TWENTY - THIRD
BIENNIAL REPORT

of the

Montana
State Board of Health

For the Years
1945 - 1946

VITAL STATISTICS FOR THE YEARS
1944 - 1945

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STATE OF MONTANA
STATE BOARD OF HEALTH

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ADMINISTRATION DIVISION

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

The past biennial period has been one in which the State Board of Health has been confronted by many problems, chief of which has been that of maintaining sufficient trained personnel to carry out a well-rounded Public Health Program that could meet the needs of all the people all of the time.

On April 1, 1946 Dr. W. F. Cogswell, Executive Officer, under whose guidance the department had developed from its early inception to one of the most important in state government, resigned. At the time of his resignation he was dean, in point of service, of all the state health officers, and Montana has reason to feel proud of the able direction he gave to the growth and development of public health work during his years of service.

The legislature of 1945 added one new division, that of Tuberculosis Control, to the State Board of Health. It also passed a law making possible the organization of full-time county or district health departments. This, from the standpoint of public health, is the greatest need in the State at the present time. Less than one-third of the population of the State has available the minimum amount of public health services which are considered essential if the people are to enjoy the maximum of health.

Another critical situation confronting the department of health is that of adequate office space for the department. At the present time different divisions occupy office space in four different buildings, one of them being two and one-half miles from the Board of Health Building. This adds to confusion in the integration of the work of the different divisions and to administrative direction.

All the divisions during the biennial period have at some time been seriously handicapped by lack of personnel. This has been particularly true as to trained professional personnel.

In spite of all the problems and difficulties resulting from the late war, this State has enjoyed the lowest incidence especially from epidemics and communicable diseases, of any biennial period for which the State Board of Health has records.

MERIT SYSTEM COUNCIL

Employees of the State Board of Health are selected through the State Merit System administered by the Merit System Council. The Council members are Dr. Francis A. Thomson of Butte, The Right Reverend Emmet J. Riley of Helena, and Dr. E. Martin Larson of Great Falls. The Council employs Melvin P. Martinson of Helena as Supervisor. During the past two years, extensive revisions have been made in classification and compensation plans for the agency. Many new classes of positions have been added and specifications for older positions have been brought up to date. Examinations have been given for all classes of clerical positions and a qualifying examination is planned for professional employees in the near future. In 1945 and the first ten and one-half months of 1946, twenty-one new employees of the State Board of Health have been selected from Merit System registers after passing appropriate examinations.

The Merit System rules also provide for a uniform system of vacation and sick leave as well as standard procedures for promotions and salary advancements.

DIVISION OF COMMUNICABLE DISEASES

The following is a biennial report of activities of the Division of Communicable Diseases and the Division of Rural Health Work for the period October 1, 1944 to September 30, 1946.

The personnel of the Department includes:

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

Nancy Mihelic, Senior Stenographer

The incidence of communicable disease and the deaths resulting therefrom have been the lowest for any biennial period in the records of the State Board of Health.

The work of the department has consisted of field investigations of diseases threatening to appear in epidemic proportions, assistance to local health officers in controlling threatened epidemics, assistance in immunization campaigns and other control measures, and educational work as related to the spread and control of communicable disease. Accurate records have been kept of cases reported through local health officers showing the incidence of the various communicable diseases as they occurred throughout the state during this period.

The accompanying tables show the number of cases of communicable diseases reported to the State Board of Health. Table I shows the cases reported for the last three months of 1944, 1945, and the first nine months of 1946. Table II gives the record of the principal communicable diseases as reported in Montana for each year since 1920.

Influenza showed a considerable increase during the months of January, February and March, 1946. The epidemic was mild in character and was not reflected by a marked increase of deaths from influenza during that period.

Encephalitis. There has been a marked decrease in the number of cases of encephalitis reported during this biennial period over the preceding period.

Typhoid Fever. 1945 showed a slight increase in the number of cases of typhoid fever as compared with the previous biennium, the number of cases reported being 45. There has been considerable reduction in 1946, only 21 cases being reported in the first nine months. Most of the cases have been single cases and nothing resembling an epidemic in any one area has occurred.

Rocky Mountain Spotted Fever. A smaller number of cases of Rocky Mountain Spotted Fever has been reported during this biennium than during any similar period on record. The reduction in incidence of human cases cannot be explained alone on a basis of immunizations done, but the incidence of ticks throughout the state has been markedly less than for any other similar period. Only two cases were reported in 1945 and eight cases in 1946.

Diphtheria. During 1945 there was an increase in the cases of diphtheria in the state over those of the years of the previous biennium. The number of cases was greater than it should have been, as diphtheria is one disease for which we have practically absolute protection, and shows the need for a more intensive immunization campaign.

Tularemia. The number of cases of tularemia has been practically the same for each year, although markedly less than it was during the previous biennium. Whether this reduction in cases is due alone to the decreased incidence of ticks throughout the state is questionable.

Sylvatic Plague. During the summers of 1944, 1945 and 1946 the State Board of Health continued to operate a laboratory truck for the investigation and detection of bubonic plague in rodents. No new areas of infection were found in any of the counties of the state during these seasons. There has been a marked decrease in the rodent population, particularly ground squirrels, in most sections of the state during the biennial period. Whether this has been due to poisoning campaigns or due to epizootic occurring among rodents, is not certain.

Poliomyelitis. This is the one disease that has appeared in epidemic proportions in the state each year during the biennium. In 1945, the cases were limited particularly to three counties in the state, Yellowstone, Big Horn and Carbon, while in 1946 the incidence was general throughout the state and cases were reported from 33 counties. 1946 was characterized by one of the largest epidemics throughout the United States and the incidence per 100,000 population in Montana was considerably lower than many of the other states.

Cancer. Beginning with the fiscal year 1946-1947, certain funds have been made available to the State of Montana by the Federal Government for Public Health work, designated to be used in the cancer program. This program is just being initiated and consists of an educational and service type of program. It is being worked out on a cooperative basis with the Montana Division of the Women's Field Army. A register of cancer cases will be maintained in the State Board of Health office so that more knowledge may be available as to the incidence of cancer and the results of the various types of treatment that are being made available. Provision will be made for more early and adequate diagnosis, particularly for indigent or semi-indigent cases. Through the Cancer Committee and the State Medical Society a more intensive program of reporting cancer cases will be carried on and adequate studies made on the reports.

VENEREAL DISEASES

Venereal disease still continues to be one of the major communicable disease problems. While syphilis seems to be fairly well reported throughout the State, we do know that the cases of gonorrhea reported do not reflect the actual incidence.

During the biennial period we have continued to receive from the Armed Forces reports of contacts throughout the state who are suspected of being sources of venereal infection developing in military per-

sonnel. Where sufficient information to identify the contacts has been made available, the follow-up has been done through local health officers and nurses, and many of these reported suspected sources of infection have been examined and placed under treatment. The number of such contacts investigated during the period has been 406.

No new clinics have been organized during the biennial period but the venereal disease clinic operated by the Health Department at Great Falls continues, and treatment has been provided through the Health Department in Gallatin County for indigent cases. In many instances local county physicians have also made free treatment available for indigent cases.

The State Board of Health has made available drugs for the treatment of syphilis, free to any physician in the state upon request. 17,373 doses of arsenicals, 17,890 doses of bismuth, 18,600,000 units of penicillin and 3,500 grams of sulfa drugs, for the treatment of syphilis and gonorrhoea, have been distributed to private physicians and the clinic. The total cost to the state for this period was $4,302.17.

BIOLOGICALS

The State Board of Health has continued to make available at State Board of Health prices, to local Boards of Health and schools, immunization material for smallpox, diphtheria, typhoid fever and whooping cough. There has been a marked increase in the last biennial period in the use of immunization material for whooping cough. Tables IX, X and XI show the amounts distributed by the State Board of Health during the biennial period.

DIVISION OF RURAL HEALTH

The Division of Rural Health continues to be combined with the Division of Epidemiology, the Epidemiologist serving as the Director. With the passage of an enabling Act for the creation of County and District Health Units by the 1945 legislature, considerable interest has been developed in such organizations. One of the former full-time City-County Health Departments has been reorganized under the new law. No new units have been organized in the state during this period. At the present time there are four counties with which the cities combine to operate as full-time health departments. One other county would be so operating if a person to fill the position of full-time health officer was available. It is hoped that during the next biennial period considerably more interest and activity may be developed and several full-time units organized. One of the full-time units which was without a health officer at the end of the last biennial period, has been supplied during the period.

