the U. S. Public Health Service have also given us valued assistance whenever we have requested it. For this we are grateful.

Respectfully submitted,

H. B. FOOTE, Director,
Division of Sanitary Engineering.

## FOOD AND DRUG DIVISION

To: B. K. Kilbourne, M. D., Executive Officer

It is my duty and privilege to herewith submit the biennial report of the Food and Drug Division of the Montana State Board of Health for the period beginning November 1, 1946 to June 30, 1948.

The Food and Drug Division of the State Board of Health functions to protect the health of the people by securing for them as far as possible, foods and drugs that are not adulterated, misbranded, handled or served under insanitary conditions. Work is conducted under authority of the State Food and Drug Act of 1911, and consists of:

1. Cooperating with local, county and reservation health officers in making inspections.
2. Enforcing regulations adopted by the State Board of Health under authority granted the Board by Law.
3. Licensing food handling and food manufacturing establishments as required by law.
4. Revoking licenses of insanitary establishments.
5. Collecting samples of food and drugs for laboratory analysis to determine whether or not they comply with the law.
6. Prosecuting those found selling illegal foods or drugs or otherwise failing to comply with the Food and Drug law.
7. Cooperating with Federal authorities in the control of interstate shipments of food and drugs.

In addition to the duties of the Food and Drug Division as concerns actual food and drug work, the Division is required to enforce the Montana Mattress Act of 1941, which requires sterilization and disinfection of all second hand materials used in mattresses or bedding, and the law also requires the proper labeling and tagging of all mattresses. No additional money has ever been appropriated by the legislature for the additional personnel necessary to enforce this law. As a result, the enforcement has been carried on by mail only, and the department has concerned itself only with proper labeling of products shipped into the state.

The 1945 session of the legislature passed a bill authorizing the State Board of Health to inspect homes for the aged and provided further that reports of these inspections be made to the Department of Public Welfare. Here again, the legislature made no provision for appropriating any money for the hiring of personnel necessary for quarterly inspections, as required, and as a result, the department has checked only those establishments on which we have received complaints.

The Food and Drug Division is also charged by the Secretary of the State Board of Health with the enforcement of the State Narcotic

Act. This act provides for the inspection of pharmacies and hospitals in an effort to determine whether they are keeping adequate records as required by law. The law also requires that narcotics be properly stored in order to protect those handling the narcotics as well as the supply itself. In the biennium of 1940-1942, in cooperation with the State Board of Pharmacy, the Food and Drug Division did inspect all pharmacies and hospitals. Since 1942 no inspections of this type have been made. No provision has ever been made in appropriations to the Food and Drug Division for an adequate inspection program as required by law.

The 1945 session of the legislature also enacted two companion bills, one requiring that restaurants employing five or more persons provide proper rest rooms and locker facilities for employees. The companion bill provides that all establishments where employees are required to stand for a long period of time on concrete floors must provide adequate matting protection. It has been impossible to enforce the provisions of this act during the critical shortage period we have experienced during and since the war. Personnel has not been available to make adequate follow-ups on inspections and owners of establishments have not been able to acquire supplies for properly equipping their establishments.

As mentioned in the last biennial report, the problem of handling economic poisons was causing a great deal of concern, both to this department and to the office of the State Entomologist. As a result, there was introduced in the 1947 session of the legislature an economic poison act. This act was modeled very closely after the model law proposed by the Council on State Governments and has since been enacted in various other states, as well as by the federal government. This law provides for the registration of all economic poisons, and describes the manner in which they can be labeled and sold. The law itself is under the joint supervision of the Montana Experiment Station and the Director of the the Food and Drug Division of the State Board of Health. The Director of the Experiment Station shall determine those plants or other forms of life that are to be declared pests, and which are controlled by economic poisons. The Director of the Food and Drug Division shall register all poisons and shall carry out the enforcement of the law regarding their sale.

After the legislative session of 1947 had been under way for some time, the Locker Plant Operators' Association, in connection with the Livestock Growers' Association, consulted with the State Veternarian, Director of the Dairy Division of the Department of Agriculture, and the Director of the Food and Drug Division of the State Board of Health regarding the enactment of a locker plant law. This law was introduced and passed, and was made effective July 1, 1947. The law provides that locker plants shall be licensed, the fee to be $10.00 per year, and for those plants starting operation after July 1 of each year, the fee shall be $5.00 for the balance of the year. This law empowers the Director of the Food and Drug Division to draw up regulations concerning the sanitary operation of locker plants. In an ef-

fort to stop the flow of illegal meat into locker plants, there was written into the regulations a section which required all whole, half or quarter carcasses of beef or game animals to be stamped with a sherifff's stamp or tagged with a Fish and Game seal, and a record shall be kept of all such carcasses entering the locker plant. If they are not properly stamped or tagged as required by the present law, the owner shall make a declaration concerning ownership.

## INSPECTIONS

Since early in 1942, the Food and Drug Division of the State Board of Health, in common with many other departments, has operated with a smaller personnel than is the usual custom. According to the law of the State of Montana, the local health officers and their deputies are supposed to check and inspect every establishment within their areas once each thirty days, and a complete report is to be mailed to the State Board of Health.

To facilitate this inspection work, blanks are furnished for noting sanitary conditions about the establishments, and they are to be graded or scored according to conditions noted. The ideal situation is one in which the local health officer handles all minor complaints and violations without asking for aid from this office. However, it is customary for most local inspectors or health officers to consult with us concerning these violations, and we are called upon to write many letters concerning the conditions which have been noted.

During the past biennium, the number of inspections has increased markedly because of the fact that we have had a full-time inspector working out of this office, and because local inspectors have been more active. Part-time and local health officers, generally speaking, do not make inspections as required by law. The State of Montana still suffers from a shortage of trained medical men, and as most local health officers operate on a part-time basis, the press of private practice does not allow time for a health program. It is the opinion of this Division that local health officers should not be required to make routine inspections. This work should be done by well trained sanitarians under the direction of the local health officer. Five counties of the state operate under the city-county health unit plan. These counties are Missoula, Lewis and Clark, Cascade, Gallatin, and Fergus. In each of these there is a well trained, full-time sanitarian who reports regularly to the Board of Health.

During the past two years, the local inspectors, health officers, and state inspectors have made 19,513 inspections. The bulk of these have come from those departments maintaining sanitarians. During the biennium of 1944-1946, the number of state inspections was only 2,468. In the past biennium, state inspectors have made 6,464 inspections. It should be noted here that one man has largely been responsible for these inspections. At no time since 1944 has the state had more than one inspector in the field. Lack of financial means with which to hire sanitarians precludes the possibility of any increase in this particular field.

Tourist camp inspections and tourist camp licenses increased also during the last biennium. In the year 1945, there were licensed 380 tourist camps and guest lodges in the state. The year 1946 showed an increase over 1945, and 1947 and 1948 have shown a continued increase. It has been stated that two million persons pased through port of entry stations in 1948. These people are largely dependent on hotels and tourist camps for their accomodations. Many new camps are being built and Chambers of Commerce are asking people to rent spare rooms to accomodate these visitors in the state. The Director of the Division believes that it is time we had a new tourist court law governing dude ranches, tourist courts, guest lodges and tourist rooms. The Montana Chamber of Commerce also feels that something along this line should be done. It is hoped that, with their cooperation, such legislation can be enacted in 1949. The summer of 1949 will again see graded tourist court licenses issued by this department. To facilitate this grading, we have designed a new inspection form which we feel will facilitate and speed up the inspection program. Included in this new form will be more specific information concerning the type of accomodations to be found in each licensed establishment. We feel this information is necessary to supply the Montana Highway Department and the Montana Chamber of Commerce with proper information for their tourist services.

The work of inspecting and licensing locker plants has added to the burden of this department. Since July 1, 1947, we have been inspecting and licensing such establishments. The number of licensed establishments has grown each year since that time. The law requires, among other things, that each locker plant shall provide proper refrigeration, and that they shall install recording thermometers in locker rooms, and direct reading thermometers in chilling rooms, aging rooms and sharp freeze rooms. The work of checking these thermometers and the records which must be maintained in connection with them increases the inspectional work.

## LICENSES

Since 1921 licenses have been required of all food handling establishments within the state of Montana. These establishments include public eating places, meat markets, manufacturing bakeries, delicatessens, confectioneries, bottling works, canneries, soda fountains, ice cream parlors, soft drink establishments and beer parlors, tourist camps, and guest lodges. The licenses required of tourist camps were included in an act passed in 1929. Since July 1, 1947 locker plants have been licensed throughout the state.

Listed below are the number of licenses collected and the fees for those licenses over a period of years extending back to the year 1922.

| Year | Food Licenses | Camp Licenses | Locker Plant Licenses | Fees Collected |
|---|---|---|---|---|
| 1922 | 2,974 | ..... | ..... | $ 5,948 |
| 1929 | 4,268 | 117 | ..... | 8,770 |
| 1936 | 5,116 | 322 | ..... | 10,876 |
| 1938 | 5,413 | 480 | ..... | 11,786 |
| 1940 | 5,773 | 558 | ..... | 12,662 |
| 1942 | 5,405 | 460 | ..... | 11,730 |
| 1944 | 4,409 | 341 | ..... | 9,500 |
| 1946 | 5,163 | 475 | ..... | 11,276 |
| 1947 | 6,016 | 574 | 103 | 13,695 |
| 1948 | 6,385 | 660 | 205 | 16,095 |

The figures given for 1948 are not complete due to the fact that some licenses will be issued before December 31. The next biennial report will show the complete figures for 1948.

Licenses issued by the State Board of Health are primarily regulatory. Under the law an establishment operating in an insanitary or unsatisfactory manner may have its license revoked and the establishment ordered to be closed until such time as it is placed in good condition. We have attempted to use this authority only as a last resort and only if the operator of the establishment has been warned of the insanitary conditions and given ample time in which to correct them.

We have, in connection with these inspections, a new system of duplicate checking on all establishments in the state. By devising an inspection form which can be carried by the sanitary inspector, the inspector is able to look back to former inspections and check to see what improvements have been made. Any letters or recommendations prescribed for insanitary establishments are attached to these inspections in order that the inspector may refresh his memory. We have found that this system has been quite satisfactory and has resulted in considerable improvement.

It will be noted in the above tabulation that there has been a tremendous increase in the number of licenses issued in 1947 and 1948 over any previous period. During the war years, many establishments closed and the tourist courts in particular were mainly operated on a full-time rental basis and were not subject to licenses. We have, since 1947, of course, added locker plants to the totals. Insofar as total numbers are concerned, this has not increased to any great extent the total of all licenses issued. It has, however, increased the intake of money considerably, due to the fact that the license fees for locker plants are much higher than are the camp and food licenses. In 1948, the amount collected from locker plant licenses totaled $515, and in 1948, up to October 31, it amounted to $2005. It has been found that many new establishments have opened up and are being operated

in the state. However, the main increase in licenses, we believe, is due to a large turnover in ownership. There will, no doubt, be a general levelling off during the years 1949 and 1950, at which time an accurate estimate can be made as to the actual number of establishments operating. It was estimated in the last biennium that the figures for 1947 would approximate those of 1941 which had been the peak year prior to the war. In that year we issued 6,312 licenses all told, of which 532 were tourist court licenses. In the year 1947 we issued 6,590 licenses, exclusive of locker plants, an increase of over 200 over 1941. With the increase in the number of establishments operating, and with the increase in the cost of inspections, and the fact that our budget for 1947-1948 approximated 1941, we do not believe that full coverage was obtained. The state appropriations for the Food and Drug Division for the fiscal years 1946-1947 and 1947-1948 were only $7,500 per year. This did not begin to approximate the increase in the revenue of the division.

## FOOD ESTABLISHMENT SANITATION

It is fundamental that any establishment operating to manufacture or dispense foods or beverages must have good water, fly-tight toilet facilities, and adequate, prompt disposal of garbage. It is also necessary that all work areas, store rooms, and utensils be kept in good condition and adequate refrigeration be provided for spoilable foods in the amounts usually kept on hand. Personal cleanliness of those engaged in the preparation, distribution, and sale of foods is also very important.

Probably one of the greatest hazards with which we have to contend in this present day and age is the improperly washed glass, knife, fork, spoon, or other utensil with which the mouth may come in contact during eating or drinking. Such improperly washed materials may be responsible in part for the spread of such diseases as mumps, diptheria, tuberculosis, measles, influenza, cerebrospinal fever, whooping cough, Vincent's Angina, lobar pneumonia, common colds, scarlet fever, and German measles.

At the Fall meeting of the State Board of Health in 1947, the old regulations concerning food handling establishments, particularly eating and drinking establishments, were repealed, and seventeen new regulations enacted. These new regulations conform to the regulations and requirements of the standard code and ordinance set up by the United States Public Health Service.

These seventeen new regulations replaced over thirty of the old regulations, leading to simplifications and providing for rapid and detailed inspections. As a result of these new regulations, we also devised a new inspection form to be used in conjunction with them. This new form has now been sent to sanitary inspectors who desire to use them, and they are used on a state-wide basis by the state inspectors. The new inspection forms also provide in their make-up for grading of establishments where local ordinance permits.

## PROSECUTIONS

The Food and Drug Law does not provide for, nor is it the policy of the State Board of Health to prosecute every violation of the laws or regulations. However, continued violation and disregard of warnings are followed by complaints being filed with the county attorneys having jurisdiction. This often does not mean the guilty party is punished as provided for by law. At certain seasons, notably election years, it has been difficult to get some county attorneys to take any action.

It would be advisable for the Board to be able to retain their own attorney to whom all cases for prosecution could be referred for prompt and efficient action and eliminate the dilatory methods employed by some county attorneys.

Fines collected as a result of prosecution for violation of the Food and Drug laws are deposited with the State Treasurer to be placed in the General Fund.

During the past year, the Food and Drug Division has not issued any complaints. The State Board of Health, in their Spring meeting of 1948, requested a restraunt proprietor to appear before them to show cause why his license should not be revoked. We believe this is the first time that such an action has been taken by the Board, although the law definitely provides that such is the procedure. As stated before, it is not the policy of the Food and Drug Division to unduly persecute or prosecute. However, we do know there are a number of establishments operating in this state that should not be licensed by the State Board of Health. Due to the fact that our law was passed in 1911, and the section on revocation of licenses has not been changed since that date, these establishments are allowed to operate. It is not feasible for the State Board of Health, having meetings for one day twice a year, to hear complaints as required by law. This also means that if an establishment has its license revoked, no action can be taken against it for a period of as much as six months at a time. This makes enforcement ineffectual and experience has proven to us that it is time inspectors be allowed more freedom of action in the swearing out of complaints with local officials to close establishments that operate in violation of regulations. It is realized that such power must be used sparingly, and the rights of the business man or individual must be protected. However, if we are to consider the protection of the public on a broad basis, certainly these establishments not complying should not be allowed to operate. If sanitarians are given authority to order such places closed with a minimum of legal red tape, certainly the welfare of the public would be better served.

The sanitary condition of food handling establishments in this state is probably no better and no worse, except in some local situations, than it has ever been. In those areas where local sanitarians are employed on a full-time basis, eating and drinking establishments, generally, are in a much better condition than in the state at large.

## Laboratory Report

By agreement, all biennial reports now made by the State Board of Health in the future will be based on the fiscal year. However, to avoid too much confusion, laboratory samples and the number analyzed will be included between the dates of November 1, 1946 and July 1, 1948. In the next biennial report the report on laboratory samples will cover the two full years.

Since November 1, 1946, the laboratory has analyzed 1,141 dairy samples for the Dairy Division of the Department of Agriculture. The various tests run on these samples were as follows:

| | |
|---|---|
| **Butterfat** | |
| Butter | 119 |
| Cheese | 39 |
| Ice Cream | 43 |
| Cream | 2 |
| **Bacterial Counts** | |
| Butter | 222 |
| Ice Cream | 704 |
| Cream | 4 |
| Cheese | 1 |
| **Yeast and Mold** | |
| Butter | 320 |
| Cream | 3 |
| **Sediment** | |
| Butter | 72 |
| Cheese | 7 |

Ten samples of butter taken from restraunts were checked for olemargarine content. All were found to be negative.

Since July 1, 1946, 822 samples of water were given chemical examinations in the laboratory. This was done for the Sanitary Engineering Division of the State Board of Health. Further information concerning these water samples will be found in the report of the Sanitary Engineering Division. On an estimated basis of 6 examinations per water sample, approximately 5,000 tests were performed.

The following examinations were performed for other state or local governmental agencies.

Four samples of blood were examined for blood alcohol for the Highway Patrol.

Four samples of blood were examined for the Indian Service and and reported to the Federal Bureau of Investigation at Butte.

Following is a list of samples run by the laboratory for county coroners, sheriffs, or other persons to determine causes of death.

One group of samples was examined for the Holy Family Hospital at St. Ignatius, Montana, and cause of death was determined to be morphine poisoning.

Samples were run for the coroner of Missoula County. Cause of death was established as alcohol poisoning.

A drug suspected of containing poisoning was analyzed for the sheriff of Madison County. Results were negative.

A sample of stomach contents was analyzed for cyanide poisoning for the coroner of Cascade County. Results were negative.

A sample of stomach contents was analyzed for the sheriff of Lewis and Clark County. Cause of death was established to be barbiturate poisoning.

One sample of stomach contents and a sample of urine were analyzed for Doctor Campbell, of Helena, to determine the concentration of arsenic in a poison case. The concentration of arsenic was established and treatment resulted in the saving of two lives.

Other samples examined for poisons were whiskey, candy, nuts, raspberries and three other miscellaneous samples.

Three samples of liquor were run for the Liquor Control Board, one sample of potatoes for the Department of Horticulture, and a sample of beef soup base was analyzed for the School Lunch Program conducted by the Department of Public Instruction.

Two samples of soft drinks were examined for a determination of contamination by filth. Nine samples of soft drinks being shipped into the state were examined for adulteration and misbranding. Four of these samples were illegal under Montana law and their shipment into the state was stopped. One sample of honey, one sample of olive oil, one sample of flour, and one of pork sausage were examined for adulteration. Thirty-two prepared meat samples were analyzed for Safeway Stores at their request to determine compliance with their store regulations. Ten samples of soft drinks were analyzed to determine the effectivenss of certain bottle washing procedures, and three samples of chlorine disinfctants were examined for efficiency.

Due to the high cost of sampling procedures, and because of the fact that the Food and Drug Division did not have sufficient money for sampling purposes, little of this has been done to determine violations of the Food and Drug Act as regards foods and drugs sold within the state. The law requires that samples used by the division for analyses must be bought and paid for. With the present high cost of food articles generally, it was not feasible to do any sampling.

## SPECIAL INVESTIGATIONS

The department in the past two years has performed some special investigational work not regularly assigned to the division.

In January of 1947, the Director of the division examined 7,000 pounds of turkeys being held in cold storage in Butte. These turkeys, when thawed, showed signs of contamination with a green mold. After due investigation, it was determined that the turkeys had been shipped from Idaho into Montana and had been allowed to thaw in transit. By agreement with the cold storage company, Doctor Gahagan, City Veternarian of Butte, examined these turkeys as thawed, and those that were found to be fit for human consumption were released for sale. Those unfit for human consumption were destroyed on his orders. Several inspections were made of school lunch programs during the year. This work is in addition to our regular inspection program. Schools, generally, have been asking for help in properly planning and properly operating school lunch programs. As a result of these investigations, we believe there are many school lunch programs operating in violation of the state laws, and it is our feeling that school lunch programs should be operated in as clean and sanitary a manner as any restraunt operation. Kitchens where food is prepared should be well built and maintained in a clean and sanitary manner, and school lunch rooms should be made as attractive as possible and kept clean. As a result of our investigations, the Sanitary Engineering Division has adopted into their school building code the 17 regulations for sanitation of eating and drinking establishments, and these are to be applied to remodeled schools or to new construction, and wherever possible, we are requiring already existing programs to comply with these regulations. The Director of the Food and Drug Division has advised with the Director of the Sanitary Engineering Division on new school plans which include school lunch programs.

In the Spring of 1948, the Food and Drug Division was asked by the Federal Food and Drug Administration to help them in locating a particular brand of intravenous solutions which were contaminated and which in some instances had caused death in other states. None of the contaminated code was found in the state of Montana, but it was necessary for the Food and Drug Division to investigate hospital supplies, drug wholesalers' supplies, and to write to every doctor and druggist in the state, requesting inventories of all of these solutions. After the inventory was completed, all solutions were returned to the manufacturer. Insofar as we are able to determine, all stocks of these solutions were returned to the manufacturer and no injuries resulted in Montana. A special investigation was made of two reported injuries at Terry, Montana, but it was determined that the solutions themselves were not at fault.

Two investigations were made of homes for the aged under a law passed in 1945. These included an inspection of the MacDonald Rest Home at Deer Lodge, and the Montana Home for the Aged at Billings. This latter was made in company with Mr. W. J. Fouse, Director of the State Welfare Department. When the Hospital Licensing Act was passed in 1947, this work was turned over to that division of the State Board of Health.

The Director of the Food and Drug Division has appeared before various groups to talk about the work of the division and these talks were given before the following groups.

Two talks before nurses in training at the Deaconess Hospital in Great Falls.

One talk before nurses in training at the Deaconess Hospital in Billings.

One talk before the nurses in training at the Sacred Heart Hospital in Havre.

One talk before the Public Health Nurses at the Public Health Association meeting in Helena.

Talks to four classes at the Home Economic School in Bozeman.

One talk to teachers in training at the Eastern Montana Normal. School in Billings.

Four talks have been given to Butte High students.

One talk to the Plumber's Union at Butte, Montana.

One talk before the Women's Council at Missoula in regard to the establishment of a full-time sanitarian in that county. The Director has met twice with the Montana Bottlers of Carbonated Beverages, and twice with the Montana Locker Plant Association, and has appeared before the Directors of the Montana Restaurant Association in Great Falls in an effort to have them sponsor food handlers' schools for their employees.

The Director of the Food and Drug Division is a member of the Montana Nutrition Council and attended five meetings of that council.

In June of 1947, the Director of the Food and Drug Division attended a meeting of the National Association of Food and Drug officials at Carlsbad, New Mexico.

In May of 1948, a meeting was held with the Extension Service Agents of six eastern counties in regard to the establishment of a 4-H camp at Ekalaka. Mr. Morton, inspector for the division, later examined the camp in question and made specific recommendations to these agents.

At the request of the Chief Engineer for the Reclamation Service at Hungry Horse, Montana, the director of the division, in company with Mr. Garber, of the Sanitary Engineering Division, made a complete inspection of Martin City, Coram, Columbia Falls, and the area around the proposed Hungry Horse Dam. Serious problems were encountered in the way of waste disposal and water supplies. These problems have a direct effect on the food handling establishments in the communities. Copies of the plans for the contractor's camp, and for future developments on the dam-site were obtained from the engineer, and recommendations were later made on the basis of the investigation.

In August, 1947, the Director of the Food and Drug Division, in company with two representatives from the National Association of Insecticide and Fungicide Manufacturers met with the members of the staff of the Montana Experiment Station at Bozeman, relative to the enforcement of the Insecticide and Fungicide Law of 1947. At this meeting plans were drawn up for a unified program of enforcement.

### Personnel

Since March, 1947, the personnel of the Food and Drug Division has been stabilized at four permanent employees, Howard Morton, Sanitary Inspector, Matt Klein, Senior Chemist, Marjorie Kennett, Senior Stenographer, and the Director of the Division. June Middlemas served as Junior Chemist from January 1947 through June, 1947, and Charles Watkins was employed as Junior Chemist from July to September, 1947 and from June 1, to September, 1948. Credit should be given to local sanitary inspectors who have helped with the work of the division, although they were employed in city-county health units. They are Charles Fahrenbach, Missoula; Lester Groom, Bozeman; William Shea, Great Falls; Harry M. Ramsey, Lewistown; Maitland W. Higgins, Helena; William Reinhart, Billings; and Harvey Girard, Butte. Clarence Nesmith served as sanitary inspector of Lewis and Clark County until June of 1947, and Victor Wilkowski served in the same capacity from June, 1947 until September, 1947. Mr. Higgins has held the position since that time.

With the increased office work it becomes more and more necessary that there be employed an additional stenographer or clerk-typist in the Division. However, there is no office space available for such a person, were we able to employ one. There should also be provision made for one more sanitarian, working from the state office. Mr. Morton, our present inspector, has been in the field almost continuously, winter and summer, since his employment, and even with this type of program, a complete coverage of the state is almost impossible.

### Recommendations

As stated under item, Personnel, it is becoming more essential that the state office have additional people employed in order to adequately handle the work which should be done. Due to the shortage of office help, we have not yet started to register economic poisons as provided for under the law of 1947. The senior stenographer in the office should not be required to do mimeographing, filling out licenses, and other routine work which is now required. Routine work should be performed by a clerk-typist. It does not seem economical to pay senior stenographer's wages when a good deal of the work which she has to do is routine work. Followups on inspections and on laboratory reports have been considerably slowed down because of routine work which the senior stenographer must do.

It has been recommended in the Buck Report that a separate division of Rural Sanitation be established under the Directors of the Sani-

tary Engineering Division and the Food and Drug Division. This new Division would employ six sanitarians to do inspections on a statewide basis. These men would operate under the direction of the Directors of the two Divisions. The more feasible solution to the problem, however, would be to place men in districts throughout the state and have them responsible for inspections within their assigned districts. We believe that it is necessary and appropriate that our administrative set-up be changed, and that sanitary work be placed in the Sanitary Engineering Division, with the exception of food manufacturing establishments. These would be supervised by the Food and Drug Division, with consultation service from the Sanitary Engineering Division. The Food and Drug Division would then become strictly an enforcing agency for the purpose of enforcing the Food and Drug Act, the Narcotic Act, the Economic Poison Act, and the Montana Mattress Act. The Director of the Division would be responsible for prosecution of violations of these laws, and would supervise the chemical laboratory. One or two inspectors would then be employed by the Food and Drug Division to sample and to lend technical advice concerning labeling of manufactured products and to investigate their sale. Local sanitarians, under this type of program, would act as agents of the Food and Drug Division and would also be empowered to do sampling work when necessary.

The aforementioned program, of course, would mean that additional help would have to be employed in the laboratory, and the laboratory facilities would have to be expanded to accommodate at least three chemists. Our present laboratory facilities are inadequate for proper operation by two chemists.

The matter of consolidation of the Industrial Hygiene Laboratory and the Food and Drug Laboratory has also been considered and inasmuch as chemical work is done in both laboratories, such a program would be entirely feasible. The Industrial Hygiene chemist and the Food and Drug chemist could then have the advantage of pooling all equipment and the Directors could supervise the work provided by common chemical supplies and by common instruments to be used by both Divisions. The Industrial Hygiene work would still be supervised by the Director of that division, and chemists assigned to Industrial Hygiene work would be responsible to him. The same would apply to the water analyses for the Sanitary Engineering Division, and the Food and Drug analyses.

Mention should be made of the fact that the Director of the Food and Drug Division worked in connection with the Laboratory Commission, which was established in 1945, and with the very able assistance of Mr. Gagle, of the Highway Testing Laboratory, had a bill sponsored by Fred Padbury, Representative of Lewis and Clark County, which provided for the building of a laboratory building to house all laboratories now located in Helena. This bill was killed on first reading in the House of Representatives and was revived by Henry Loble, Representative of Lewis and Clark County. The bill then passed the House of Representatives and was also passed by the

Senate. Mr. McQuitty, Senator from Wheatland County was very helpful in figuring the finances of this bill. A consultation was also held with the Governor of the state, who signed the bill after its passage through the legislature. The bill authorized the expenditure of $600,000 for a laboratory building and when this building is finished, we believe that the various departments concerned, including the Food and Drug Division, will be much better able to render adequate services to the general public. This new building will provide for consolidation of laboratories of the Board of Health, as recommended in the previous paragraph.

The Food and Drug Division gratefully appreciates all co-operation from all divisions of the Board of Health and from local health units.

Respectfully submitted,

Elton M. Andrew, Director
Food and Drug Division

# REPORT OF THE HYGENIC LABORATORY DIVISION

Biennial Period

July 1, 1946 to July 1, 1948

Personnel as of July 1, 1948:

**Edith Kuhns, B. S., Director**
**Harry P. Gelsing, B. A., Assistant Director**
**Ruth A. Dwyer, B. S., Senior Bacteriologist**
**Kathryn Deloughery, B. S., Senior Bacteriologist**
**Richard Fleming, B. A., Junior Bacteriologist**
**Patricia Maxey, B. A., Junior Bacteriologist**
**Bernadine Randall, Senior Stenographer**
**Atherlene Blackmore, Senior Stenographer**
**Betty Jo Peters, Junior Stenographer**
**Evelyn Jackson, Junior Stenographer**
**Harold M. Barnes, Laboratory Assistant**
**Gerald A. Boone, Laboratory Helper**

To: B. K. Kilbourne, M. D., Executive Officer

Sir:

I have the honor to submit the report of the Hygienic Laboratory Division for the biennial period, July 1, 1946 through June 30, 1948.

This report is being presented in as brief a form as possible to inform you of the activities of this division during the past biennium, to present for your consideration certain recommendations for expansion of the present services, as well as to acquaint you with some of the more immediate needs of the division.

The principal functions of the Hygienic Laboratory are:

1. Examination of specimens of various materials of human origin, submitted by private physicians, clinics, hospitals and various county, state and federal agencies, for the presence of communicable disease.

2. Administration of the laboratory provisions of the Prenatal and Premarital Examination Laws.

3. Registration and approval of local laboratories performing examinations for communicable diseases including prenatal and premarital serologic tests for syphilis.

4. To serve as a distribution center for the American National Red Cross Surplus Plasma.

5. To serve as a distribution agency for American National Red Cross Surplus Immune Globulin (Measles).

6. Special investigations and studies upon request of food poisoning.

No biologics of any sort are produced or manufactured by the State Board of Health. All biologics are purchased under state contract, stored by a local drug firm downtown and distributed through the direction of the office of Epidemiologist.