TABLE I

Communicable Diseases Reported in Montana

Including Deaths from Communicable Diseases Not Previously Reported as Cases

Diseases	1944 (3 mos.)	1945	1946 (9 mos.)
Anthrax	.....	2,483	.....
Chickenpox	1,045	2,283	1,026
Diphtheria	37	80	44
Dysentery, Amoebic	2	1	3
Dysentery, Bacilliary	25	8	1
Dysentery, Unclassified	1	1	1
Encephalitis, Epidemic	1	5	4
Influenza	103	2,377	821
Malaria	5	30	7
Measles	29	493	1,688
Measles (German)	24	219	521
Meningitis, Meningoccus	6	24	12
Meningitis, Non-Epidemic	.....	1	2
Meningitis, Pheumococcic	.....	1	1
Mumps	298	1,530	1,156
Pneumonia	61	272	341
Poliomyelitis	7	86	103
Rocky Mtn. Spotted Fever	1	2	8
Scarlet Fever	205	698	274
Septic Sore Throat	16	139	49
Smallpox	2	4	1
Tuberculosis	132	373	273
Tularemia	1	10	12
Typhoid Fever	9	45	21
Undulant Fever	5	9	7
Whooping Cough	249	340	138
Gonorrhoea	72	341	237
Syphilis	94	459	251
Tetanus	.....	1	1
Trachoma	1	28	46

TABLE II

Record of Certain Important Diseases from 1920

Number of Cases Reported Each Year

Year	Tubercu-losis	Ty-phoid	Diph-theria	Small-pox	Scarlet Fever	Menin-gitis	Polio-myelitis	Spot'd Fever	Meas les
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 (9 mos.)	273	21	44	1	274	15	103	8	1,688

TABLE III

Poliomyelitis—1944 (3 mos.)

By Sex and Age Groups and Month of Onset

	0-9		10-19		20-29		30-39		40 & Over		
Month	M	F	M	F	M	F	M	F	M	F	Total
October		2		1						1	4
November			1								1
December					1			1			2
		2	1	1	1			1		1	7

TABLE IV

Poliomyelitis—1945

By Sex and Age Groups and Month of Onset

	0-9		10-19		20-29		30-39		40 & Over		
Month	M	F	M	F	M	F	M	F	M	F	Total
January									1		1
February		1	1								2
March											
April											
May											
June	1										1
July	2		1								3
August	3	1	3	2							9
September	11	11	2	4	2	1	1	2			34
October	8	6	4	4		2	1	1			26
November	3	1	1								5
December	2	1	1					1			5
	30	21	13	10	2	3	2	4	1		86

TABLE V

Poliomyelitis—1946 (9 mos.)

By Sex and Age Groups and Month of Onset

	0-9		10-19		20-29		30-39		40 & Over		
Month	M	F	M	F	M	F	M	F	M	F	Total
January	2	1		1		1	1				6
February	1	4				1					6
March	3	2									5
April											
May								1			1
June				2							2
July	8	4	5	2							19
August	14	10	4	2	1		1				32
September	7	4	8	3	5	3	2				32
	35	25	17	10	6	5	4	1			103

TABLE VI

Syphilis Cases Reported in 1944 (3 mos.)

By Age Groups, Sex and Stage of Disease

Age Groups	MALE						FEMALE					
	Primary	Secondary	Tertiary	Congenital	Not Stated	Total	Primary	Secondary	Tertiary	Congenital	Not Stated	Total
0-14					2	2					2	2
15-24	4	1			8	13			2		5	7
25-39		1	3		3	7		3	4		5	12
40-59			10			10		1	1		1	3
60-Over			3			3			1			1
No Age Given		2	2		23	27		2	1		4	7
	4	4	18		36	62		6	9		17	32

TABLE VII

Syphilis Cases Reported in 1945

By Age Groups, Sex and Stage of Disease

Age Groups	MALE						FEMALE					
	Primary	Secondary	Tertiary	Congenital	Not Stated	Total	Primary	Secondary	Tertiary	Congenital	Not Stated	Total
0-14				13	8	21	2	2	1	14	4	23
15-24	19	3	11	2	17	52	13	10	12	7	28	70
25-39	11	7	18	2	15	53	8	15	20		15	58
40-59	4	6	39	2	16	67		3	16		7	26
60-Over		2	20		4	26			6		2	8
No Age Given	1		9		23	33	1		3		18	22
	35	18	97	19	83	252	24	30	58	21	74	207

TABLE VIII

Syphilis Cases Reported in 1946 (9 mos.)

By Age Groups, Sex and Stage of Disease

Age Groups	MALE						FEMALE					
	Primary	Secondary	Tertiary	Congenital	Not Stated	Total	Primary	Secondary	Tertiary	Congenital	Not Stated	Total
0-14	1			1	2	4	1			1	2	4
15-24	8	7	2	1	3	21	6	15	9		1	31
25-39	21	10	15		12	58	7	14	14		8	43
40-59	4	3	20	1	4	32		5	10		3	18
60-Over			7		2	9		1	1			2
No Age Given		2	5		9	16			4		9	13
	34	22	49	3	32	140	14	35	38	1	23	111

TABLE IX

Amount of Various Immunization Materials Distributed by State Board of Health—1944 (3 mo.)

Month	Diphtheria Toxoid	Smallpox Vaccine	Typhoid Vaccine	Pertussis Vaccine	Diptussis Vaccine	Scarlet Fever Immuniz
October	840	135		150		
November	810	270	1	175		10
December	1,770	750	20	100		
	3,420	1,155	21	425		10

TABLE X

Amount of Various Immunization Materials Distributed by State Board of Health—1945

Month	Diphtheria Toxoid	Smallpox Vaccine	Typhoid Vaccine	Pertussis Vaccine	Diptussis Vaccine	Scarlet Fever Immuniz
January	480	95		200		
February	1,950	685	40	75		
March	1,260	295	20			
April	330	285		75		
May	450	295	160	25		
June	213	85	40	250		
July	270	140	40	150		
August	450	225	85	175		
September	270	105	5	75		
October	1,110	355	40	300		
November	540	85	40	75		
December	240	180	20		10	1
	7,563	2,830	490	1,400	10	1

TABLE XI

Amount of Various Immunization Materials Distributed by State Board of Health—1946 (9 mo.)

Month	Diphtheria Toxoid	Smallpox Vaccine	Typhoid Vaccine	Pertussis Vaccine	Diptussis Vaccine	Scarlet Fever Immuniz
January	90	80		125		
February	270	175		100	250	
March	270	500		50		
April	1,650	2,000		105		
May	930	560		150	10	
June	330	183	14	100		
July	210	310		150		
August	200	120		175		
September	880	420	20	535	530	
	4,830	4,348	34	1,490	790	

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

From: Division of Maternal and Child Health

Personnel as of October 1, 1946:

Robert E. Mattison, M. D., Director
Vacancy, Assistant Director
K. Elizabeth Anderson, M. A., Health Education Consultant
Vacancy, Field Health Educator
Vacancy, Nutritionist
Isabel Peaslee, Senior Clerk
Lois O'Connell, Senior Stenographer
Margaret Sandbo, Senior Stenographer
Marjorie Wieglenda, Senior Stenographer
Shirley Broderson, Junior Clerk-Typist

The Legislative Assembly of 1945 enacted legislation changing the name of the Child Welfare Division to the Division of Maternal and Child Health.

The Division of Maternal and Child Health is responsible for a statewide program to improve the health of mothers and their children. This program is enhanced through funds available under Title V of the Social Security Act which is administered by the U. S. Children's Bureau, Federal Security Agency. Administrative duties require formulation of plans and budgets for approval by the Children's Bureau, preparation of reports of the Division as required by the Children's Bureau, and supervision of all services under the jurisdiction of the Division. Further duties have included the administration of the E. M. I. C. program and the local administration of the American Academy of Pediatrics Child Health Survey.

The Maternal and Child Welfare Committee of the Montana State Medical Association serves as a technical Advisory Committee to the Division. All literature is reviewed by this committee and their approval is obtained for all medical procedures.

Consultation is supplied to the Division through a regional medical consultant of the U. S. Children's Bureau.

The Division herewith submits the biennial report for the period October 1944 through September 1946 of the following activities.

1. **Literature Distribution:**

Prenatal letters in series of nine are sent monthly to all patients authorized under the E. M. I C. program. These letters are also sent to other expectant mothers at the request of the attending physician, the public health nurse, or the mother.