The Hygienic Laboratory Division may properly be considered as a service bureau performing laboratory tests of various natures to aid the medical profession in their diagnoses and thus indirectly serve the public. Regulations provide that reports of any laboratory examination are never given directly to private individuals unless written permission has first been obtained from the submitting physician. These services are available to the public also, through other divisions of the department, through other state and federal agencies, through health offices and through public and private laboratories serving local communities and institutions. The main emphasis is placed upon service to the medical profession and to other agencies concerned with public health.

This division should assume also, some responsibility in furthering the standardization and improvement of all laboratory work having to do with the diagnosis and prevention of disease in any laboratory within the state.

The trend of modern laboratory service is for it to concern itself with methods and procedures other than those having to do solely with the diagnosis of communicable disease and recognized principles of sanitation. Any problem which concerns the health of all or many persons is a matter which may require the direct or indirect services of the laboratory division. For instance, a number of states, at the present time, are making routinely, studies of all prenatal blood specimens submitted, to determine the blood grouping and Rh blood types to which the expectant mother belongs. Other states are making provision to offer a service whereby physicians may submit slide smears of suspected materials to be examined by cytologic study for evidence of a cancerous infection.

The field of modern medicine is expanding so rapidly that the impact is bound to be felt immediately by the laboratory through its close association with the medical profession.

Demands for any new lines of work, including the above mentioned, must be left unfilled by our laboratory until it is possible to obtain larger quarters, additional personnel, and sufficient funds to handle the work. The saturation point has now been reached as far as further expansion is concerned, until at least one additional room can be secured.

### Report of Scientific Work

The number of specimens examined the last biennial period exceeded by 20,834 specimens or 19.6%, the number submitted during the previous biennium. The total number of specimens received during the fiscal years 1946-1948 reached 127,104. The total number of examinations run upon these specimens equaled 260,484. As in previous

years, the continued increases in blood specimens submitted for serologic tests for syphilis accounted for the major portion (88%) of the total increase. An increased demand for agglutination tests for febrile conditions accounted for a marked increase also.

Table I gives a picture of the comparative numbers of each type of examination. Table II presents a detailed classification of examinations made during the period of the fiscal years 1946-1948.

## Table I

## COMPARATIVE EXAMINATIONS

### Fiscal Periods 1944-46 — 1946-48

| LABORATORY EXAMINATION | | Fiscal Period | | Gain or Loss | |
|---|---|---|---|---|---|
| | | 1944-46 | 1946-48 | Number | % |
| Syphilis | Specimens | 95073 | 112645 | +17572 | +18% |
| | Examinations | 190137 | 224484 | +34347 | +18% |
| Gonorrhea | | 2214 | 2088 | —126 | —5.6% |
| Typhoid-Salmonella | | 9734 | 14712 | +4978 | +51.1% |
| Dysentery | | 168 | 50 | —118 | —70% |
| Brucellosis | | 2297 | 3606 | +1309 | +57% |
| Tularemia | | 2283 | 3598 | +1315 | +57% |
| Diphtheria | | 2835 | 3846 | +1011 | +35% |
| Tuberculosis | | 2324 | 3354 | +1030 | +44% |
| Parasitic Diseases | | 190 | 336 | +146 | +76% |
| Miscellaneous | | 3424 | 4423 | +999 | +26% |
| Total Examinations | | 215606 | 260484 | +44878 | +28% |
| Total Specimens | | 106270 | 127104 | +20834 | +19.6% |

## Table II

## HYGENIC LABORATORY

### Report of Laboratory Examinations for July 1, 1946 to June 30, 1948.

| | Positive | Doubtful | Negative | Unsatisfactory | Unclassified | Total Exams | Total Specs. |
|---|---|---|---|---|---|---|---|
| SYPHILIS | | | | | | | |
| Kolmer Comp.-Fix. Test | | | | | | | |
| Blood | 4844 | 634 | 100633 | 2975 | | 109086 | 109086 |
| Spinal Fluids | 238 | 33 | 1035 | 77 | | 1383 | 1383 |
| Pleural and other fluids | | | | | | | |
| Kahn Precipitation Test | | | | | | | |
| Blood | 4276 | 934 | 96231 | 9805 | | 111246 | 2161 |
| Spinal Fluids | | | | | | | |
| Pleural and other fluids | | | | | | | |
| Spinal Fluids | | | | | | | |
| Collodial Gold | | | | 2 | 1375 | 1377 | |
| Globulin | | | | | 1377 | 1377 | |
| Treponema Pallidium | | | | | | | |
| Darkfield | 4 | | 10 | 1 | | 15 | 15 |
| Stained Smears | | | | | | | |
| GONORRHEA | | | | | | | |
| Smears | 253 | 38 | 1780 | 13 | | 2084 | 2084 |
| Comp.-Fix. Test | | | | 2 | | 2 | 2 |
| Cultures | | | 2 | | | 2 | 2 |
| TYPHOID-PARATYPHOID FEVERS | | | | | | | |
| Blood | | | | | | | |
| Micro-Agglutination Test | | | | | | | |
| B. Typhosus | | | | | | | |
| B. Paratyphosus "A" | | | | | | | |
| B. Paratyphosus "B" | | | | | | | |
| Macro-Agglutination Test | | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| B. Typhosus | | | | | | |
| "H" Aggl. | 93 | 124 | 3318 | 62 | 3597 | 3597 |
| "O" Aggl. | 69 | 49 | 3318 | 80 | 3597 | |
| B. Paratyphosus "A" | | | 45 | | 45 | |
| B. Paratyphosus "B" | 7 | 17 | 3294 | 273 | 3591 | |
| Blood Cultures | | | | | | |
| B. Typhosus | 9 | 2 | 3419 | 33 | 3463 | |
| B. Paratyphosus | 1 | | | | 1 | |
| Feces | | | | | | |
| B. Typhosus | 23 | | 382 | 2 | 407 | 407 |
| B. Paratyphosus | 1 | | | | 1 | 1 |
| Urine | | | | | | |
| B. Typhosus | | | 8 | | 8 | 8 |
| B. Paratyphosus | | | | | | |
| Bile | | | | | | |
| B. Typhosus | | | | | | |
| B. Paratyphosus | | | | | | |
| Water | | | | | | |
| B. Typhosus | | | | | | |
| B. Paratyphosus | | | | | | |
| Milk | | | | | | |
| B. Typhosus | | | 2 | | 2 | 2 |
| DYSENTERY | | | | | | |
| Amebic | | | | | | |
| Feces | | | | 36 | 36 | 36 |
| Bacillary | | | | | | |
| Blood for Aggl. | | | | | | |
| Feces | 2 | | 11 | 1 | 14 | 14 |
| Urine | | | | | | |
| Bile | | | | | | |
| BRUCELLA INFECTION | | | | | | |
| Blood Agglutination | 29 | 16 | 3499 | 55 | 3599 | 7 |
| Blood Cultures | | | 6 | | 6 | 6 |
| Opsonocyptophagic Test | | | 1 | | 1 | 1 |
| TULAREMIA | | | | | | |
| Blood Agglutination | 41 | 37 | 3370 | 150 | 3598 | 6 |
| Blood Cultures | | | | | | |
| Animal Innoculations | | | | | | |

## Table II.—Report of Laboratory Examinations—(Continued)

| | Positive | Doubtful | Negative | Unsatisfactory | Unclassified | Total Exams | Total Specs. |
|---|---|---|---|---|---|---|---|
| STREPTOCCI | | | | | | | |
| Beta Hemolytic | | | | | | | |
| Throat and Nose Cultures | 1 | | | | | 1 | 1 |
| Other Cultures | 2 | | 5 | | | 7 | 7 |
| Non-Hemolytic | | | | | | | |
| Throat and Nose Cultures | | | | | | 1 | 1 |
| Other Cultures | | | 1 | | | 1 | 1 |
| MENINGITIS | | | | | | | |
| Meningococcus | | | | | | | |
| Spinal Fluids | | | | | | | |
| Throat Cultures | | | | | | | |
| Other Types | | | | | | | |
| Other Types | | | | | | | |
| Spinal Fluids | | | | | | | |
| PARASITIC DISEASES | | | | | | | |
| Ova and Parasites | | | | | | | |
| Feces | 20 | 1 | 278 | 2 | | 301 | 301 |
| Specimens for Identification | | | | | 6 | 6 | 6 |
| Fungi | | | | | | | |
| Direct Microscopic | | | 10 | | 3 | 13 | 13 |
| Cultures | | 1 | 10 | | 5 | 16 | 16 |
| DIPHTHERIA | | | | | | | |
| Direct Smear | 4 | 3 | 4 | | | 11 | 11 |
| Cultures | 280 | 87 | 3420 | 44 | | 3831 | 3831 |
| Virulence Test | 1 | | 3 | | | 4 | 3 |
| TUBERCULOSIS | | | | | | | |
| Blood | | | | | | | |
| Comp.-Fix. Test | | | | | | | |
| Spinal Fluid | | | | | | | |
| Comp.-Fix. Test | | | | | | | |
| Sputum | | | | | | | |
| Microscopic | 213 | 14 | 2477 | 75 | | 2779 | 2779 |
| Direct Smear | 1 | | 11 | | 6 | 18 | 18 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Animal Innoculation | 4 | | 49 | 4 | | | 57 | 57 |
| Culture | | | 3 | 2 | 4 | | 9 | 9 |
| Urine | | | | | | | | |
| Direct Smear | | | | | | | | |
| Microscopic | | | 4 | 2 | | | 6 | 6 |
| Animal Innoculation | 14 | | 256 | 12 | | | 284 | 284 |
| Culture | 1 | | | | 12 | | 13 | 13 |
| Body Fluids | | | | | | | | |
| Comp.-Fix. Test | | | | 1 | 5 | | 6 | 6 |
| Direct Smear | | | 6 | | | | 6 | 6 |
| Microscopic | | | 31 | | 8 | | 39 | 39 |
| Animal Innoculation | 10 | | 68 | 10 | | | 88 | 88 |
| Spinal Fluids | | | | | | | | |
| Microscopic | | | 2 | | 1 | | 3 | 3 |
| Animal Innoculation | 4 | | 6 | 1 | | | 11 | 11 |
| Feces | | | | | | | | |
| Microscopic | | | 4 | | | | 4 | 4 |
| Animal Innoculation | | | | | | | | |
| Gastric Washings (GP Inoc.) | 1 | | 29 | 1 | | | 31 | 31 |
| PNEUMONIA | | | | | | | | |
| Sputum | | | | | | | | |
| Typing Neufield (Direct) | | | | | | | | |
| Typing Mouse Innoculation | | | | | | | | |
| Transudates and Exudates | | | | | | | | |
| Typing Neufield (Direct) | | | | | | | | |
| Typing Mouse Method | | | | | 1 | | 1 | 1 |
| VINCENT'S INFECTION | | | | | | | | |
| Smears | 8 | | 10 | | | | 18 | 18 |
| MALARIA | | | | | | | | |
| Blood Smears | 15 | 1 | 193 | 8 | | | 217 | 217 |
| WHOOPING COUGH | | | | | | | | |
| Cough Plates | | | 3 | 1 | | | 4 | 4 |
| VACCINES PREPARED | | | | | | | | |
| AUTOGENOUS | | | | | 1 | | 1 | 1 |
| SPECIAL INVESTIGATIONS | | | | | | | | |
| Food Poisoning | | | | | | | | |
| Bacteriological | | | 6 | | | | 6 | 6 |
| Toxic | | | | | | | | |
| Microscopical Examinations | | | | | | | | |

## Table II.—Report of Laboratory Examinations—(Continued)

| | Positive | Doubtful | Negative | Unsatisfactory | Unclassified | Total Exams | Total Specs. |
|---|---|---|---|---|---|---|---|
| [illegible]gical Examinations | | | | | | | |
| Serological | | | | | 1 | 1 | 1 |
| Chemical | | | | | | | |
| Animal Tests | | | | | | | |
| Discharges—Pus, Sputum, Etc. | | | | | | | |
| Microscopical | | | | | 9 | 9 | 9 |
| Bacteriological | | | | | | | |
| Pleural and Other fluids | | | | | | | |
| Blood | | | | | | | |
| Miscellaneous Examinations | | | | | 14 | 14 | 14 |
| Red Cell Count | | | | | 1 | 1 | 1 |
| White Cell Count | | | | | 5 | 5 | 5 |
| Diff. Count | | | | | 50 | 50 | 50 |
| Typing | | | | 1 | | 1 | 1 |
| RH Factor | | | | | 20 | 20 | 8 |
| Spinal Fluid | | | | | | | |
| Microscopical | | | | | 12 | 12 | 12 |
| Cell Count | | | | | 6 | 6 | 6 |
| Bacteriological | | | | | 20 | 20 | 20 |
| Chemical | | | | | | | |
| Urine Analysis | | | | | | | |
| Microscopical | | | | | 27 | 27 | 27 |
| Physical and Chemical | | | | | 2 | 2 | 2 |
| Quantitative | | | | | | | |
| Bacteriological | | | | | 2 | 2 | 2 |
| Nasal Smears | | | | | | | |
| Eosinophiles | | | | | | | |
| Organisms | | | | | | | |
| MISCELLANEOUS EXAMINATIONS | | | | | | | |
| Feces for Occult Blood | 7 | | 16 | 2 | | 25 | 25 |
| Cultures for Identification | | | | 1 | 3 | 4 | 4 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Specimens for Confirmation | | | | | | | |
| Rickettsial | | | | 4 | | 4 | 4 |
| Smears for Organisms | | | | | 76 | 76 | 76 |
| Cultures for Organisms | | | | 1 | 164 | 165 | 165 |
| Hetrophile Antibodies | 76 | 37 | 3411 | 96 | | 3617 | 20 |
| Sterility Tests | | | | | | | |
| Animal Tests (Autopsies) | | | | | | | |
| Proteus OX-19 | | 2 | 32 | 26 | | 60 | 10 |
| Unclassified | | | | 5 | 20 | 25 | 25 |
| Urine for Pregnancy | | | | 7 | | 7 | 7 |
| **TOTAL** | | | | | | 260484 | 127104 |

**Syphilis:** A total number of 224,484 examinations for syphilis were made upon 112,645 specimens, an increase of 34,347 examinations and 17,572 specimens. A large part of this increase may be credited to the Prenatal Examination Law, which became effective July 1, 1945 and to the Premarital Examination Law, effective July 1, 1947. Figures are not obtainable upon the number of blood specimens submitted for prenatal purposes. The first year of the Premarital Law brought in a total of 15,118 blood specimens for premarital purposes. Positive reactions were obtained upon 117 or 0.7%. Of these, 56 were females and 61 males. 8,885 of these examinations were performed in the state laboratory, 6,219 in local laboratories and 14 in out-of-state laboratories.

The senior-serologist spent two weeks training period in 1948 at the V. D. Research Laboratories of the U. S. Public Health Service.

**Gonorrhea:** A total of 2,088 examinations for gonorrhea were completed, a decrease of 126 from the previous biennium.

**Tuberculosis:** Specimens submitted for examination for tuberculosis increased from 2,324 to 3,354, an increase of 44%. Routine culturing of all concentrated specimens will begin as soon as time permits.

**Agglutinations:** Request for agglutinations of all types continue to increase. Agglutinations are routinely run at present for the typhoid-paratyphoid group, undulant fever, tularemia and heterophile antibodies. It is planned to add proteus OX19 agglutinations to this series as soon as suitable antigen can be prepared.

No special studies of any especial interest have been made. Requests for investigation of food poisoning have been infrequent. Small outbreaks in local hospitals of infant diarrhea cases have resulted in a few requests for special media and techniques to determine the etiologic agent.

All viral and rickettsial studies have been referred to the Rocky Mountain Laboratory at Hamilton.

### Personnel

The technical staff now includes the director, assistant director, 2 senior bacteriologist-seriologists, 2 junior bacteriologist-seriologists, 1 laboratory assistant and 1 laboratory helper. The clerical staff numbers four. Good clerical help is difficult to obtain and even more difficult to retain due to the higher competitive salaries offered by some of the adjacent state and federal agencies.

### Physical Equipment

The following new permanent equipment has been purchased since the previous report: 1 sterling automatic pipette, 1 Spencer Binocular Microscope, 1 automatic pipette washer, 10 Kahn test tube racks, 1 radial gas burner and 80 animal cages together with 2 stands each holding 40 cages, to mount them upon. A larger size centrifuge has been ordered, but not received to date.

Recommendations made by consultants from the Communicable Disease Center of the U. S. Public Health Service will necessitate the purchase of several new items of equipment before they may be carried out. The cost of none of the items should prove excessive.

The major items are:

2 automatic timers for centrifuges.

1 Mazzini shaker and glassware incidental to the performance of this test as a routine measure.

1 shaking machine (for homogenization of sputum concentrates).

1 Klett-Summerson Photoelectric Colorimeter.

1 Ph. meter (for standardization of all culture media).

It is believed that the saving effected by a simplification of our present syphilis serology program, namely, the adoption of a screening procedure, will more than care for the expense of the purchase of the above equipment.

### Extension of Present Services

The adoption of a screening flocculation test upon all blood specimens submitted for syphilis serology, as recommended by the U. S. Public Health Service, will be effected as soon as proper glassware and equipment can be obtained.

All reacting bloods will then be subjected to quantitative complement-fixation tests and to a standard flocculation test. By this method, special study can be given to blood specimens submitted in treatment cases and other cases which are of doubtful etiology.

Quantitative complement-fixation tests will continue to be run on all spinal fluids as at present, but in addition, total protein determinations will be run routinely also as soon as a photo-electric colorimeter can be purchased.

Agglutinations for Proteus OX19, now made only upon request, will be run routinely with all other febrile agglutinations.

If personnel permits, cultures for tuberculosis will be routinely run on all concentrates of materials submitted to be examined for the presence of this disease.

Evaluation and approval of local laboratories, a function which becomes more essential every year, has not been accomplished due to the lack of sufficient and adequately trained personnel, as in other years. It is becoming imperative that this service become actively established and it is hoped that a committee on approval may be appointed by January 1949, as the first formal step in this direction.

In accord with betterment of standards we will hold, if arrangements can be made, a refresher course for laboratory technicians of

the state, in some of the more routine procedures for the diagnosis of communicable diseases. Help in conducting such a school is now available, upon request, from the Communicable Disease Center of the U. S. Public Health Service.

Revision of the existing report forms has become essential since the present system has become entirely too burdensome upon the office staff for the volume of reporting accomplished. This is under study at the present time.

Reorganization of the technical staff with assignment of definite responsibilities is under way.

This division has continued to serve as a distributing agency for the distribution of the surplus American Red Cross Plasma. A total of 2,642 units was distributed in 1947 to hospitals and physicians for the use of their patients.

Plans for the establishment of the State Blood Bank have been virtually abandoned due to the availability of surplus dried plasma from the American National Red Cross and the fact that the last appropriation made by the state, of $15,000 for a two-year period, was entirely inadequate to furnish suitable housing facilities, necessary equipment and personnel for such a program even upon a very limited scale. The establishment of the first district Blood Collection Center in Great Falls by the American National Red Cross marks the first initiation of their anticipated state-wide program into this state.

### Recommended New Services

Recommendations which have been made for adoption of new services by the laboratory beyond the extension of present services noted above are:

1. Blood grouping and Rh grouping routinely on all prenatal blood specimens submitted.
2. Fowl red cell agglutinations on blood specimens submitted for aid in diagnosis of influenzal infections.
3. Preparation of a Physician's Guidebook to Public Health Laboratory Services.
4. Preparation of a Manual of Laboratory Techniques to serve local laboratories as well as the Central Division.
5. Arrangements for refresher courses in laboratory methods for local laboratory technicians.
6. Assist local laboratories by furnishing certain standard reagents.
7. Revision of office record and report forms to facilitate a more efficient reporting.

Certain of the above mentioned recommendations are dependent upon the obtaining of more space, additional equipment and personnel.

Others may be adopted at little cost or effort and should be placed under immediate consideration.

**Acknowledgements**

We wish to express our appreciation of the aid given upon request by the U. S. Public Health Service in assigning consultants to this division, upon two different occasions within the past year. Dr. Martin Frobisher gave us invaluable technical advice and aid during a local outbreak of diphtheria in the state earlier in the year. Dr. Seward Miller visited our laboratory in October, 1948, and after a careful study of the existing facilities, technical procedures, and particular problems of administration, gave a number of suggestions and made certain recommendations, which would result in a more effective and proficient service to the medical profession and the local laboratories and thus, indirectly, offer more extensive services to the public.

We wish to again acknowledge the cooperation received from all other divisions of the state health department, and the excellent relationships that have continued to exist.

We wish especially to thank you for your kind consideration of our needs and problems as presented to you, and for your continued guidance.

Respectfully submitted,

EDITH KUHNS, Director.

## DIVISION OF INDUSTRIAL HYGIENE

**Advisory Committee appointed by Montana State Board of Health:**

**James D. Graham, President of the Montana Federation of Labor, Helena.**

**Dennis McCarthy, Representative of Trades and Labor Council, Butte.**

**A. S. Richardson, Representative of Anaconda Copper Mining Co., Butte.**

**Carl J. Trauerman, Secretary, Mining Association of Montana, Butte.**

**R. B. Richardson, M. D., Chairman, Industrial Health Committee, Montana Medical Society, Great Falls.**

To: B. K. Kilbourne, M. D., Executive Officer:

Below is submitted the bi-annual report of the Division of Industrial Hygiene for the period from November 1, 1946 to June 30, 1948.

The Division of Industrial Hygiene in its endeavors to maintain and improve industrial health:

1. Makes available medical, nursing, engineering, and chemical consultation on industrial hygiene problems.
2. Investigates occupational diseases reported and makes studies to eliminate or control their occurrence.
3. Makes studies of industrial establishments throughout the state to determine whether processes or conditions may be detrimental to employees' health.
4. Reports findings of such studies to management and makes recommendations for the elimination or control of health hazards uncovered.
5. Consults on design of industrial ventilation systems and other engineering methods for control of health hazards.
6. Maintains a laboratory service to analyze (for toxicity) air samples taken in plants or materials used industrially.
7. Serves as a clearing house for information on industrial health subjects.

In spite of this being a report for only twenty months, seven of which there was no director (who does practically all the field work), activities of the Division were on a level somewhat commensurate with the previous period.

Solvig Lee Roth resigned as stenographer, effective August 1947. Paul Giever resigned as director, effective November 1947; thus leaving Ludwig Champa, the chemist, to maintain the work of the Division. In May 1948, Abraham Wallach was appointed director of the Division; Veda Crabtree was hired in June 1948 as stenographer.

During this fiscal period, Mr. Champa was sent to Washington, D. C., for two weeks to observe and study methods of industrial hygiene chemistry.

Two meetings of the Advisory Board were held. The one in 1946 discussed adopting a law governing maximum allowable concentrations of exposure to various toxic materials found in industry, but no action was taken. The one held in June 1948, was with the new director to discuss the program for the period 1948-49.

Among the studies to be made in 1948-49, in addition to any request work by management or labor, are:

1. Smelters and chemical plants, working co-operatively with industrial hygiene personnel of companies studied.
2. Mercury problems in gold dredging and refining operations, Jardine Mining Co., chemical laboratories, seed and grain companies.
3. Arsenic study at the Anaconda smelter and the Jardine Mining Co.
4. Those mines which appear to need corrective measures as indicated by silicosis records obtained from the Tuberculosis hospital at Galen, the Tuberculosis Division of the State Health Department, and other sources.

Another important point of the program discussed was correlating physiological studies of workers with the engineering surveys to give a more complete picture of whether or not health hazards existed. Stll another point was giving short courses in industrial hygiene to engineering and business administration students, since such students later on in life become part of plant management.

At the end of the fiscal period, approval was obtained for purchasing two pieces of valuable equipment to aid in field and laboratory work—the polarograph, which will permit more accurate laboratory analysis in a shorter time of many toxic materials; and a vapor detector which gives instantaneous readings in the field of concentrations of toxic materials like mercury, benzol, toluol, pyridine, acetone.

**Occupational Disease Reporting**

As has been true in previous years, reporting of occupational diseases is still not satisfactory, and of the four cases reported (excluding silicosis cases)—two due to lead, one arsenic and one in industrial dermatitis case—two were learned of only because of the attending physician's request for urinalysis for toxic materials. The problem is one of educating the medical profession as to the value of such reporting as an aid in preventing similar cases.

Data on silicosis has been obtained from the Tuberculosis Division of the State Board of Health and the hospital at Galen (persons receiving benefits from the Public Welfare Department). Although the number of cases reported annually has been increasing during the

past six year period, it is not necessarily an indication that the incidence of silicosis is increasing. This is because there is usually a lag of from five to twenty years—although under certain circumstances within two years—before any effect of exposure to silica dust takes place in the lungs.

At present most of our data is based upon third stage silicosis (Galen hospital records). Data on the earlier stages (first and second) would be invaluable in obtaining a more accurate picture of silicosis incidence, since such data is much more indicative of present day conditions. An age analysis of early stage silicotics would also be valuable. Data on ages of last stage (third) silicotics is not as valuable because of the possible long and varied time intervals between exposure and effect on the workers.

This Division will endeavor to obtain more complete data as indicated above, and prepare a statistical analyses in the next period of time.

## ABSENTEEISM RECORDS

Monthly reports of absenteeism records are still being received from two industrial plants, both together employing approximately 1,800 workers. The Division prepared a graph analysis of the 1946 data for both companies, thus helping evaluate sickness problems for that year. The data in both plants showed a general decrease of illness, reflecting continued efforts on the part of the management in improving working conditions.

Because of the seven months absence of a director and more pressing problems, an analysis of the data for 1947 was not made.

## EDUCATION

Talks on industrial hygiene were given before gradute nurses at the Deaconess Hospital in Great Falls and at Billings.

The Division received a representative of the Bolivian government, Mr. Manuel Caceres, who was interested in industrial hygiene in mining, smelting, and related industries. He was shown our laboratory, field apparatus and precedures; he was also taken to visit the smelters and refineries of plants in the state.

The director attended the joint meeting of the American Industrial Hygiene Association and American Conference of Governmental Industrial Hygienists held in April 1947 in Buffalo, where great benefit was obtained as to the activities of other Industrial Hygiene Divisions throughout the country.

## FIELD ACTIVITIES

Field studies were conducted in forty plants; thirteen being complete studies, and the other 27 being studies of specific health hazards.

In conjunction with Ed Davies, State Coal Mine Inspector, studies were made in the Bear Creek and Foster Creek mining districts.

Studies of X-ray and fluoroscopic equipment in doctors' laboratories were made to determine possible health hazards to the doctors themselves (or their technicians) from excessive X-ray exposure. Several of the places checked showed need for better protction of the doctor operating his X-ray or fluoroscopic unit. The testing of infant incubators for the Public Health Nursing Division was continued. Consultation on the use of ozone generators for use in eliminating carbon monoxide hazards in garages was given for the Industrial Accident Board.

## LABORATORY AND FIELD ANALYSIS

A total of 977 chemical analyses were made in the laboratory, and 226 determinations were made by direct reading instruments in the field. About 30 per cent of these 1,203 analyses or determinations were made for the Industrial Accident Board, consisting chiefly of mine air samples and coal dust samples.

A detailed breakdown is presented below. This does not include research work in developing a new method for arsenic determinations.

## SUMMARY OF LABORATORY AND FIELD ANALYSES

| Materials Analyzed | Number of Analyses |
|---|---|
| Dust Counts | 83 |
| Lead | 126 |
| Arsenic | 27 |
| Mercury | 3 |
| Zinc | 1 |
| Manganese | 6 |
| Nitrogen Oxides | 9 |
| Sulphur Dioxide | 7 |
| Carbon Monoxide | 10 |
| Fluorine | 2 |
| Chlorinated Hydrocarbons | 1 |
| Carbon Dioxide | 163 |
| Methane | 163 |
| Oxygen | 197 |
| Nitrogen | 157 |
| Temperatoure | 54 |
| Humidity | 44 |
| Air Velocity Readings | 128 |
| Free Silica | 13 |
| Rock Dust | 4 |
| Ash | 4 |
| Soap | 1 |

## RECOMMENDATIONS

Completion of the detailed studies and program enumerated will take one to two years of intensive field work, since administration work prevents the Director from spending more than

two-thirds of his time in the field. This does not take into consideration request work from management, labor, the State Industrial Accident Board and other groups, (for example, the study and design of an improved ventilation system in the Chemistry Building at Montana State College). Because of this lack of personnel, our periodical, "The Montana Roundup," which was sent to management, labor and others interested in industrial health, had to be discontinued.

Especially in view of the approval given by the advisory board, at least one additional engineer should be employed. Such an addition would more than double the present amount of field activities, with but little added administrative work.

Respectfully submitted,

A. WALLACH, Director

## DIVISOION OF TUBERCULOSIS CONTROL

**L. J. Lull, M. D., Acting Director**

The annual death rates from tuberculosis in Montana when compared with those of other states of the United States strikes about an average of all of the states. However, when Montana tuberculosis death rates are compared with the Northwest states we find Montana the highest of any of them. The lowest death rate for 1946 was in the neighboring state of Wyoming.

An appraisal of the deaths occurring in Montana indicates that the major part of our high tuberculosis rates are accounted for by a small portion of the population, the Indians. A comparison of Indian and white tuberculosis death rates in the State of Montana shows that the Indian population, representing about three per cent of the total, accounts for approximately thirty per cent (see Table I) of the total tuberculosis deaths of the state. The TB death rate of our Indian populaion then, is approximately ten times that of the white population.