The Children's Bureau pamphlet entitled "Infant Care" is distributed to the various hospitals in the state so that every mother with a newborn baby may be given a copy before she leaves the hospital. The

pamphlet is distributed through physicians and public health nurses for mothers who are delivered at home. The quota for Montana is 6,000 copies annually. Two thousand four hundred are distributed as described, by the Division. Three thousand six hundred are distributed by the two U. S. Representatives. This number is inadequate for the number of births in the state.

Other pamphlets are distributed only on request. An attempt is made to provide authentic material on the various aspects of maternal and child health and related health problems. These pamphlets give information concerning maternal, infant, and child care; nutrition; social, mental, and personal hygiene; public health; hearing and vision conservation; and dental health.

Additional literature is available through the Health Education Service.

In the period covered by this report, 3,125 series of prenatal letters, 14,545 pamphlets, and 4,800 copies of "Infant Care" were distributed.

2. **Silver Nitrate:**

Silver Nitrate ampules have been furnished to hospitals, physicians, and nurses for prophylactic treatment of the eyes of newborn babies. During the biennium 16,490 ampules were distributed.

3. **Well Child Conferences:**

These conferences are conducted by local physicians assisted by public health nurses. The physicians are remunerated for their services. 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. Conferences have been conducted in Cascade and Gallatin Counties through the local health department and in Ravalli, Valley, Chouteau, Teton, and Yellowstone Counties through participation by local physicians.

4. **Premature Infant Care Program:**

This program as described in previous reports has been maintained. A consultant is available to hospitals and physicians for special care as well as demonstration of care for premature infants. If possible, incubators are supplied for hospital use.

The demonstration program for premature care in Cascade County as described in the previous report has been maintained.

5. **Maternity Hospital Licensing:**

The necessary inspections for licensing the various hospitals was curtailed for lack of personnel. However, at least one medical and nursing inspection was made during the biennium. The cooperation shown by the hospitals was most gratifying. In spite of wartime limitations, many improvements were made. There is need for further improvements.

To date no licenses have been issued as all necessary inspections have not been completed. The inspections that have been made have revealed the need for a general minimum standard law for all hospitals operating within the state. Since such a law is necessary, and since it has been impossible to issue licenses provided by the present law, the activities of the Division in this regard is planned to be those of inspection, demonstration, and recommendation. General consultation is provided in the same manner as that provided under the premature infant care program.

The present regulations need to be rewritten. It is hoped that this can be done as part of a minimum Standard Law if such legislation is enacted.

6. **Maternal and Infant Mortality and Stillbirth Studies:**

Maternal mortality rate in Montana compares favorably with any other registration area. There has been a steady decline in the rate for the past several years. A detailed study of all maternal deaths since 1940 is being conducted. A complete report of these will be made at a later date to the Montana State Medical Association through the Medical Advisory Committee.

Infant mortality and stillbirth studies have not been made. Pertinent data concerning these deaths are kept in the office for future study if personnel becomes available.

7. **Postgraduate Education for Physicians:**

This program has not functioned during the war. The continuation of this program is strongly urged by the Medical Advisory Committee and plans for its continuation in the near future are being formed.

8. **Emergency Maternal and Infant Care Program:**

The regulations of this program were altered somewhat in October 1945. Since that time, the program has operated well. There have been objections to some policies. However, practically all physicians and hospitals in the state are continuing participation.

The number of authorizations has shown a steady decrease since the end of the war and will continue to decrease as the Armed Forces become smaller. The program is limited to the duration of the war and six months thereafter as provided by the Congress of the United States.

A study of the care of these patients in Montana is being made. Since most physicians practicing obstetrics in Montana have participated in the program, valuable information concerning the care of expectant mothers in Montana is anticipated.

The required cost accounting statements submitted by participating hospitals has produced comparative figures of incalculable value. They can be used not only to determine the cost of hospital care but also can be used by the hospitals in planning their management on a more equitable basis.

In the biennium, 2,272 maternity cases and 912 infant cases were cared for under program. $153,509.72 was paid physicians and $153,-444.68 was paid hospitals.

9. **Premarital and Prenatal Examinations:**

The Legislative Assembly of Montana at the 29th Session enacted a law relating to the prevention of congenital syphillis. This required a standard serological test to be performed on all pregnant women and further that the result be reported to the State Board of Health and that all birth certificates shall state if such blood test was made. The first month after the law was enacted, 40 per cent of the birth certificates showed evidence of such tests. At the present time, 95 per cent of the birth certificates contain the required information.

A law requiring similar examinations to be performed on persons requesting marriage licenses is recommended by the Division. The Montana State Medical Association, the Montana Parent and Teachers' Association, Montana Federation of Women's Clubs, the Montana Federation of Business and Professional Women, and the Montana Public Health Association favor similar legislation.

10. **Summer Round-Up of Children:**

The Director of the Division served as State Chairman for the Summer Round-Up project of the Montana Parent and Teacher Association. The reports on this activity have not been compiled. Since the resignation of the Director who acted as chairman, this project will be carried on by the Montana Parent and Teacher Association. The Division will act only in a consultant capacity.

11. **Cooperation With Other Agencies:**

The services of the Division are made available to all agencies and professional and lay groups. Professional meetings attended included the Montana State Medical Association, Public Health Association, Tuberculosis Association, Parent and Teacher Association, Hospital Association, and Vocational Rehabilitation Council.

The Director was a member of the Governor's Committee for a Hospital Survey of Montana. A preliminary report has been submitted by this committee.

The Assistant Director acted as local Executive Secretary for the American Academy of Pediatrics Study of Child Health Services. This study was sponsored by the Montana State Medical Association through its Maternal and Child Welfare Committee. A preliminary report on the Child Health Services in Montana will be available before the report is made by the American Academy of Pediatrics.

12. **Health Education:**

Health Education Services aim (1) to give scientific knowledge in the field of health and (2) to create proper attitudes for the practical application of accepted health principles and procedures. Through this service it is hoped to stimulate public thinking and action so that both personal and public health will be protected, maintained, and improved.

Health Education Service is given (1) through cooperation with other agencies by committee work, participation in group meetings, institutes, workshops and addresses (2) direct teaching (3) examination and distribution of literature (4) circulation of films and posters.

The staff includes a Health Education Consultant and a Field Consultant in Health Education. With the resignation of the Health Education Consultant in January, 1946, the Field Consultant was appointed to that position and at the present time the position of Field Consultant has not been filled.

Through the present biennium efforts have continued to be chiefly directed through the schools. The school health program has shown considerable progress. Emphasis has been placed on the development of all phases of this program, i.e., health service, healthful school living, health guidance, and a healthful environment. The influence of the school in the improvement and development of the public health program is recognized as a potential force in the community.

Close relationship has been continued with the State Department of Public Instruction. The consultants work closely with the supervisors in that department, the state high school supervisor, the elementary supervisor, and the supervisor of health, physical education and recreation.

In the fall of 1945, the field consultant in health education took part in each of the county institutes held by the State Department of Public Instruction. This made it possible to contact practically all of the teachers, both high school and elementary in second and third class school districts and all the elementary teachers in rural schools as well as many city and county superintendents and principals.

The Executive Officer, the Maternal and Child Health Director, the Director of Public Health Nursing, the Generalized Public Health Nursing Consultant, and the Health Education Consultant have met frequently with public school personnel at local teachers' meetings.

Field appraisals have been continued. The appraisal of the health program in a school requires from a day to as long as two weeks, depending upon the size of the system. Whenever possible, a return visit is made. If possible the administrator and public health nurse accompany the consultant. When this is not possible or feasible, the report, with recommendations, is given in both oral and written form. The recommendations usually include suggestions for correction, improvement, or expansion of the program as it already exists. In all aspects of these school visits one of the fundamental aims is to try to show administrators and teachers how to assume their responsibilities in the health program.

Since the school lunch and physical education activities both make important contributions to the health of the student, encouragement is always given for the development or expansion of these programs. Coordination of health and guidance programs is always recommended.

During the spring of 1946, Directors of the Division of Sanitation and Division of Food and Drug and Health Education Consultants took

part in the clinic for the study of Building and Renovation of Schools, sponsored by the School Administrators Association.

There has been more participation in teacher training in health education than formerly. The need for emphasis in this phase of the program has been apparent to members of both state and local public health staffs. The State Superintendent of Public Instruction also has been aware of the need and has been anxious to have health education included in pre-service teacher-training curricula and has asked that teacher-training departments offer extension courses in health education to teachers in-service.