In 1946 a coordinated case finding program was established through the cooperation of the Montana State Tuberculosis Association and the State Board of Health. In this cooperative plan the Montana State Tuberculosis Association purchased a mobile x-ray unit for case finding services. This survey program has been carried on during the past two years by the State Board of Health in cooperation with the State Tuberculosis Association. Soon after the initiation of the mobile unit survey operations a second portable unit was purchased by the Division of Tuberculosis Control and that unit began its operation in January of 1948. The case finding program then, will continue with a portable and a mobile x-ray unit.

This chest survey program has visited every county of the State and has accounted for an X-ray chest examination for approximately one of every four persons in the total population of the State. This X-ray service has been provided at a cost of approximately thirty-two cents per person examined (Table II).

The future program will concentrate in those counties showing the highest number of cases and deaths. There will be a special concentration of case finding among the Indian population.

As a result of the intensive tuberculosis health education activities throughout the State several of the larger communities have established permanent microfilm X-ray units in their communities for continuing survey work. These communities include Billings and Butte. Two large hospitals in Billings have installed microfilm attachments for their regular hospital X-ray units and carry on a continuing program of routine chest X-rays for all admissions to the hospital.

During the calendar year 1947, as a result of 78,881 microfilm chest X-rays taken by the mobile unit, there were referred to private

physicians for further examination 1,853 patients. These have resulted in the diagnosis of many other chest conditions in need of medical attention other than tuberculosis (see Table III). This program then, is not confined to case finding of tuberculosis (see Table IV) but is also finding heart disease, cancer, and other pathology.

Through the cooperation of State and Federal officials Congress has enacted a bill authorizing an expenditure of one and one-half million dollars for the establishment of an Indian tuberculosis sanitarium in connection with the present State tuberculosis sanitarium at Galen. Progress in this plan is temporarilly delayed awaiting State legislation for the provision of State financial contribution to this program.

The Division of Tuberculosis Control has operated during the last nine months of the biennium with only a part-time medical director and to date it has been unable to hire a full-time medical director.

The major needs in continuing the program for the next biennium are as follows:

1. A continuation of the mobile unit chest X-ray case finding program with concentration on those communities of the State showing the highest number of cases and deaths.
2. The provision of a full-time medical director.
3. The provision of adequate tuberculosis hospital beds for the Indian population.

TABLE I

**White and Indian Tuberculosis Deaths—Montana, 1938 - 1947**

| Year— | Total No. Deaths | Rate Per 100,000 Pop. | No. White Deaths | Rate Per 100,000 Pop. | No. Indian Deaths | Rate Per 100,000 Pop. | % Indians In Total | Others: Mex., Yellow, Black |
|---|---|---|---|---|---|---|---|---|
| 1938 | 239 | 43.0 | 172 | 31.9 | 59 | 355.4 | 24.7 | 8 |
| 1939 | 239 | 42.8 | 176 | 32.5 | 52 | 509.5 | 21.8 | 11 |
| 1940 | 225 | 40.2 | 172 | 31.7 | 48 | 282.4 | 21.3 | 5 |
| 1941 | 201 | 35.8 | 149 | 27.4 | 48 | 279.1 | 23.9 | 4 |
| 1942 | 195 | 34.8 | 133 | 24.5 | 58 | 333.3 | 29.7 | 4 |
| 1943 | 199 | 35.5 | 130 | 23.9 | 59 | 335.2 | 29.6 | 10 |
| 1944 | 167 | 35.9 | 113 | 25.3 | 49 | 275.3 | 29.3 | 5 |
| 1945 | 166 | 33.2 | 127 | 26.3 | 38 | 211.1 | 21.7 | 3 |
| 1946 | 151 | 30.2 | 96 | 19.9 | 50 | 277.8 | 53.1 | 5 |
| 1947 | 135 | 27.0 | 88 | 18.3 | 44 | 244.4 | 32.6 | 3 |

## TABLE II

### Cost of Mobile Unit Operation, 1947

| | |
|---|---|
| Salary | $ 3,670.71 |
| Film Development & Interpretation | 2,937.06 |
| Truck Expense | 82.49 |
| Supplies and Equipment | 14,573.02 |
| Travel | 4,160.21 |
| Total Cost | $25,423.49 |

### Cost Per Readable Film

### 78,881 Films, 1947

| | Total Cost | Cost Per Film |
|---|---|---|
| Salary and Travel | $ 7,830.92 | 9.9 |
| Supplies & Equipment | 17,592.57 | 22.3 |
| Total | $25,423.49 | 32.2 |

## TABLE III

### Mobile TB X-Ray Unit

### Results of Survey

| | No. of Counties | No. Readable Films | Tuber-culosis | TB Suspects | Other Pathology | Total Cases Referred to Physicians |
|---|---|---|---|---|---|---|
| 7-1-46 to 7-1-47 | 26 | 74,716 | 160 | 350 | 603 | 1,113 |
| 7-1-47 to 7-1-48 | 30 | 70,615 | 298 | 112 | 531 | 740 |
| TOTALS | 56 | 145,331 | 358 | 462 | 1,134 | 1,853 |

## TABLE IV

### Results of Mobile Unit Survey

### Montana, 1947

| | |
|---|---|
| Total Readable Films | 78,881 |
| Tuberculosis | 242 |
| Tuberculosis Suspects | 277 |
| Cardiac | 270 |
| Spinal Deformity | 43 |
| Mediastinal Mass | 36 |
| Aorta | 8 |
| Diaphragm Hernia | 5 |
| Dextro Cardia | 4 |
| Cancer Suspect | 4 |
| Cancer | 3 |
| Bronchiectasis | 3 |
| Pneumonia | 2 |

## DIVISION OF PUBLIC HEALTH EDUCATION

B. K. Kilbourne, M. D., Executive Officer,
State Board of Health

### Personnel

K. Elizabeth Anderson, M. A., Director

Inga A. Hoem, M. A., Health Education Consultant
(Employed July 14, 1948)

This report covers the activities of the Division of Public Health Education since its creation on July 1, 1947 to June 30, 1948. It also includes the report of Health Education as a part of the Maternal and Child Health program from November 1, 1946 to June 30, 1947.

With the creation of the Division of Public Health Education objectives and functions which are in accord with recommended procedures in good public health education have been established.

### OBJECTIVES

The Division of Public Health Education is concerned with promoting health from an educational standpoint by personnel known as health educators who are educators by profession.

Health education aims (1) to create proper attitudes for the practical application of accepted personal and community health principles and procedures; (2) to give scientific knowledge in the field of health. Health education aims to stimulate public thinking and action so that both good personal health and public health will be practiced, manitained and improved. The Division of Health Education is devoting its major effort along with other Divisions of the State Board of Health toward the promotion of complete coverage of the State with full time local public health departments.

### GENERAL FUNCTIONS

**How** health education is to be done is a specific responsibility of the Division of Health Education. Health educators serve in a consultant capacity to the other divisions of the State Board of Health as to the best educational methods of presenting their materials. They also assist in the interpretation of health information given by technical personnel in the field of health to non-technical groups or individuals. Since health education cuts across all areas of public health, rather than being a program of its own, it requires considerable joint general planning with all other Divisions.

### SPECIFIC FUNCTIONS

#### Assistance to Other Divisions of the State Board of Health

The Division of Public Health Education can assist other Divisions of the State Board of Health in planning and arranging the mechanics

for (1) conferences, meetings, and institutes; (2) the general orientation of new personnel; and (3) inservice personnel training.

Assistance can also be given other Divisions of the State Board of Health in fitting the content of talks, materials, radio and news releases to the interest and understanding of the group for whom it is intended; and in preparing community groups for technical speakers.

**Assistance to local public health departments**

Assistance can also be given to local public health personnel in the general health education work which they carry on. This includes assistance (1) in the preparation of bulletins or any other literature; (2) in the in-service training of school personnel in the health program; (3) in the organization and functioning of local health planning committees; (4) and in keeping them informed of the availability of new health education materials.

**Direct Service**

Direct service is given by the Division of Public Health Education through (1) answering of inquiries on general health information either by letter, conference or through participation in group meetings; (2) through the preparation, assembly and distribution of health education literature, posters or exhibits; (3) through assuming responsibility for the lending library; (4) through the reviewing and purchasing of health films and by assuming responsibility for their distribution through the State Film Library in the State Department of Public Instruction.

One of the most important contributions of the Division of Health Education is the contribution to community organization, in giving assistance to citizens in the organization and functioning of county and state health planning committees. Assistance is also given to organizations such as the Parent-Teacher Associations, Civic Clubs and Study Groups in planning their health programs.

The personnel of the Division of Public Health Education actively participate in the Montana Health Planning Committee, the Joint Committee of the Agriculture Extension Service and the State Board of Health. Close working relations are maintained with the Supervisors in the State Department of Public Instruction. Consultation Service is given to local personnel and other education groups in the development of health programs.

## ACTIVITY SUMMARY

### COMMITTEE WORK

**Montana Health Planning Committee**

This is an advisory health committee composed of representatives from more than forty state agencies, associations or organizations working in or interested in the field of health who were appointed by Governor Sam C. Ford. It was organized in October, 1947, with Sheldon E. Davis, Ph. D. of Dillon as the chairman.

The W. K. Kellogg Foundation of Battle Creek, Michigan, through the State Department of Public Instruction made a financial grant to Montana for a three-year period, beginning in July, 1945. This grant was made to assist in promoting cooperative effort in health education between the several groups working in this area. Mr. H. B. Masters, Foundation Educational Director has given valuable guidance.

The funds, in the main, have been used to bring groups of people together, such as the Montana Health Planning Committee, Teacher Training in Health Education Committee, and conferences at Missoula and Bozeman. This grant also provided for four representatives from local schools to attend a School Health Institute at the University of California at Berkeley, California, during June, 1948.

The executive officer and director of health education are members of the Montana Health Planning Committee. Some of the representatives come from the medical, dental and nursing professions; others represent educational agencies, voluntary health agencies, civic, labor or farm groups. In addition to the official Public Health Agencies, there are also representatives from other official agencies with an interest in health. This committee provides an opportunity for representatives from all these groups to meet together to make health needs and accomplishments known and to coordinate health programs.

The purpose of this committee, as stated in the By-Laws, is to determine the health needs and resources of Montana, to make these needs known to the people of the State, to plan an adequate program for meeting these needs, and to assist in carrying out such a program. The committee exercises informational and advisory, rather than administrative functions.

F. L. McPhail, M. D., representing the Montana Medical Association and Chairman of the Health Service Sub-Committee of the Montana Health Planning Committee, in speaking at the second meeting of the Montana Health Planning Committee, stated that, "No one group, strong or weak, can plan a health program for Montana or any other state. It is going to take each group with various interests to choose ideas from these meetings that will help develop a program for the state, to carry these ideas back to the organization and to the community each represents."

There are five sub-committees, known as Health Service, Legislation, Program, Health Education, Hospital and Membership.

The Montana Health Planning Committee has committed itself to work on the following problems: to determine how well Montana provides health facilities for rural communities; to determine why full-time local public health departments are the next step in Montana Public Health Administration; to determine how to inform the public as to what the existing health agencies have accomplished and are now doing; to study the duplication of effort among health agencies working in Montana; to study health, medical, accident and hospital insurance now in effect in Montana; to promote the formation of county health planning committees. The activities of this committee

are doing a great deal to further public health education in Montana.

During the Month of February, 1948, the Montana Health Planning Committee, the State Board of Health, and the Montana Extension Service sponsored twelve district citizen meetings in the several population centers in Montana to begin work on some of the above-named problems. A more detailed explanation of these meetings is given elsewhere in this report.

**County Health Planning Committees**

Since the district health planning meetings were held during the month of February, 1948, there has been considerable interest and action in the formation of county health planning committees. Beaverhead, Big Horn, Blaine, Custer, Flathead, Meagher, Phillips, Richland, Rosebud, Silver Bow, Toole, Yellowstone and Valley counties have formed such committees. Several other counties are in the process of forming such committees.

The purpose of these committees like the Montana Health Planning Committee is advisory and informational. Public Health development in Montana is dependent upon citizen understanding, interest and promotion.

**Montana Teacher Training in Health Education Committee**

This committee was formed in January, 1947. Since the formation of the Montana Health Planning Committee, the Montana Teacher Training in Health Education Committee has functioned as one of its sub-committees. The Teacher Training Committee has representatives from the five units of the University of Montana engaged in teacher training, the State Department of Public Instruction, the State Department of Public Welfare, the State Board of Health, the Montana Extension Service and the Voluntary Agencies. The Director of Health Education acts as the coordinator of this committee. Since the formation of the Montana Health Planning Committee, George A. Selke, Ph. D., Chancellor of the University of Montana has given the committee considerable encouragement and assistance. He asked the units of the University to make the course in Health Education available to all students preparing to teach.

The purpose of this committee is to extend and improve the quality of teacher training in Health Education in Montana. In addition to this it has served as an excellent means of in-service training for its members, all of whom are concerned with the welfare of youth. It has also assisted in the adult education program sponsored by the University of Montana.

"The Outline for a Basic Course in Health Education for Teacher Training in Montana" was prepared in rough draft by a smaller state committee in 1945 and has been revised twice by the Teacher Training in Health Education Committee. The first revision in mimeographed form was used during the 1947-1948 school year in each of the units of the University of Montana. The printed revision will be used during the 1948-1949 school year. This course of study has been adopted by all the University Units engaged in Teacher Training.

The committee, in cooperation with representatives from local elementary, rural, and high schools has begun the preparation of a "Guide for the Montana School Health Program." It will include assistance in all three areas of the school health program, that is: Healthful environment, Health Service and Guidance, and Health Instruction.

**Joint Committee Agriculture Extension Service and State Board of Health**

This committee was organized in August, 1947. It meets formally two or three times a year and members meet informally more often and carry on considerable work by correspondence.

The State Board of Health is represented by the Executive Officer, the Director of Public Health Nursing and the Director of Health Education, the latter serving as secretary of the committee. The Montana Extension service is represented by its Health Specialist, Mrs. Frances Macdonald, who is the chairman, the assistant Home Demonstration Leader and the assistant 4-H Club leader.

Policies have been agreed upon between the two agencies which state the major contributions of the Extension Service will be (1) to help rural people recognize their health problems, (2) to organize for meeting their health and medical needs, and (3) to direct them to technical specialists prepared to help develop programs of adequate family and public health protection.

Extension service personnel are actively assisting in the promotion of county health planning committees, local public health departments, the mass X-ray Tuberculosis Control Program and other phases of public health.

**State Department of Public Instruction**

Close working relationships exist between the Supervisors of Rural Education, the High School Supervisor, and the Supervisor of Health, Physical Education and Recreation.

Informal meetings and conferences are held at times when a need arises. The rural supervisor through joint planning with representatives from the State Board of Health, one of whom is the Director of Health Education, developed a "Suggested Self-Evaluation Blank for Teachers, Principals and Superintendents of Elementary Schools." This combines, improves, and brings up to date the School Health Appraisal blank formerly provided to schools by the State Board of Health and Rating Cards provided by State Department of Public Instruction.

## MEETINGS

A three-day meeting in April, 1948, devoted to the "Technics of Health Education" was sponsored jointly by the Teacher Training in Health Education Committee, the State University and the State Board of Health. Dorothy B. Nyswander, Ph.D., Professor of Health Education in the School of Public Health, University of California at

Berkeley, directed this conference. It was attended by about 100 persons who were members of the Teacher Training in Health Education Committee; State Board of Health Staff; local Public Health Nurses; local and county school superintendents and teachers; University students and instructors; nursing education instructors and Parent-Teacher Association members.

A two-week health education workshop on the school health program was conducted at the Eastern Montana Normal School at Billings in July, 1948. It was directed by Miss Marjorie A. Stevenson, Associate Professor of the Eastern Montana Normal School. About 50 persons were registered in this workshop. State Board of Health personnel, members of the Teacher Training in Health Education Committee, as well as representatives from many other agencies participated.

A two-day meeting on the School Health Program was held at the Northern Montana College in July, 1948. About 90 people attended this meeting, which was directed by Miss Jeannette Donaldson, Assistant Professor of Education at the College. State Board of Health personnel and several members of Teacher Training in Health Education Committee and the Montana Health Planning Committee participated.

A three-day meeting in Health Education was held on the Montana State College Campus in August, 1948. This meeting was sponsored jointly by the College, the Extension Service, the Montana Health Planning Committee, the Teacher Training in Health Education Committee, and the State Board of Health. It was directed by Mrs. Frances Macdonald, Rural Health Specialist of the Extension Service. The theme of the meeting was "Community Organization for Health." County Health Planning Committees were invited to send two representatives, or in counties where such committees have not been formed, people were invited who were interested in the formation of such committees. The meeting was enthusiastically attended by about 100 people.

Citizens district health meetings in 12 centers of Montana were sponsored during the month of February, 1948, by the Montana Health Planning Committee, the Extension Service, and the State Board of Health. These meetings were attended by approximately 800 interested citizens. The purpose of these meetings was to (1) acquaint people with the need for and services rendered by full-time health departments, (2) to acquaint people with the Montana Hospital Program and (3) to interest them in the formation of county health planning committees.

## PROGRAM PARTICIPATION

A great many talks have been given at meetings other than at those already named in this report. Talks have been given at local, district and State Parent-Teacher Association meetings, the State Convention of the American Association of University Women, State Kiwanis Convention, In-Service Teacher Training meetings in local schools, Montana School Administrators Association, Montana Public

Health Association, Women's Medical Auxiliary, Montana Society for the Study of Education, Montana Association for Health, Physical Education and Recreation, Nursing Education Classes, University Classes, State Association of County Superintendents, School and Community Health Committees.

## ASSOCIATION MEMBERSHIPS

The Health Education program has been furthered through membership and active participation in several organizations; such as, the State Guidance Committee, State, District and National Associations for Health, Physical Education and Recreation, the Western Branch of the American Public Health Association, the Montana Education Association, and the State Nutrition Committee.

## PUBLICATIONS

Several articles have been prepared for "Montana Education," published by the Montana Education Association, "Montana Health," published by the Public Health League and "Survey Mid-Monthly."

## PREPARATION OF HEALTH EDUCATION MATERIALS

An exhibit on Rural Sanitation was prepared by the Division of Sanitary Engineering in cooperation with the Montana Teacher Training in Health Education Committee, the Montana Extension Service and the Division of Health Education. This has been widely used throughout the State in connection with the labor-saving caravan sponsored by the Extension Service and at county fairs.

Mimeographed materials for local health planning committees and school health education materials have been prepared and distributed.

## CONSULTATION SERVICES

Innumerable conferences giving consultation in health education have been held with local and State Health Planning Committee members, city and county school administrators, Public Health Department personnel, Parent-Teacher Association members, University faculty members, State Tuberculosis Association staff, Montana Cancer Society, Red Cross and National Health Council representatives.

## SCHOOL HEALTH PROGRAM APPRAISALS

School Health Program Appraisals have been continued on a more limited basis than during the previous biennium. The faculties of several schools are assuming very well the teacher responsibilities in the school health program and considerable progress is evident.

## DIRECT HEALTH TEACHING

During the winter quarter of 1946-47 the course in Health Education for Teacher Training was taught at the Montana State College by the Director of Health Education, loaned for this purpose by the State Board of Health. One section was an on-campus course and the other was an extension course for teachers in-service in the area around Bozeman.

## DISTRIBUTION OF HEALTH EDUCATION MATERIALS

### New Films

Many new health films have been reviewed and a considerable number purchased. The films which are purchased are deposited in the State film library of the State Department of Public Instruction. The Division of Health Education assumes the responsibility for their distribution through the State Film Library.

### New Literature and New Books

A considerable amount of new literature and many new books have been reviewed, much of which has been added to the lending library. Materials from the lending library are made available to Montana citizenry. Information is given to interested groups or individuals on the availability of new and recommended materials which they may wish to purchase.

### Future Plans and Needs

Since the vacancy in the position of the Health Education consultant has been filled, much more work can be accomplished and the program can proceed much more effectively. More service can also be given to other divisions of the State Board of Health in the development of the educational phases of their programs.

There is a great need for more health educators on the state staff and health educators should also be employed in local public health departments. Adequate and satisfactory office space is greatly needed as is storage space for materials.

An awareness of need and an interest in public health education on the part of both professional and non-professional health workers has been created within the state. The Division of Health Education aims to give continued educational assistance in the development, extension, and improvement of public health in Montana.

## DIVISION OF HOSPITAL SURVEY AND CONSTRUCTION

Report Period: March 10, 1947 to June 30, 1948

### Division Personnel

B. K. Kilbourne, M. D., Director
Robert J. Munzenrider, Consulting Engineer
Vincent H. Walsh, Consulting Architect
Marjorie DuMez, R. N., Consultant
Alice L. Henry Senior Stenographer

### Hospital Advisory Council

Dr. B. K. Kilbourne, Helena
Dr. L. S. Crary, Fairfield
Walter Neils, Libby
Carl Lindquist, Scobey
Mrs. Peter Yegen, Jr., Billings
S. H. Riven, Missoula
Dr. F. I. Terrill, Galen
Milo Dean, Great Falls
Gordon Holt, Hot Springs
W. F. Flinn, Miles City
*Mrs. Walter Melin, Livingston
W. J. Fouse, Helena
Rev. Frank Harrington, Butte
Carl F. Kraenzel, Bozeman
Rev. G. T. Bergee, Shelby
A. B. Applegren, Wolf Point

*Resigned, January 1, 1948

To: B. K. Kilbourne, M. D., Executive Officer, Montana State Board of Health:

The following is a report of the Division of Hospital Survey and Construction covering the period March 10, 1947 to June 30, 1948.

Chapter 270, cited as the "Montana Hospital Survey and Construction Act", was enacted by the Thirtieth Session 1947 of the Montana Legislature. The purpose of the Act was to enable Montana to participate in a program of hospital construction as provided in Public Law 725 of the 79th Congress, approved August 13, 1946, entitled the "Hospital Survey and Construction Act."

The Montana Hospital Survey and Construction Act became effective upon the approval of Governor Sam C. Ford on March 10, 1947. The Act as passed and approved established in the State Board of Health, a Division of Hospital Survey and Construction. The State Board of Health through such a division constitutes the sole agency of the state for the purpose of:

(1) making an inventory of existing hospitals, surveying the need for construction of hospitals, and developing a program of hospital construction as provided in the Act, and

(2) developing and administering a state plan for the construction of public and other nonprofit hospitals as provided in the Act.

During the period from March 10, 1947 to August 20, 1947, the affairs of the Division were conducted by Dr. B. K. Kilbourne. On August 20, 1947 Robert J. Munzenrider was appointed as Consulting Engineer for the division. The first few months were spent in organizing the new Division, establishing policies and programs, as well as conducting the routine business of the Division.

Mr. Munzenrider attended an orientation course for architects and personnel of State Agencies presented by the Office of Technical Services, Division of Hospital Facilities, U. S. Public Health Service held at Washington, D. C. during the period October 6 to October 24, 1947.

The purpose of the course was to familiarize personnel of the State Agencies with the Hospital Survey and Construction Act. Particular emphasis was placed on the organization of general hospitals and the medical aspects to be considered in the planning of a general hospital. The course also covered all the technical phases of hospital construction.

The basis for drawing up a State Plan for hospital construction was an inventory and survey of the existing hospitals and health facilities in Montana. This study was made at the request of Governor Sam C. Ford during 1945 by a committee known as the Montana Hospital Survey Committee. Since the original survey was made two years prior to the development of a State Plan, it was thought advisable to conduct a supplemental survey to determine what new construction had taken place during the two year period and also to determine what new construction was contemplated. The results of the survey were gratifying. The survey revealed that 28 communities in Montana were contemplating additions or alterations to existing facilities or the construction of new facilities. The total cost for this expansion will amount to approximately $14,000,000.00.

With the survey information on hand a State Plan was developed. The state was divided into five regions, the regions being sub-divided into hospital service areas. The State Plan was then drawn up to conform with the regulations as promulgated by the U. S. Public Health Service.

The State Plan as drawn up was submitted to the Hospital Advisory Council for their review. A meeting of the Council was held in the House Chamber of the State Capitol Building on December 11, 1947, at which time the State Plan was discussed in detail. The State Plan with some revisions was approved by the Hospital Advisory Council on the same day. The State Plan, as approved by the

Hospital Advisory Council, was publicized in the press and on the radio so that the people of Montana would have a knowledge of its contents.

A public hearing was scheduled in the House Chamber, State Capitol Building, Helena, Montana for January 8, 1948. The purpose of the public hearing was to allow any interested persons or organizations to appear and afford them an opportunity to be heard on any objections or criticisms that they might have to offer. At the meeting the State Plan was explained in detail and the meeting was thrown open to discussion. The discussion which followed had no material effect upon the State Plan as presented and therefore no changes were required.

The State Plan was also presented to the State Board of Health on January 8, 1948 at which time it was discussed and approved by the Board.

The final draft of the State Plan was prepared and submitted to the Surgeon General of the U. S. Public Health Service on January 16, 1948. The plan as submitted was approved by the Surgeon General on February 19, 1948. The essential parts of the Montana State Plan for Hospital Construction were duplicated and distributed to all hospitals, County Commissioners and other interested individuals and organizations on April 1, 1948. After the Montana State Plan had been approved, the State Board of Health was then in a position to receive applications from sponsoring agencies contemplating hospital construction. During the period covered by this report 12 Project Construction Applications were filed with the Division. Two of the applications were returned to the applicants since they were in the low priority group and therefore could not be considered for Federal Aid under the program. A project Construction Schedule was prepared according to the procedures outlined in the Montana State Plan. The Project Construction Schedule for the fiscal year 1948 included the following projects, all of which are general hospitals.

| Name of Project | Location | No. of Beds | Total Est. Cost | Est. Fed. Share |
|---|---|---|---|---|
| Glacier County Memorial Hospital | Cut Bank | 36 | $277,470.50 | $90,490.17 |
| Teton Memorial Hospital | Choteau | 22 | $212,000.00 | $70,000.00 |
| Fallon County Hospital | Baker | 19 | $172,485.00 | $57,266.66 |
| Sweet Grass County Hospital | Big Timber | 10 | $128,500.00 | $13,993.17 |

The Division distributed literature pertaining to hospital construction to the architects of Montana in order to familiarize them with the program. A meeting with architects doing hospital work under the program was held in the Division offices on April 12 and 13.

At that time the program was discussed with the architects by members of the U. S. Public Health Service and personnel of the Division. Numerous conferences were also held during the period covered by the report with individual architects on the various projects that are or will be included in the Montana State Plan. In this respect the Division has been working in close harmony with Dr. F. I. Livingston, Director, Division of Dental Health, in an attempt to incorporate dental facilities in new hospitals being contemplated.

The personnel of the Division have also appeared at public meetings in communities throughout the state to discuss the hospital construction program and new hospital construction as well at attending meetings sponsored by various hospital and public health organizations. In addition to reviewing plans for hospitals participating in Federal Aid, the plans and specifications for projects not participating in Federal Aid have been reviewed. During the latter part of the report period the work load in the Division has been increased considerably which has created a backlog of work. Present indications are that additional personnel will be required to carry on the work of the Division.

Respectfully submitted,

ROBERT J. MUNZENRIDER,
Consulting Engineer.

## DIVISION OF HOSPITAL FACILITIES

Personnel: Miss Marjorie DuMez, Consultant, succeeded by Miss Marjory V. Young, Mr. Robert J. Munzenrider, Consulting Engineer, Mrs. Gladine McCarthy, Senior Stenographer.

To: B. K. Kilbourne, M. D., Executive Officer, State Board of Health of Montana.

Sir:

I have the honor to report to you the work of the Inspection and Licensing branch of the Division of Hospital Facilities of the State Board of Health for the biennial period ending June 30, 1948.

Section 269 of the 1947 Session Laws enacted by the 30th Legislative Assembly provided for the Inspection and Licensing of all Hospitals, Maternity and Convalescent Homes. This law became effective March 10, 1947. The enactment of Chapter 192 of 1947 Session Laws effective July 1, 1947, was passed at the same time to provide for the Inspection and Licensing of Nursing Homes for the care of the aged.

The provisions of Chapter 269 further provides for the establishment of a Hospital Advisory Council of nine members whose term of office shall be four years. The Governor appointed Mrs. R. S. Jesse, Mrs. Dean King, Mrs. J. L. MacDonald, Sister Mary St. Ignatius, Mr. Harry Wheeler, Mr. Edwin Grafton, Dr. H. H. James, Dr. E. S. Weyer and Mr. C. J. Houle to serve on this council.

The Executive Officer of the State Board of Health shall serve as Chairman ex-officio, and the State Director of the Department of Public Welfare shall also act ex-officio.

### ADVISORY COUNCIL MEETINGS

The first meeting of the Hospital Advisory Council was held on October 11, 1947 in the Senate Chamber of the State Capitol. The purpose of this meeting was to read, discuss and approve for adoption the proposed regulations and standards for Hospitals, Maternity Hospitals, Chronic and Convalescent Homes, and Homes for the Aged. It was moved, seconded and unanimously carried that "the regulations and standards for Hospitals and related institutions, Maternity Homes, Convalescent Homes and Homes for the Aged be approved for adoption by the State Board of Health."

The second meeting of the Advisory Council on November 17, 1947 was for the purpose of considering minimum Standards for Hospital Construction not involving Federal Aid. It was moved, seconded and unanimously carried that "Appendix A of Title 42 as promulgated by the United State Public Health Service applying to Hospital Construction and Equipment be adopted by the Montana State Board of Health as the minimum Standards and Regulations for Construction as applying to all new hospital construction, alterations and additions to the system."

The motion "It is recommended that plans for new hospital construction or alterations or additions to existing hospital structures not include any plans for the housing of personnel unless complete facilities for segregation of such personnel from patients are provided" also carried unanimously.