Furthermore, it is expected that teachers who have had a basic course in health education will contribute to the public health program in their respective communities. They will learn what a full time public health unit can do for a community and they will probably give impetus to the support or creation of county or district full time public health units. The Director and Health Education Consultants were members of a state committee, organized for the purpose of writing a suggested syllabus in Health Education for the teacher-training departments in the various units of the University of Montana. This course was prepared to be offered to all students who expect to teach and is therefore a basic course rather than a course to be offered to specialists or majors in health education.

The course aims to teach an understanding and proper attitudes in the (1) importance of a positive viewpoint in health, the value, need for and methods for obtaining optimal health, (2) health problems of the school age child and suggestions for the proper management of these problems, (3) observation and procedures for teacher appraisal of child health, (4) mental health in the classroom, (5) essentials of an effective school health program i.e., healthful school environment, healthful school living, health service, and health instructions, (6) interrelationship of home, school, and community, (7) the teacher's health.

It is expected that this committee will continue to function as a subcommittee of the State Health Committee.

The Consultant in Health Education was loaned to the Eastern Montana Normal School at Billings to teach this basic course in health education during the 1946 summer session. The course was offered as a four quarter-credit course during a ten-week session. There were 48 students enrolled in the class. Two of the students were local public health nurses and all but three of the others had had previous teaching experience. Thirty-eight of these students planned to teach in the state and four planned to continue their study at the school. Some specialists were called in for lectures in the area of their specialty. Among them were the Executive Officer of the State Board of Health, Director and two Nursing Consultants of the Division of Public Health Nursing in the State Board of Health, the Elementary Supervisor in the State Department of Public Instruction, Nutrition Specialist in the Extension Department, and two of the critic teachers in the training school of the college.

Conferences have been held with instructors in the other teacher training institutions and the health education consultant has met

with classes in health education in these institutions for from one to three class periods. She also gave guidance to curricula committees at the State College and at the State University in setting up curricula offering a major in health education, such major courses to be offered when trained staff personnel is available to teach such courses.

One of the aims of those working in the field of public health is to make services an educational experience and in this endeavor health education consultants have often been able to serve in an advisory capacity.

Many divisions of Public Health include the school health program as one of the areas in which they work. Because health educators have had some training and experience in both health and education, it is possible to make distinctive contributions in planning the total school health program.

Very close working relationships have been established with the Division of Public Health Nursing. The development, clarification, and expansion of the school health program has been due to, in a great measure, cooperative planning. An outline of responsibilities for the administrator, public health nurse and teacher in health service, healthful environment and health instruction was prepared jointly and serves as a guide to those developing a school health program.

Occasionally the Director of Public Health Nursing, a Nursing Consultant and the Health Education Consultant meet together with school personnel. When this is not feasible each tries to implement the plan keeping the total program in mind.

Because there are no health educators at the present time in local public health offices the public health nurse must often carry considerable advisory responsibility in health education in the school health program. Therefore, the health education consultants work very closely with the local public health nurses.

Participation in the program of many other groups has been made by members of other divisions of the State Board of Health. The Health Education Consultant has participated in the meetings of the State School Board Association, Hill County Association of School Trustees and Clerks, Montana Education Association, State Kiwanis Association, Women's Clubs, Parent Teacher Associations, Mother's Clubs, Women's Field Army for the Control of Cancer, Nursing Education Classes, Farmers Union, State Extension Department, State School Administrators Association, Public Health Nurses, and Parents of Cerebral Palsied. She was a participant in the health education workshop held at the State College in the summer of 1946. In the American Association of Health, Physical Education, and Recreation, the Health Education Consultant is a member of the Committee on Local, State, and District Associations. Until April 1946, she was one of the three Vice Presidents of its Northwest District and President of the State Association. The Health Education Consultant is a lay member of the Board of Directors of the Montana League of Nursing Education, the Board of Directors of the State Organization for Public Health Nursing and a member of the State Nutrition Committee.

The Health Education Consultant attended the National Convention of the American Association of Health, Physical Education, and Recreation which was held in St. Louis and the Northwest District Association Convention in Seattle in 1945.

A considerable amount of new literature is examined and each year new books are added to the lending library. These books are loaned on request to professional and lay citizens.

Up-to-date and scientifically accurate pamphlet material is distributed.

With the approval of the State Superintendent of Public Instruction, health records and guides are supplied to the elementary and high schools of the state. These guides include cumulative health records, health information blanks, nurse-teacher work sheets, school health appraisal blanks, dental cards, classroom growth records, bulletin and wall chart on the control of communicable disease, daily health records, Snellen vision charts, and teacher's requests for nursing service blanks.

These records and guides are almost universally used in the schools in the state and form a guiding nucleus around which the school health program develops. The use of these records helps parents, school and public health personnel understand the child as a whole and bring to attention his physical, mental, and emotional needs. The cumulative health record has been accepted by most elementary teachers as equally essential as the academic records. The practice of continuing the record into the high schools is developing and it is expected that on the student's entrance into college, the college will request these records along with the academic record of the student in order to utilize the health information which has been kept throughout the pre-school, elementary, and high school years.

The general circulation of posters has been discontinued this past year and local agencies are urged to purchase their own. During the current biennium several new films have been purchased and deposited with the Department of Visual Education in the office of Public Instruction and are circulated by that department.

The Division of Maternal and Child Health requires the use of the public health nurses to maintain its activities. Until recently, Public Health Nursing was a unit of the Division. Such close cooperation requires the joint use of office facilities. Office space in the Capitol Building was made available by the Board of Examiners in 1944. At the present time two divisions, namely the Division of Public Health Nursing and the Division of Services for Crippled Children share this space with the Division of Maternal and Child Health. The space is overcrowded. Plans for expansion of all programs have been formulated. Additional space is necessary to adequately carry out these plans as well as to handle the necessary increase in personnel.

Respectfully submitted,

ROBERT E. MATTISON, Director
Division of Maternal and Child Health

To: B. K. KILBOURNE, Executive Officer, State Board of Health

From: Division of Services for Crippled Children

Personnel as of October 1, 1946:

Robert E. Mattison, M. D., Director
Vacant, Assistant Director
Margaret Kerns, Medical Social Consultant
Vacant, Physiotheapist
Grace Johnsrud, Senior Stenographer
Ella Ellingson, Intermediate Stenographer

The following is a biennial report of the Division of Services for Crippled Children for the period from November 1, 1944, to October 1, 1946.

1. **General Information:**

Services for crippled children were established by state law in 1921 with the creation of the Montana Orthopaedic Commission and were reorganized and expanded in 1936 in cooperation with the Federal Government as outlined in Title V of the Social Security Act administered by the United States Children's Bureau. These services were administered by the Montana Department of Public Welfare from 1936 until 1941 when, through State Legislative Enactment, they were transferred to the State Board of Health, under the Division of Services for Crippled Children.

The Division administers services for crippled children to every political sub-division of the state. Funds are derived from Federal and State appropriations. No funds are derived from county or non-official organizations. $90,102.23 State funds and $41,940.70 Federal funds were expended for crippled children's services for the two-year period ending June 30, 1946.

Diagnostic clinic service is available to all children in the state under twenty-one years of age irrespective of the financial circumstances of the family. Children are accepted for medical and surgical care under the program who have defects requiring orthopaedic care and plastic surgery, and whose parents are financially unable to obtain care privately.

2. **Case Finding:**

Case finding, a basic part of the program, was carried out continuously by local public health nurses, the orthopaedic nursing consultant, local physicians and the local departments of Public Welfare. Records of crippled children from birth certificates were secured each month through the Division of Vital Statistics. To determine the need of these children for orthopaedic care, letters were sent out and visits were made to local physicians and to parents. A register of all known physically handicapped children in Montana has been maintained since 1938. Between November, 1944, and October 1, 1946, 1,227 children were added to the register. There were 587 closed for various reasons

during the same period, leaving a total of 2,724 children on the case register as of October 1, 1946.

3. **Clinic Service:**

Field clinics were held throughout the state in the spring and autumn of each year. During the biennium forty-four clinics were held in fifteen centers in the state. These centers were located so that children in all areas of the state were given access to the clinic service twice a year. Local public health nurses and the Departments of Public Welfare were responsible for the organization of the clinics and they were assisted in this by the orthopaedic nursing consultant. An orthopaedic surgeon and a pediatrician served each clinic. The clinics were for diagnostic purposes but they also provided the means for the supervision and follow-up of children who had previously been accepted for care. A total of 2,435 children were examined in clinics between November 1, 1944, and October 1, 1946. Of this number, 827 children were new patients and the remaining 1,608 children returned for follow-up service. The attendance of the clinics ranged from 30 to 115 children. Several clinics were of two days duration but the majority were one day clinics.