## REPORT OF OFFICE ACTIVITIES

At the outset of the program a study was made of Licensing Laws that were available at the time from other states. These laws were used as a guide in developing the Standards for Montana. In developing the regulations cognizance of the fact was taken that the Standards developed were not too rigid. The thinking was that the Regulations should be revised from time to time making them more rigid as standards improved in Montana hospitals. It was thought that if standards were too high it would throw a hardship on the hospitals to meet the maximum standards. The Standards as developed were submitted to the Hospital Advisory Council for their recommendations and approval. Following the revision of the Standards on recommendations of the Hospital Advisory Council the Regulations were duplicated and distributed to all Hospitals, Maternity Homes, Convalescent Homes and Homes for the Aged.

The work of the Hospital Consultant in the Division has been the collection of fees for licenses, the inspection and licensing of hospitals and related institutions; conferences with Administrators, Supervisory Personnel and Boards of Managers of such institutions; the compiling of reports following inspections and the subsequent letters of recommendations and suggestions to such hospitals and homes for their consideration and guidance. A very necessary part of her activities was the personal contact with various organizations in the state; the attendance at meetings such as the Montana State Nurses' Association, the Montana Hospital Association and individual civic organizations. Reports and papers were prepared and presented at the various meetings and so a closer relationship was established between individuals, communities and the State Board of Health.

The preparation of reports was another of the Consultant's activities. Each hospital and home were required by law to submit an annual report to the State Board of Health. This report accompanies the application for license. Annual reports are a vital source of information to the Hospital Advisory Council and Executive Officer not only for the statistical data contained therein but of the utilization of services offered by the hospital or home to the public. The application for license and the annual report are sent to all hospitals and homes in June so they may be returned to the State Board of Health immediately at the close of the fiscal year.

The conclusions observed at the end of the first year of activities are that:

1. The Hospitals, Maternity Homes, Convalescent Homes and Homes for the Aged in Montana need the guidance and support of

trained personnel in the construction and standardization of the physical plant, equipment and safety measures to insure the well being of persons while hospitalized.

2. A well established personal relationship to be created between the individual units and the State Board of Health.

3. A better understanding by the public of the purposes and aims of the State Board of Health in preparing a good standardization program.

4. Following the inspections made, a follow up will be necessary in order that many of these facilities will be brought up to the minimum standards required by the regulations.

## REPORT OF FIELD ACTIVITIES

All known existing Hospitals, Maternity Hospitals, Chronic and Convalescent Homes, and Homes for the Aged were granted a temporary license in 1947 pending an inspection by the Consultant.

## LICENSES ISSUED

| | |
|---|---|
| Hospitals | 68 |
| Maternity Homes | 6 |
| Convalescent Homes | 4 |
| Homes for the Aged | 27 |
| | 105 |

## INSPECTIONS MADE

| | |
|---|---|
| Hospitals | 24 |
| Maternity Homes | 2 |
| Convalescent Homes | 4 |
| Homes for the Aged | 13 |
| | 43 |

## PERSONNEL

Miss Marjorie DuMez was appointed Consultant in the Division but resigned from the position in May 1948. Miss DuMez was succeeded on June 15, 1948 by Miss Marjory V. Young. Mrs. Gladine McCarthy was appointed to the staff as Senior Stenographer.

In conclusion I wish to express my appreciatiton of the co-operation given this Division by the other Divisions in the State Board of Health.

Respectfully submitted,

Marjory V. Young, Consultant

# DIVISION OF DENTAL HEALTH

**Report Period: October 1, 1946—June 30, 1948**

## DIVISION PERSONNEL

**June 30, 1948**

**Director: F. I. Livingston, D. D. S., L. D. S., M. S. P. H.**
**Senior Stenographer: Harriette Tulloch, B. S.**

## DENTAL ADVISORY COMMITTEE

**Dr. Paul H. Stephens, Chairman, Anaconda, Montana.**
**Dr. E. S. Weyer, Billings, Montana**
**Dr. Wayne E. Thompson, Bozeman, Montana**

## DENTAL CONSULTANT IN CHARGE

**Dental Caries Control and Research Unit: K. E. Johnson, B. S. D.D.S.**

To: B. K. Kilbourne, M. D., Executive Officer, Montana State Board of Health.

Following is a report of the Division of Dental Health covering the period from October 1, 1946, when the Division was activated, to June 30, 1948.

### Legal Status of the Division of Dental Health

Chapter 125
Session Laws of Montana 1943

". . . . . .

Section 1. That a division of dental health be, and the same is hereby created, which shall be under the direct supervision of the state board of health, and conducted by a full time director of dental health.

Section 2. (As amended, Chapter 189, session laws of Montana 1947) The director of dental health shall be a dentist who is duly licensed in some state or territory, or the District of Columbia, to practice his profession, and who shall have had at least one school year of training in an accredited school of public health.

Section 3. The duties of the division of dental health shall be the development and promotion of those activities which result in the protection and improvement of the dental health of the people of the State.

Section 4. The state board of health shall adopt rules and regulations for the proper administration of this act. The state board of health through the division of dental health shall have supervision over the dentists employed by municipalities, counties, school districts, and custodial institutions.

. . . . ."

This act, and amendment thereto, was instigated by the Montana State Dental Association.

**General Statement**

The Division of Dental Health was activated October 1, 1946. During the first few months despite the usual routine of organizing a new division, establishing policies and programs, and gathering together the scattered administrative functions of the Division, it was possible to carry on considerable vital field work. The freedom of the Director to carry on the very essential professional and public relations work, was due to the exceptional education and business background, and interest in the program of Mrs. Jeanne Mayville who conducted the business affairs of the Division from its inception until September, 1947. At that time Mrs. Mayville resigned to join her husband, Captain R. Mayville of the Military Government in Germany.

Because dental preventive and control measures function most effectively in the child population, the basic goal of the Division of Dental Health is expressed as follows: "The program seeks to graduate the child from school with a normal, healthy mouth, a complete set of teeth in good repair, and with a knowledge and desire to maintain the condition." As a corollary to this program, a dental health program for preschool children was also established, and has gradually expanded during the last year. To reach the preschool children, the dental health program is largely dependent on integration with an active maternal and child health program with established well child health conference centers.

Research and statistical studies, and mass examinations were kept to a minimum, and only performed when essential to collect information vital to the service and education programs comprising the basic activities of the Division of Dental Health.

In actual practice, the various phases of the dental health programs can not be disassociated from one another. For convenience in reporting, the major activities have been separated.

**Dental Caries Control and Research Unit**

The Dental Caries Control and Research Unit is a mobile unit consisting of a Columbia Trailer, converted to serve as a dental office, and a "Jeep" station wagon, purchased June 27, 1947. Dental equipment and special instruments were provided on loan by members of several district dental societies. As no State Board of Health funds were made available, the service is financed by funds deposited in the Division of Dental Health Special Fund by sponsoring local organizations. This fund was established by the State Board of Examiners, State of Montana, to permit the Division of Dental Health legally to accept donations to finance the service.

A memorandum giving complete information on the Unit, policies governing the programs, and financial requirements was prepared and

distributed by the Division of Dental Health to all public health personnel, to asist local organizations desiring the services of the Dental Caries Control and Research Unit. On August 10, 1947, the Unit was stationed in Carter County where it remained until November 12. December 1, 1947, service was started in the west end of Sanders County, and the Unit was stationed there on June 30, 1948.

K. E. Johnson, B. S., D. D. S., who has had special training in dentistry for children conducts an excellent service and dental health education program as dental consultant in charge of the Dental Caries Control and Research Unit. Chart No. 1 is a synoptic report from August 10, 1947 to July 7, 1948, when the Trout Creek service was completed.

hart No. 7

# REPORT
## DENTAL CARIES CONTROL and RESEARCH UNIT
From August 11, 1947 to July 7, 1948

| Local Financial Participation | Counties | Unit Stations | Operating Days | Unit Mileage |
|---|---|---|---|---|
| $ 3,933.40 | Carter | 2 | 195½ | 1,387 |
| | Sanders (West End) | 3 | | |

| Type of Service | Examined | Would Not Accept Service | No Service Required | Admitted To Service | Discharged from Service | |
|---|---|---|---|---|---|---|
| | | | | | Completed | Incompleted |
| Pupils of 34 Grade Schools (1-8) | 693 | 33 | 119 | 541 | 526 | 15 |
| Preschool * | 84 | 1 | 23 | 60 | 60 | -- |
| Preschool Emergencies Only | 9 | -- | -- | 9 | -- | 9 |
| High School Students | 112 | -- | 17 | 95 | 93 | 2 |
| High School Emergencies Only | 7 | -- | -- | 7 | -- | 7 |
| Adult Emergencies | 14 | -- | -- | 14 | -- | 14 |
| **TOTALS** | 919 | 34 | 159 | 726 | 679 | 47 |

* Include Kindergarten Pupils

Because of the urgent need of dental service for children in certain areas of the State, this program was requested and apjproved by the Montana State Dental Association. It was realized at the time the Unit was first put in operation that certain principles of good program administration were being violated: (1) Funds would not be available to assist counties needing the service, but unable to make the required financial deposits. (2) Proper time would not be allowed for adequate community organization. (3) The dental consultant would be paid per operating day, and not provided any allowance for maintenance. (4) The dental consultant, not being a member of the Division staff could not be employed in other activities, and would be in the field for too long periods of time, which is against good public health practices. (5) Operation of the Unit would be dependent on continued recruitment of dentists qualified to operate a specialized service.

Despite the factors listed above, the Unit continues to fill a very essential need. Reports show the work performed is in line with reported averages for such activities.

**Dental Referral and Report Card Programs**

1. School: A dental referral and report card system was established early in 1947 as part of the school dental health program. Through the cooperation of the Department of Public Instruction, all school administrators in the State were informed of this program and the objectives. Order forms were provided to every superintendent of schools to facilitate obtaining the free kits provided individual schools by the Division of Dental Health. The kits containing referral cards, instruction sheets for teachers, and dental health education material have been provided by the Division for each participating school. District dental societies participate actively in the program. The collected cards are returned to the Division at the end of the school year. The results of a study made in the Division are then compiled in a report sent to every superintendent of schools in the State. Together with other pertinent information, the report shows the number of children in each school who are under dental supervision. This referral system is a vital part of the control and education program, and provides information on local dental health problems. It also shows the areas where Division field personnel, when obtained, should be stationed to conduct most effectively intensive control and education programs.

Chart No. 2 shows the excellent results for the school year 1947-1948. Deeply appreciated is the interest and cooperation of all concerned in including this system in dental health programs of local areas.

Chart No. 2

**Report of Dental Referral and Report Cards Returned**
School Dental Health Program, School Year 1947-1948

| Counties | Schools City, Town, Rural and Parochial | Children Reported as Having Received by Close of School Year Dental Examinations, and Care When Needed |
|---|---|---|
| 25 | 269 | 10,821 |

2. Preschool: A dental referral card system was developed for preschool children, and this program is gradually expanding. Due to the difficulty in having the cards returned, verifiable figures are not available to date. Several health departments are using these cards and have reported to the Division. Further expansion of the program depends on planning now under way with the State Parent Teachers Association, and directors of well child health conferences.

**Hospital Dental Service**

1. As Chairman, Hospital Dental Service Committee of the Montana State Dental Association, the Director, Division of Dental Health, has had a twofold interest in this field. Through the cooperation of the Consulting Engineer, Hospital Survey and Construction Division, State Board of Health, it has been possible to meet the majority of the architects in the State. New construction in several hospitals will provide or expand facilities in the physical plant for dental service for inpatients.

2. Well-illustrated, scientifically factual and modern books on oral health have been placed in libraries of most hospitals having schools of nursing education. Underway is an outline of lectures for undergraduate and graduate nurses. Earnest cooperation has been extended the Division of Dental Health by many directors of nursing education and the Executive Secretary, State Board of Examiners for Nurses.

**Professional Postgraduate Education**

1. College Courses: As part of the planned program of the Division of Dental Health, 11 dentists have been provided postgraduate instruction in dentistry for children, and related subjects at the College of Physicians and Surgeons, San Francisco, California. Ten of the dentists were selected, each by one district dental society; the eleventh being the dental consultant in charge of the Dental Caries Control and Research Unit. All recipients of the course are required to increase their caseload of child patients, and to clinic and lecture before local dental societies to present the latest findings in pedodontics.

This activity has been one of the best investments of the Division of Dental Health. It is part of a long term plan to be stimulated at periodic intervals by the importation of lecturer-clinicians of national reputation in the science of pedodontia.

Chart No. 3 shows a summary of the results of the program to June 30, 1948.

Chart No. 3

## SYNOPSIS OF REPORTS RECEIVED

### From

## DENTISTS PROVIDED POSTGRADUATE COURSE IN PEDODONTICS

| Number District Societies Represented | Number Sent to Course | Number Who Reported | Reported Course of Very Practical Value | Now Taking Graduate Work in East as Result of Course | Practice Now 30-50% Children | Regarded as Specialized Consultant by Local Dentists | Provided PG Instruction to Members District Dental Societies | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Lectures | Lectures and Clinics |
| 10 | 10 dentists in private practice ; 1 Public Health personnel. | 10 | 10 | 1 | 8 | 6 | 4 | 3 |

2. Cancer Control: Color slides on oral cancer, and the latest texts on this subject were provided by the Division of Dental Health to dentists particularly interested in cancer control.

3. Division Inservice Training: It is vitally important the Director, Division of Dental Health, be informed on the latest developments in dental science. He attended two four-day annual courses in Dental Medicine conducted in Billings by Hermann Becks, M. D., D. D. S., University of California. The Midwinter Clinic held annually in Chicago was attended in 1947. The Director, at this time, also represented the Montana State Dental Association at the annual meeting of the National Council on Dental Health, American Dental Association with specialists in dental public health and dentistry for children.

**Oral Health Education**

1. Oral health education permeates every activity of the Division of Dental Health, and is a part of every service program. For convenience in reporting, this activity may be divided into two types of oral health education: direct and indirect. Chart No. 4 is a synopsis of the direct type of health education.

Chart No. 4

## DIRECT ORAL HEALTH EDUCATION

### Conducted by Director, Division of Dental Health

| Type of Oral Health Education | PTA State District and Local | Local Health Committee | Service Clubs | School Children | Public Health Personnel | Dental Association & Societies | Nurses Undergraduates & Graduates | Teachers Undergraduates & Graduates* | College Students |
|---|---|---|---|---|---|---|---|---|---|
| Formal Lectures | | | | | | | 9 | 8 | 4 |
| Talks and papers | 6 | 4 | 9 | 6 | 2 | 13 | | 4 | 2 |
| Workshops, panels, seminars, study clubs | 4 | | 1 | | | 1 | | 1 | 1 |
| Inservice training | | | | | 2 | | | | |
| TOTAL AUDIENCES | 1575 | 342 | 690 | 260 | 340 | 710 | 295 | 1235 | 355 |

*--Includes annual meeting County Superintendents of Schools, school faculties and administrators.

Indirect oral health education is carried on through the distribution of literature and other material. The increased number of requests for literature from the general public indicates the growing interest in oral health education. Many thousands of copies of leaflets and charts to be used for teaching purposes were provided to school teachers, public health personnel, college faculties, and individual dentists. Hundreds of copies of technical and specialized literature were distributed by the Division of Dental Health. Requests from six out-of-state universities and one school of medicine for information on the dental health programs were complied with immediately. The latter information is used for teaching and research purposes by the institutions making the requests.