4. **Hospitalization and Orthopaedic Care:**

Orthopaedic service was provided by four orthopaedic surgeons in the state: L. W. Allard, M. D., of Billings; J. K. Colman, M. D., of Butte; S. L. Odgers, M. D., of Butte; and John C. Wolgamot, M. D., of Great Falls. There were three consulting pediatricians on the staff, O. M. Moore, M. D., of Helena; Ellis Adams, M. D., of Great Falls; and D. L. Gillespie, M. D., of Butte. In addition, another pediatrician, A. L. Gleason, M. D., of Great Falls, participated in the diagnostic clinics. E. A. Hagman, M. D., of Billings, another pediatrician, participated in the program on a fee for service basis. These pediatricians attended field clinics, giving physical examinations to all patients and/or gave pediatric consultation service to hospital patients. The four treatment centers for crippled children were Great Falls, Helena, Butte, and Billings. The hospitals participiating in the program were St. Vincent's Hospital, Billings; Deaconess Hospital, Billings; Murray Hospital, Butte; St. James Hospital, Butte; Montana Deaconess Hospital, Great Falls; and Shodair Hospital, Helena.

During the two-year period ending October 1, 1946, 370 children have received medical and surgical service. Of this number, 270 children were hospitalized and the remaining 100 children secured medical care in the physicians' offices or were provided with special appliances. These figures represent an unduplicated count for many children were admitted to hospitals several times during the two-year period. There were 365 hospital admissions for this period with a total of 12,700 days hospitalization provided.

5. **Cerebral Palsy Program:**

In January, 1945, a physiotherapist, Miss Ruth Hansen, was employed on a part time basis for a cerebral palsy program in Billings. A small project was instituted for the training of selected children and the

Eastern Montana Normal School participated in the project by making the facilities of the school available to the physiotherapist. Between January, 1945, and August, 1945, 24 children received special training and many of these children profited materially from this short period of training. The project was discontinued in August, 1945, when Miss Hansen resigned to secure postgraduate training.

The project demonstrated the value of and the need for a service which woud provide a continuous training program for children with cerebral palsy. It is planned to establish a program for the special training of children with cerebral palsy as soon as personnel is available. Only one hospital in the state has facilities for the training of these children and a limited number of children have received training by a physiotherapist under the direction of the orthopaedist. This program will be enhanced by a State Society for Crippled Children and Adults. The organization of this society is being planned for Montana.

6. **Rheumatic Fever:**

Although the plan for the administration of a rheumatic fever program was approved by the United States Children's Bureau, the program has not developed because of the lack of medical direction and other personnel. While the rheumatic fever program has not been carried out according to the former plan, children have been given medical care when special need was indicated.

7. **State Staff:**

During the biennium the state professional staff consisted of one physician, one orthopaedic nursing consultant, and a medical social consultant who was added to the staff in August, 1946. In counties with public health nurses, the orthopaedic nursing consultant gave consultant service to public health nurses for case finding and nursing follow-up of medical service. In counties with no public health nurses, the orthopaedic nursing consultant gave direct service to the crippled children. It is planned to secure additional orthopaedic nursing consultants since it is impossible for one consultant to give consultation and direct services to all areas in the state.

8. **Cooperation with Other Agencies:**

During the biennium, close cooperation continued with the Department of Public Welfare, the State Bureau of Vocational Rehabilitation and the National Foundation for Infantile Paralysis. The local Departments of Public Welfare assisted in locating and reporting crippled children as well as making a financial and social study for each family applying for orthopaedic services. One hundred and forty children over the age of sixteen whose medical care had been completed but who had a residual handicap and required vocational training were referred to the State Bureau of Vocational Rehabilitation. A representative from the Bureau of Vocational Rehabilitation attended each clinic and interviewed all applicants for this service.

The proper administration of the program conducted by the Division of Services for Crippled Children requires the participation of consid-

erable time and personnel provided by the Division of Public Health Nursing.

The plans provide for considerable expansion in the future. This is necessary if the handicapped children in the State are to receive adequate care.

Provision should be made establishing a full time Director. The large scope of the activities of this Division is reflected in the fact that it expends more money than any other Division of the State Board of Health.

Respectfully submitted,

ROBERT E. MATTISON, M. D.
Director
Services for Crippled Children

DIVISION OF PUBLIC HEALTH NURSING

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

The following is a biennial report of activities of the Division of Public Health Nursing covering the period November, 1944 to October, 1946.

The personnel as of October 1, 1946:

Helen M. Murphy, Director

Wava L. Dixon, Generalized Public Health Nursing Consultant

Sarah N. Barnes, Orthopaedic Nursing Consultant

(Mrs.) Edna Kuhn, Maternal and Child Health Nursing Consultant

Mary A. Ivanko, Tuberculosis Nursing Consultant

Daisy Prentice, Hospital Nursing Consultant

Vacant, Generalized Public Health Nursing Consultant

Vacant, Orthopedic Nursing Consultant

Marilyn Anderson, Stenographer

Administration: The State Board of Health has full power of supervision and regulation of all public health nurses in Montana through the Public Health Laws and Regulations of Montana. Public Health Nursing was a unit within the Division of Maternal and Child Health and Crippled Children Services until July 1, 1946. Miss Florence Whipple, State Supervisor of Public Health Nursing, resigned in June 1945 to take postgraduate work and was succeeded by Miss Helen Murphy in July 1945. In July 1946 the Division of Public Health Nursing was established with a Director of Public Health Nursing in charge. The nursing consultant staff consisted of one generalized nursing consultant and one orthopedic nursing consultant, each covering the entire state, until June 1946 when a maternal and child health nursing consultant was added to the staff and a tuberculosis nursing consultant was loaned to the state from the U. S. Public Health Service. A hospital nursing consultant came on the staff in August 1946.

The services of the specialized nursing consultants are necessary to keep the public health nurses informed concerning the rapidly changing scene of medical science and its preventive ramifications. These consultants function as specialists but have a broad perspective through which the best interests of the program as a whole are kept in mind. They function primarily in cooperation with other divisions to integrate their special programs into the public health nursing service. A high standard of proficiency cannot be maintained without new knowledge necessary to effective performance in the many fields of endeavor.

In 1945 there were 23 counties which had public health nursing service and 25 in 1946. Five of these counties were organized as full time health units employing a total of 18 public health nurses. Thirteen unorganized counties have public health nursing service employing a total of 21

nurses. In addition, public health nursing services were available in other areas in the state through the U. S. Indian Service, Local Boards of Education, Metropolitan Life Insurance Company, and State and Local Tuberculosis Associations. These services employed a total of 11 nurses.

During the report period, we had 18 resignations from public health nurses. We secured 27 nurses for positions. Of this number, three were returning veterans on military leave, four were graduate nurses, two were loaned from U. S. Public Health Service, 17 were new to public health services in Montana, and one was a former employee. There are 11 positions vacant at the present time. Many counties are interested in establishing a nursing service whenever personnel becomes available.

In-Service Training and Staff Development: The in-service training program in 1945 was carried on through institutes for all public health nurses in five centers in which all Division Directors of the State Board of Health participated. In June 1946 an institute on Mental Hygiene was held in Helena for public health nurses. This institute preceeded the annual meeting of the Montana Public Health Association also held in Helena thus enabling the attendance of all the public health nurses. In September 1946 an institute on Tuberculosis Nursing was held in Helena with all public health nurses in attendance. This institute preceeded the annual meeting of the Montana Tuberculosis Association also held in Helena, again enabling the attendance of public health nurses at the meeting. In 1945 and 1946 the public health nurses had the opportunity of attending the annual meetings of the Montana State Nurses' Association and the State Organization for Public Health Nursing.

The consultant staff offers guidance in the planning and conducting of local staff programs. Monthly staff meetings are being held in two areas in the state. It is planned to extend this to all areas having public health nursing service. Through the supervisory service offered by the consultant staff, there is opportunity for staff development through individual and group conferences with the public health nurses.

The state staff has monthly conferences for the purposes of discussing and planning for the various phases of the public health nursing services. A planned educational program is part of these monthly meetings.

Stipends for Study: Twelve nurses were given a stipend for three months for study in basic public health nursing courses. One nurse was given a stipend for nine months for postgraduate study in public health nursing. Four nurses on the staff were given a grant for tuition and travel for studying on salary a short intensive course in Supervision. These expenditures were from the U. S. Public Health Service monies granted the State of Montana. Two nurses were sent for a short intensive course in Maternal Care through funds granted the State of Montana by the U. S. Children's Bureau.