The Division of Dental Health maintains an up to date bibliography file on all dental phases of public health. There has been a large demand for this material which is used for lecture, teaching, and other purposes by dentists, teachers, and public health personnel.

Four articles were prepared in the Division and published in journals: one appeared in a journal of national distribution.

2. The Director, Division of Health Education, has given the fullest cooperation to the Division of Dental Health, and provided many avenues for the dissemination of oral health education. Through membership on the State Committee on Teacher Training in Health Education the Director, Division of Dental Health, was able to establish and maintain effective relationships with school administrators, college faculties and directors of Vocational Guidance; Rehabilitation; Health, Physical Education and Recreation; and welfare programs. The Director participated in the Health Education Workshop held in Missoula under Doctor Dorothy Nyswander, and the northwest district meeting of the National Association for Health, Physical Education and Recreation.

**Visual Education**

1. Display: A travelling exhibit designed by the Division of Dental Health staff, and built by a professional display maker, has been used at conventions of four profesional organizations, and viewed by approximately 900 instate and out-of-state professional personnel. The exhibit presents, in picture form, the functioning of the school dental health program, and the parts played by practicing dentists, teachers, parents, nurses, and others concerned.

2. Exhibit Material: Material, models, and films have been provided on loan to assist local groups to prepare exhibits. One of these exhibits, used by 4-H Club leaders has reached an estimated audience of 20,000. No reports are available on the other exhibits.

**Advisory and Consultation Service**

This service provided by the Division of Dental Health has been utilized by dentists, teachers, and other groups to the extent the Director averaged over 1,000 miles travel per month in filling requests.

**Special Activities**

1. Fluorine: On the request of the Division of Sanitary Engineering for information to assist in matters regarding contemplated new water supplies in two areas of the State, the Division of Dental Health conducted a fluorosis survey in the school populations of the areas to determine the prevalence of "mottled tooth enamel."

2. Sodium Fluoride: The Division of Food and Drugs made available 2 per cent solutions of sodium fluoride for shipment by the Division of Dental Health to dentists desiring to study the results of sodium fluoride applications to the teeth of children as a measure to help control tooth decay.

3. United States Public Health Service Conference: During the last week of June 1948, the Director, Division of Dental Health, attended in Washington, D. C. the conference of all state and territorial dental public health program directors. This conference was called by the U. S. Public Health Service to plan state participation in the new nationwide sodium fluoride therapy program.

The future maintenance and expansion of existing programs of the Division of Dental Health, and efficient statewide participation in the new national sodium fluoride treatment program will depend on the acquisition of adequate and healthful office quarters, and the recruitment and training of additional professional personnel for field work.

Respectfully submitted,

FRANCIS I. LIVINGSTON
Director, Division of Dental Health

# ITEMIZED DIVISIONAL EXPENDITURES

## July 1, 1946 to June 30, 1948

## M. S. Stanley, Fiscal Agent

| ADMINISTRATION | State | Federal | Grand Total |
|---|---|---|---|
| Salaries | $ 19,042.57 | $ 19,094.89 | $ 38,137.46 |
| P E R S | 2,745.84 | 3,298.39 | 6,044.23 |
| Travel | 1,147.09 | 1,718.91 | 2,866.00 |
| Office Expenses & Equipment | 996.82 | 1,467.00 | 2,463.82 |
| Insurance and Bonds | 1,546.82 | 470.58 | 2,017.40 |
| Maintenance and Repair | 1,614.13 | 2.10 | 1,616.23 |
| Miscellaneous | 997.79 | 1,425.32 | 2,423.11 |
| | $ 28,091.06 | $ 27,477.19 | $ 55,568.25 |
| **EPIDEMIOLOGY** | | | |
| Salaries | $ 7,404.93 | $ 5,511.45 | $ 12,916.38 |
| P E R S | 477.25 | | 477.25 |
| Travel | 1,487.92 | 1,229.64 | 2,717.56 |
| Office Expenses & Equipment | 977.65 | 1,622.56 | 2,600.21 |
| Scientific Supplies | 57.95 | 216.10 | 274.05 |
| Hospital Care | | 1,198.56 | 1,198.56 |
| Drugs and Arsenicals | 6,078.55 | 1,191.28 | 7,269.83 |
| Biologicals | 2,383.65 | | 2,383.65 |
| Miscellaneous | 256.33 | 144.25 | 400.58 |
| | $ 19,124.23 | $ 11,113.84 | $ 30,238.07 |
| **HYGIENIC LABORATORY** | | | |
| Salaries | $ 22,546.47 | $ 30,430.14 | $ 52,976.61 |
| P E R S | 146.50 | 311.29 | 457.79 |
| Travel | 227.75 | 288.45 | 516.20 |
| Office Expenses and Equipment | 945.84 | 3,767.94 | 4,713.78 |
| Scientific Supplies | 249.15 | 4,061.75 | 4,310.90 |
| Animals and Expense | 343.85 | 2,221.45 | 2,565.30 |
| Printing and Binding | 661.27 | 1,682.91 | 2,344.18 |
| Miscellaneous | 109.14 | 79.20 | 188.34 |
| | $ 25,229.97 | $ 42,843.13 | $ 68,073.10 |
| **SANITARY ENGINEERING** | | | |
| Salaries | $ 20,800.00 | 18,188.80 | 38,988.80 |
| P E R S | 69.30 | | 69.30 |
| Travel | 107.96 | 3,991.27 | 4,099.23 |
| Office Expenses and Equipment | 53.59 | 2,158.03 | 2,211.62 |
| Scientific Supplies and Equipment | 234.83 | 837.39 | 1,072.22 |
| Printing and Binding | 31.25 | 337.29 | 368.54 |
| Miscellaneous and Express | | 1,613.81 | 1,613.81 |
| | $ 21,296.93 | $ 27,126.59 | $ 48,423.52 |
| **VITAL STATISTICS** | | | |
| Salaries | $ 17,558.58 | $ 5,799.19 | $ 23,357.77 |
| P E R S | 60.00 | | 60.00 |
| Travel | 14.05 | 41.95 | 56.00 |
| Office Expense and Equipment | 659.08 | 1,034.14 | 1,693.22 |
| Printing and Binding | 583.93 | 1,239.60 | 1,823.53 |
| | $ 18,875.64 | $ 8,114.88 | $ 26,990.52 |
| **FOOD AND DRUG** | | | |
| Salaries | $ 12,883.00 | $ 8,477.97 | $ 21,360.97 |
| P E R S | 273.30 | | 273.30 |
| Travel | 245.37 | 2,907.97 | 3,153.34 |
| Office Expense and Equipment | 609.11 | 602.94 | 1,412.05 |
| Scientific Supplies and Equipment | 138.68 | 864.11 | 1,002.79 |
| Printing and Binding | 286.20 | 171.90 | 458.10 |
| Miscellaneous | 30.27 | 8.31 | 38.58 |
| | $ 14,665.93 | $ 13,033.20 | $ 27,699.13 |

| | State | Federal | Grand Total |
|---|---|---|---|
| **INDUSTRIAL HYGIENE** | | | |
| Salaries | $ 9,614.41 | $ 6,374.19 | $ 15,988.60 |
| P E R S | 94.80 | | 94.80 |
| Travel | 1,008.49 | 432.89 | 1,441.38 |
| Office Expenses and Equipment | 797.81 | 346.49 | 1,144.30 |
| Scientific Supplies and Equipment | 721.15 | 1,238.73 | 1,959.88 |
| Janitor Service | 1,200.00 | | 1,200.00 |
| Miscellaneous | 279.20 | 5.82 | 285.02 |
| | $ 13,715.86 | $ 8,398.12 | $ 22,113.98 |
| **MERIT SYSTEM** | | | |
| | | $ 6,861.98 | $ 6,861.98 |
| **PLAGUE INVESTIGATION** | | | |
| Salaries (2 months) | | $ 950.00 | $ 950.00 |
| Truck Expense and Supplies (2 months) | | 120.92 | 120.92 |
| | | $ 1,070.92 | $ 1,070.92 |
| **TRAINING** | | | |
| Stipend | $ | $ 2,905.00 | $ 2,905.00 |
| Tuition | 285.00 | 1,057.60 | 1,342.60 |
| Travel | 750.78 | 2,398.15 | 3,148.93 |
| | $ 1,035.78 | $ 6,360.75 | $ 7,396.53 |
| **BLOOD BANK** | | | |
| Office Supplies | $ 9.43 | | 9.43 |
| Office Rent | 150.00 | | 150.00 |
| Miscellaneous and Express | 492.07 | | 492.07 |
| | $ 651.50 | | $ 651.50 |
| **CRIPPLED CHILDREN** | | | |
| Salaries | $ 10,440.54 | $ 12,421.06 | $ 22,861.60 |
| P E R S | 165.01 | 136.36 | 301.37 |
| Doctor's Fees & X-Ray Treatment | 14,009.35 | 25,284.12 | 39,293.47 |
| Hospitalization | 44,016.09 | 79,574.25 | 123,590.34 |
| Travel | 5,652.31 | 1,355.30 | 7,007.61 |
| Communications | 483.09 | 9.88 | 492.97 |
| Office Supplies & Equipment | 830.37 | 101.52 | 931.89 |
| Clinic Expenses | 278.52 | 77.82 | 356.34 |
| Appliances | 857.24 | 3,951.77 | 4,809.01 |
| | $ 76,732.52 | $122,912.08 | $199,644.60 |
| **MATERNAL AND CHILD HEALTH** | | | |
| Salaries | $ 12,702.83 | $ 20,311.85 | $ 33,014.68 |
| P E R S | 124.90 | 450.43 | 575.33 |
| Travel | 14.06 | 3,086.18 | 3,100.24 |
| Communications | | 3,721.91 | 3,721.91 |
| Office Supplies and Equipment | | 4,609.94 | 4,609.94 |
| Scientific Supplies and Equipment | | 3,647.23 | 3,647.23 |
| Printing & Binding | | 1,898.06 | 1,898.06 |
| Publications for Distribution | | 1,275.80 | 1,275.80 |
| Contingent | | 18.88 | 18.88 |
| | $ 12,841.79 | $ 39,020.28 | $ 51,862.07 |
| **PUBLIC HEALTH NURSING** | | | |
| Salaries | $ 10,635.00 | $ 19,407.12 | $ 30,042.12 |
| County Nurses Salaries | 335.00 | 36,848.57 | 37,183.57 |
| Travel | 1,565.65 | 9,588.53 | 11,154.48 |
| | $ 12,535.65 | $ 65,844.22 | $ 78,379.87 |
| **PUBLIC HEALTH EDUCATION** | | | |
| Salaries (1 year only) | | $ 5,026.75 | $ 5,026.75 |
| Travel | | 1,427.57 | 1,427.57 |
| | | $ 6,454.32 | $ 6,454.32 |

| | State | Federal | Grand Total |
|---|---|---|---|
| **DENTAL HEALTH** | | | |
| Salaries | $ 11,571.78 | | $ 11,571.78 |
| P E R S | 53.59 | | 53.59 |
| Travel | 633.94 | 1,625.63 | 2,259.57 |
| Office Expenses and Equipment | 3,859.08 | 457.13 | 4,316.21 |
| Purchase of Vehicle | 3,371.16 | | 3,371.16 |
| Printing and Binding | | 1,065.81 | 1,065.81 |
| Miscellaneous | | 167.12 | 167.12 |
| | $ 19,489.55 | $ 3,315.69 | $ 22,805.24 |
| **TUBERCULOSIS CONTROL** | | | |
| Salaries | $ 20,975.28 | $ 3,059.13 | $ 24,034.41 |
| P E R S | 89.20 | 190.23 | 279.43 |
| Travel | 8,581.68 | 4,068.78 | 12,650.46 |
| Purchase of Vehicle | 1,429.33 | 1,429.00 | 2,858.33 |
| Office Supplies & Equipment | 12,618.80 | 2,589.35 | 15,208.15 |
| Scientific Supplies and Equipment | 11,562.41 | 4,271.86 | 15,834.27 |
| Miscellaneous | 2,354.16 | 10.80 | 2,364.96 |
| Heat, Light and Rent | 1,099.74 | 82.78 | 1,182.52 |
| | $ 58,710.60 | $ 15,701.93 | $ 74,412.53 |
| **HOSPITAL SURVEY** | | | |
| Salaries | $ 3,741.63 | 116.00 | 3,857.63 |
| Travel | 576.63 | 6.97 | 583.60 |
| Office Supplies and Equipment | 946.92 | 50.80 | 997.72 |
| Miscellaneous | 296.18 | | 296.18 |
| | $ 5,561.36 | $ 173.77 | $ 5,735.13 |
| **HOSPITAL STANDARDS & LICENSE—1 yr. only** | | | |
| Salaries | $ 4,050.05 | | $ 4,050.05 |
| Travel | 433.70 | | 433.70 |
| Office Supplies and Equipment | 900.23 | | 900.23 |
| | $ 5,383.98 | | $ 5,383.98 |
| **CEREBRAL PALSY—1 yr. only** | | | |
| Salaries | | $ 6,185.00 | $ 6,185.00 |
| Travel | | 458.47 | 458.47 |
| Office Supplies and Equipment | | 1,304.59 | 1,304.59 |
| Scientific Supplies and Equipment | | 505.64 | 505.64 |
| Appliances | | 129.65 | 129.65 |
| | | $ 8,583.35 | $ 8,583.35 |
| **CASCADE COUNTY** | | | |
| Salaries | $ 1,698.55 | $ 10,572.83 | $ 12,271.38 |
| Physician's Fees | | 2,115.75 | 2,115.75 |
| Travel | | 980.85 | 980.85 |
| | $ 1,698.55 | $ 13,669.43 | $ 15,367.98 |
| **FERGUS COUNTY** | | | |
| Salaries | | $ 3,491.54 | $ 3,491.54 |
| **GALLATIN COUNTY** | | | |
| Salaries | $ 1,290.00 | $ 4,303.88 | $ 5,593.88 |
| Travel | | 1,106.63 | 1,106.63 |
| | $ 1,290.00 | $ 5,401.51 | $ 6,700.51 |
| **LEWIS AND CLARK COUNTY** | | | |
| Salaries | $ 1,095.00 | $ 1,502.29 | $ 2,597.29 |
| Travel | | 557.45 | 557.45 |
| | $ 1,095.00 | $ 2,059.74 | $ 3,154.74 |
| **MISSOULA COUNTY** | | | |
| Salaries | $ 2,880.00 | $ 7,992.68 | $ 10,872.68 |
| Travel | | 531.56 | 531.56 |
| | $ 2,880.00 | $ 8,524.24 | $ 11,404.24 |
| GRAND TOTALS | $340,905.90 | $447,561.70 | $788,467.60 |
| **EMERGENCY MATERNAL AND INFANT CARE** | | | |
| Medical Services and Hospitalization | | $129,788.09 | |