Statistical Report of Services:

Communicable Disease Control:	
Field Visits to Communicable Disease	11,084
Vaccination for Smallpox	14,507
Immunization Diphtheria	10,013
25% under 5 years of age, 16% under 1 year of age	
Vaccination for Whooping Cough	3,353
44% under 2 years of age	
Venereal Disease Visits	461
Immunizations for Rocky Mountain Spotted Fever	47,532
Tuberculosis Control:	
Nursing Visits	11,142
Tuberculin Tests	24,437
X-rays Taken	13,888
This figure includes mass survey films.	
Maternity Service:	
Individuals Admitted to Service	5,805
Antepartae Visits	3,513
Postpartae Visits	5,056
Infant Service:	
Field Visits	9,815
41% made to infants under 1 month of age	
Office Visits	2,006
Pre-School Service:	
Field Visits	8,168
Office Visits	5,067
School Health Services:	
Examinations by Physicians	8,298
Examinations by Physicians	8,298
Examinations by Physician with Parents Present	3,094
Nurses' Inspection of School Children	19,917
Nursing Visits	27,090
Crippled Children's Service:	
Nursing Visits	3,889
Morbidity Service:	
Nursing Visits	2,372
Adult Health Supervision:	
Nursing Visits	2,397

Additional services of the public health nurses are reflected in the reports of the various Divisions of the State Board of Health for it is largely through them that the services of the health department are interpreted and integrated and made available to the individual and the family.

Other Services: In addition to the heavy routine duties of the staff, the following brief statements point up the special work done by the

nursing consultants in contributing to the total public health program. Through the efforts of the health education consultant and the generalized nursing consultant, our school health services have shown considerable development during the past biennium. Intensive service by these consultants was given in two areas where new programs were initiated. Since the results of this intensive service was so well received it is planned to give similar intensive service in other areas. The need for orthopaedic nursing classes in the basis curriculum was a problem presented during the past biennium. The orthopaedic nursing consultant in cooperation with nursing educators developed a syllubus for a sixteen-hour and twenty-two-hour course. This syllubus is to be distributed to the Schools of Nursing in Montana. The maternal and child health nursing consultant developed a much needed guide for Well-Child Conferences and a guide for use of volunteers. The tuberculosis nursing consultant has developed guides for programs of nursing in tuberculosis control in addition to the public health educational work that has been done with community groups. The hospital nursing consultant is developing guides for nursing care and techniques for hospitals.

The services of the nursing consultants are available to the schools of nursing for assistance with the content for the basic curriculum for students, and acceptable care to the patients. Their services are also available and being used by hospitals for professional staff in service education.

We express our appreciation for the cooperation and assistance given this division by the other divisions of the State Board of Health. The U. S. Public Health Service and the U. S. Children's Bureau through their consultant staff have rendered a valuable assistance. We acknowledge the continued cooperation given by the Montana Tuberculosis Association, the State and Local Departments of Public Welfare, and the Division of Child Welfare Services.

Respectfully submitted,
HELEN M. MURPHY, Director
Public Health Nursing

BIENNIAL REPORT

BUREAU OF VITAL STATISTICS

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 1944 and 1945.

The personnel of the Bureau includes the State Registrar, one senior stenographer, one intermediate stenographer, one junior stenographer and a senior clerk.

The Bureau of Vital Saatistics 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. The Bureau was placed under the superintendance of the Executive Officer of the State Board of Health, who was empowered to make regulations with the approval of the Board of Health, to carry out the provisions of the Act.

The legislature of 1943 repealed the Vital Statistics Registration 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 of marriages. 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 a citizen, regardless of place of birth, 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 violation and authorizes the State Board of Health to make and promulgate regulations for the enforcement of the Act.

There is at least one Local Registrar of Births and Deaths in each county at the county seat, and where necessary for convenience and to prevent undue delay in the filing of these 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 State Board of Health.

The attendant at a 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 death certificate to the Local Registrar and receive a burial permit before a body may be in any way 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 issued and the divorces or an-

nulments and the adoptions granted in his court, by the 15th of the following month.

Death reporting became accurate and complete much more rapidly than did birth reporting. Montana was admitted to the Death Registration Area in 1910, when it was proved to the Federal Census Bureau that we were registering over 90% of the deaths occuring 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 occuring and we were accordingly admitted as the twenty-fourth state to the Birth Registration Area on January 1, 1922. The latest check on birth reporting, made in conjunction with the Federal Census of 1940, revealed that 97% of the births were being properly recorded.

POPULATION

The population figures for the state are 465,000 (Census Bureau estimate) for 1944, and 500,000 for 1945. Thousands of citizens left the state between 1940 and 1943 for the armed forces or to enter war work in other states. The return to Montana started in 1945. It is extremely difficult to arrive at any reasonable figures by counties or other minor civil divisions at this time.

RESEARCH

Total requests received at the office for information, corrections or certified copies, and the filing of delayed birth records amounted to 21,709 in 1944 and 19,279 in 1945. There were 7,178 certified copies of birth and 259 certified copies of deaths issued in 1944, compared to 6.048 births and 389 deaths in 1945. Money deposited in the General Fund was $7,561.17 and $5,707.46, respectively, for the two years.

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, consequently there was a marked increase of free certified copies issued in 1945.

INDEX REVISION

The large number of delayed birth records placed on file in the past few years made it necessary to revise the birth index volumes for the years from 1925 back as far as registration extends. In addition to the current index of births, deaths, marriages and divorces during the biennium, a revised birth index was completed for the years 1917, 1922 1923 and 1924. Previous to 1944 revised indexes had been completed for 1918, 1919, 1920 and 1921.

PRENATAL BLOOD TEST

The legislature of 1945 enacted a prenatal blood test law, requiring all physicians to enter on the birth certificate:

"Was a blood test for syphilis made on mother?
(Yes or No)
Date of test
If test not made, state reason ."

The first month the law was in effect, July 1945, the question was answered on 39.3% of the birth certificates. Twelve months later the question was answered 94.9% of the time.

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 of babies born within the states. These were sent out under the franking privilege. They contained the essential information of date and place of birth, the child's name and the father's name and mother's maiden name. July 1, 1945 these were discontinued and an unverified copy of the complete birth certificate was sent in its place. This necessitated an unusual amount of clerical work and as 94% of the births in Montana occur in hospitals the State Board of Health passed a regulation as follows: "Regulation 50 (c). It shall be the duty of the Superintendent of any hospital wherein a birth occurs, to present a completed birth certificate to the mother of each baby born therein, before she leaves the institution, for review as to the correctness of the information contained in the birth certificate. After examining the complete birth certificate, the mother must sign Item 23, 'I have reviewed the information on this, my child's birth certificate and find it to be correct.'

"

Signature of Mother.

When the mother reviews and signs this record there will be no necessity of sending her an unverified copy and it will be only necessary to send the unverified copy to the 6% of the parents of babies whose births do not occur in hospitals. A state Board of Health postcard containing the essential information on the birth certificate is sent to all parents.

REPORTS TO OTHER AGENCIES

Reports at regular intervals made to other 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 State Public Welfare Department, tuberculosis deaths to the State Tuberculosis Association, cancer deaths to Women's Field Army and to Cancer Committee of Montana Medical Association. All auto accident deaths are checked with the State Highway Patrol and sent to the National Office of Vital Statistics and to the National Safety Council. All communicable deaths, to the Division of Epidemiology and the Infant deaths and Maternal deaths to the Division of Child and Maternal Health. The total deaths to the National Funeral Directors Association. Special studies are made on request for various agencies.

PRINCIPAL CAUSES OF DEATH 1944-1945

1944			1945	
Order	Cause	Number	Order	Number
1.	Heart	1,687	1	1,606
2.	Cancer	665	2	640
3.	Apoplexy	546	4	484
4.	Total Accidents	491	3	524
5.	Nephritis	308	5	270
6.	Pneumonia	246	6	198
7.	Tuberculosis	167	7	166
8.	Diabetes	131	8	134
9.	Premature Births	123	9	132

These nine causes of deaths account for 77% or over three-fourths of the total deaths for the two years. Heart Disease alone causes 30% of the deaths or three of every ten deaths.

The only change in position of the nine leading causes for the two years is that of apoplexy and total accidents from third to fourth places. Within the accident groups, falls caused the most deaths in 1944 with 134, while motor vehicles claimed the most in 1945 with 121.

Table I, following shows the population, births, deaths, infant and maternal deaths, communicable diseases and principal causes of death with their rates by years, 1910-1945.

TABLE I

Year	Population	DEATHS		BIRTHS		INF. MORT.		MAT. MORT.		T. B.		SMALLPOX		TYPHOID		DIPH	
			Rate	Rate		Deaths	Rate	D	R	D	R	D	R	D	R	D	R
1910	376,053	3,999	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	396,223	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	4,083	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	548,339	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	541,733	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	7.2	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

TABLE I—(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	25.0	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	31.6	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	49	9.4	2	0.4	10	2.0	121	24.2	640	128.0	1,606	321.2

TABLE I—(Continued)

Year	NEPH.		PNEUMONIA		SUICIDE		HOMICIDE		ACCIDENTS		APOPLEXY		ALCOHOL		ALL. COMM.	
	D	R	D	R	D	R	D	R	D	R	D	R	D	R	D	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	72.4	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

The high lights of the preceding table which covers the past 36 years are: A decided drop in the rates for all the communicable diseases over which the Public Health authorities may exercise some control. The most gratifying is that of Typhoid Fever. The Tuberculosis rate has been cut by two-thirds. The four diseases of childhood: Dyphtheria, Scarlet Fever, Measles and Whooping Cough, all show gratifying declines. The Infant Mortality rate is one-third of what it was in 1910, while the maternal rate has dropped over 85%. On the other hand the degenerative diseases of old age, cancer, heart and apoplexy, show enormous increases. There is little change in meningitis and poliomelitis, while there is a downward trend in pneumonia, suicides and homicides.

Note: Birth and death rates are per 1,000 population.

Infant and maternal mortality rates are per 1,000 live births.

All others are per 100,000 population.

Table II following gives the births, deaths, marriages, divorces, adoptions, infant deaths and maternal deaths by counties for 1944:

TABLE II

1944

County	Births	Deaths	Marriages	Divorces	Adoptions	Infant Deaths	Maternal Deaths
Beaverhead	62	61	237	35	2		
Big Horn	190	94	192	27	2	15	1
Blaine	114	33	64	14	2	5	
Broadwater	75	41	26	51	1	1	
Carbon	70	74	94	20	2	1	
Carter	16	12	8	4	1	2	
Cascade	1,403	510	653	198	40	33	4
Choteau	60	46	91	6	3		
Custer	314	164	177	49	4	11	
Daniels	103	24	36		3	4	
Dawson	261	84	141	12	5	4	
Deer Lodge	286	416	99	58	1	9	2
Fallon	65	28	64	2	1	3	
Fergus	319	159	90	47	4	12	1
Flathead	460	245	189	73	17	21	1
Gallatin	309	168	174	20	4	7	
Garfield	48	12	3		1		
Glacier	247	104	52	30	2	27	
Golden Valley		13	5				
Granite	9	13	16	10	1		
Hill	417	139	115	40	8	10	
Jefferson	57	30	41	6		3	
Judith Basin	1	11	12	4		1	
Lake	174	140	84	41	7	20	
Lewis & Clark	463	279	240	96	84	11	
Liberty	37	19	10	4	1		
Lincoln	116	58	100	8		4	
McCone	15	9	12	2	2		
Madison	39	42	15	13	3	1	
Meagher	5	16	5	5			
Mineral	16	19	190	8	2	1	
Missoula	698	393	533	153	24	18	
Musselshell	82	55	52	20	3	1	
Park	187	120	114	43	9	11	1
Petroleum	1	4			1		
Phillips	98	51	43	21	2	6	1
Pondera	117	53	30	40		4	1
Powder River	37	15	101		1	1	
Powell	110	69	49	14	10	4	
Prairie	47	20	13	1	2	2	
Ravalli	182	106	107	33	5	4	
Richland	228	64	228	6	1	6	
Roosevelt	207	82	118	45	7	11	
Rosebud	134	63	36	14	3	8	1
Sanders	36	42	111	18		3	
Sheridan	136	60	128	9	1	3	
Silver Bow	942	617	545	194	26	35	1
Stillwater	33	40	67	5	1	2	
Sweet Grass	42	31	16	5		2	
Teton	23	35	44	2	1	1	
Toole	121	48	63	21	2	4	
Treasure	3	6				1	
Valley	253	78	67	11	6	7	
Wheatland	31	18	15	8			
Wibaux	5	7	82				
Yellowstone	1,261	475	636	199	39	51	4
TOTAL	10,765	5,615	6,433	1,745	347	391	19

Table III following gives the births, deaths, marriages, divorces, adoptions, infant deaths and maternal deaths by counties for 1945:

TABLE III

1945

County	Births	Deaths	Marriages	Divorces	Adoptions	Infant Deaths	Maternal Deaths
Beaverhead	50	69	301	28	1	1	
Big Horn	155	79	284	44	2	13	
Blaine	92	37	62	21	3	4	
Broadwater	79	29	33	67	1		
Carbon	70	70	143	25	3	4	
Carter	15	6	9	8	1	1	
Cascade	1,433	486	719	292	50	31	4
Choteau	52	50	90	8	5	1	
Custer	347	146	226	50	7	13	
Daniels	102	18	40	5	3		
Dawson	269	88	158	21	6	10	
Deer Lodge	265	332	148	66	3	4	
Fallon	102	35	98	9		6	
Fergus	276	132	123	57	13	14	2
Flathead	456	235	244	83	10	13	2
Gallatin	316	175	218	22	8	8	1
Garfield	46	25	4			3	
Glacier	231	84	62	56	3	26	
Golden Valley		7	8				
Granite	2	33	12	14	1		
Hill	426	133	164	65	3	9	1
Jefferson	43	35	44	4	1		
Judith Basin		9	13	14			
Lake	188	97	93	47	2	8	1
Lewis & Clark	398	184	294	157	77	12	
Liberty	33	12	15		2		
Lincoln	106	66	146	18		2	
McCone	6	12	17	4			
Madison	25	41	27	21	1		
Meagher	6	15	9	6			
Mineral	18	11	232	5			
Missoula	806	379	647	226	26	31	
Musselshell	49	38	63	24	5	2	
Park	197	116	154	53	2	2	
Petroleum		2	2	1			
Phillips	85	47	57	26	2	2	
Pondera	120	57	30	52	1	7	1
Powder River	11	18	123		1		
Powell	88	67	70	12	5	2	
Prairie	19	12	10	2			
Ravalli	150	103	140	43	3	10	
Richland	213	68	298	21		6	
Roosevelt	232	73	132	45	3	9	1
Rosebud	145	61	72	20		7	
Sanders	27	38	165	16		1	
Sheridan	103	54	155	6	1	1	
Silver Bow	844	619	582	253	26	41	
Stillwater	33	22	84	15	2		
Sweet Grass	31	35	30	8		1	
Teton	20	37	52		2		
Toole	98	47	76	24	2	7	
Treasure	8	3			1		
Valley	242	81	105	19	8	5	
Wheatland	20	16	21	7		1	
Wibaux	4	10	118				
Yellowstone	1,251	524	925	290	57	39	2
TOTAL	10,403	5,378	8,147	2,380	353	357	15

The total births reported in 1944 were 10,765 and was a decrease under 1943 of 493. The birth rate was 23.1. The National birth rate for 1944 was 20.2. Montana's rate was 2.9 higher than the National rate.

The year 1945 showed a decrease of 362 births as compared to 1944. There were 10,403 births registered that year, with a rate of 20.8 per 1,000 of population.

SUMMARY OF THE BIRTH STATISTICS OF 1944 AND 1945

	1944	1945
Total	10,765	10,403
January	860	843
February	829	750
March	907	916
April	918	878
May	919	913
June	905	881
July	975	965
August	943	879
September	923	909
October	850	839
November	877	813
December	855	817
Males	5,555	5,392
Females	5,210	5,001
Sex ratio	107 males to 100 females	108 males to 100 females
White	10,060	9,694
Indian	567	573
Mexican	97	99
Yellow	18	23
Brown	12	8
Black	11	6
Illegitimate	153	205
Twins	106	114
Triplets	1	.....
Stillbirths	177	171
Births occurred away from mother's usual residence	1,695	1,910

There were 5,615 deaths reported for 1944 with a rate of 12.1 per 1,000 of population. This was an increase of 124 over 1943. The rate may be compared with the National rate for 1944 which was 10.6. Montana's death rate was 1.5 per 1,000 higher. For 1945 there were 5,378 deaths registered, a decrease of 237 from 1944. The death rate was 10.8 per 1,000.

Death Summaries 1944 and 1945 by Month, Sex, Marital State and Color

Deaths	1944	Per Cent	1945	Per Cent
Total	5,615	100.0	5,378	100.0
January	559		503	
February	469		408	
March	507		474	
April	462		462	
May	450		447	
June	471		416	
July	458		421	
August	386		411	
September	419		396	
October	443		454	
November	496		475	
December	495		511	
Males	3,493	62.2	3,450	64.2
Females	2,122	37.8	1,928	35.8
Single	1,511	26.9	1,402	26.1
Married	2,321	41.3	2,259	42.0
Widowed	1,455	25.9	1,393	25.9
Divorced	201	3.6	208	3.9
Unknown	127	2.3	116	2.1
White	5,262	93.7	5,101	94.8
Indian	290	5.2	206	3.8
Mexican	24	0.4	33	0.6
Black	20	0.4	26	0.5
Yellow	18	0.3	12	0.2
Brown	1			

MARRIAGE SUMMARY 1944-1945

Month	1944	1945
January	445	542
February	419	442
March	441	493
April	554	505
May	529	509
June	675	795
July	513	696
August	521	734
September	591	784
October	596	864
November	557	846
December	592	937
Total	6,433	8,147

Color	Groom	Bride	Groom	Bride
White	6,205	6,220	7,920	7,917
Indian	127	128	130	141
Yellow	48	50	39	39
Mexican	32	25	32	31
Brown	14	3	7	1
Black	7	7	19	18

Marital State of Those Obtaining Marriage License

Single	4,488	4,317	5,769	5,327
Divorced	1,512	1,598	1,882	2,118
Widowed	433	518	496	702

Official at Wedding Ceremony

Religious	3,635	56.5%	4,716	57.9%
Civil	2,798	43.5%	3,431	42.1%

DIVORCE SUMMARY 1944-1945

Month	1944	1945
January	148	145
February	124	154
March	122	163
April	130	173
May	133	175
June	164	174
July	133	203
August	176	186
September	161	234
October	189	261
November	116	257
December	149	255
Total	1,745	2,380

GROUNDS FOR DIVORCE

Cruelty	970	1,432
Desertion	389	466
Neglect	41	220
Other	147	262

PLAINTIFF

Husband	516	743
Wife	1,222	1,629
Other	7	8

THE GREATEST FREQUENCY OF MARRIAGES AND DIVORCES OCCURRED

	1944		1945	
County	Marriages	Divorces	Marriages	Divorces
Cascade	653	198	719	292
Yellowstone	636	199	925	290
Silver Bow	545	194	582	253
Missoula	533	153	647	226
Lewis & Clark	240	96	294	157

The marriage rate for the state was 13.8 per 1,000 of population in 1944 and 16.3 in 1945. The divorce rates were 3.8 and 4.8, respectively. In 1944 there were 3.7 marriages performed to one divorce granted, while in 1945 the ratio was 3.4 to 1.

In the marriage summary it will be observed that with the exception of decreases in the months of February and March and the large increase in June of each year, there was an almost continual increase in the marriages by month from the beginning of 1944 through the end of 1945.

During the two-year period, less than an average of 225 licenses were issued to other than persons of the white race.

In the summaries by counties it is interesting to note that many of our less densely populated counties on the borders of the state issue many more licenses in proportion to population than do the more densely populated counties in the central portions of the state. This is due, undoubtedly, to the fact that there is no waiting period or health test required in Montana as there is in our neighboring states.

For divorces there is a gradual increase by months for the two-year period. Cruelty is by far the outstanding cause for divorce, and the wife is the plaintiff in seven out of ten cases.

Respectfully submitted,

L. L. BENEPE,
State Registrar

REPORT OF THE DIVISION OF SANITARY ENGINEERING

Biennial Period Ending October 31, 1946

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

W. M. Cobleigh, E. M., A. M., Dean (Emeritus) School of Engineering, State College, Bozeman, Counsulting 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 October 31, 1946.

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 has been prepared 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 county-wide application, poses a question to us 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 used is of 125 ml. (approximately 4.4 oz.) capacity, with a ¾-inch mouth, and provided with a bakelite screw cap ¾-inch long. A thin gasket is placed in each cap.

This system fits very satisfactorily into our extensive territory where the visiting of supplies is attended by considerable expense. The local collectors cooperate 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 duplication of analyses. The same may be said of arrangements with Dr. Butler, 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	Per Cent of Total
Samples from Public Water Supplies	8,261	87	78.2
Samples from Private Water Supplies	1,021	402	13.2
Samples from Tourist Camp Water Supplies	71	2	0.6
Samples from School Water Supplies	250	5	2.2
Samples from United States Government	146	19	1.9
Samples from Miscellaneous Sources (including those from stream pollution studies)	236	175	3.9
Total	9,985	690	100.0
GRAND TOTAL			10,675

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 visited and inspected as required, in addition to other public structures, including the municipal sewer system.

Public Water Supply Improvements

There has been little in the way of improvements in public water supply systems in Montana during the past two years. Such as have been made have been in treatment and such work as has been necessary to keep the water flowing. Two new water supplies have been constructed, one at Fairfield and the other at Highwood, approximately 1,000 people being served.

New wells to augment the present water supplies have been drilled at Deer Lodge, Ekalaka, Plentywood, Havre, Wolf Point, Richey, Three Forks, Twin Bridges, Whitehall, Poplar, and Helena, both for the City of Helena and the State Vocational School for Girls. In most places the water obtained has been similar to that previously used. However, at Three Forks, the water is softer and has a lower fluorine content than the waters from the two wells which have furnished the city water for many years. Likewise, at Twin Bridges, the new well for the city will furnish water of much improved chemical quality.

New distributing reservoirs and new extensions or replacements to distribution systems have been built or are in progress at Billings, Fort Benton, Great Falls, Harlowton, and Sunburst. The new storage tank at Fort Benton is of steel, while those at Great Falls and Harlowton are of concrete.

It is worthy of note that the extensive improvements in the distribution system at Billings have given a considerable amount of trouble, especially at one point, in that great difficulty has been encountered in securing proper disinfection.

The new distribution system at Sunburst replaced entirely the old system, which was of wood, and in that locality did not withstand the soil conditions.

At Cascade a new hypochlorite disinfecting plant has been installed in a new house for the disinfection of water obtained from the springs. This is also true at Lima where the Union Pacific Railway Company has installed disinfection of the water furnished their employees and the citizens of the community.

The new disinfecting equipment at Great Falls has been installed of a greater capacity so that excess chlorination may be effected.

At Whitefish, the city has installed a liquid chlorine plant in the pump house so that water drawn from Whitefish Lake in emergencies may be disinfected.

Emergency Disinfection of Water Supplies

During the past year an emergency hypochlorite plant was installed in the city pump house at Twin Bridges during an emergency there.

The State Board of Health has secured a second hypochlorite machine from the Proportioneers Company, which is electrically operated. This is available for emergency use.

Planning Future Water Supplies

Engineers have been engaged to study the possibilities of and make plans for a new water supply system at Boulder, Montana. The course will doubtless be ground water, obtained by the drilling of a well.

At Broadus, it is planned to build a new water system, artesian water of good chemical quality being available in that vicinity.

At Crow Agency a well has been drilled, and when materials for distribution systems are available that system will, doubtless, be built.

At Cut Bank, bids will soon be received for the construction of a new source of water, tests of ground water possibilities to be made first.

Test wells are under construction at Drummond, a community which is now incorporated, and which hopes to have a new water supply system in the near future.

At Froid, Montana, in the eastern part of the state, engineers have been engaged to design a new water supply system, the water source doubtless being a well which will have to be constructed.

At White Sulphur Springs, engineers have designed a new intake on Willow Creek, some new flow line piping, and a new reservoir of approximately 450,000 gallons capacity, which may be either of steel or concrete, depending upon relative costs.

At Hardin, Montana, some improvements are planned for the filtration plant, whereby greater settling capacity will be available.

Engineers have been engaged at Harlem, Montana, to plan for revamping of the whole filtration plant to increase its capacity and to modernize it.

At Helena, the City Commission has under consideration the building of an additional flow line to bring more water to the city from the Ten Mile system.

Improvements in Sewerage and Sewer Systems

There has been considerable activity in extending sewerage facilities in our various communities in connection with attempts, in most cases, to provide more housing which is so critically short at this time. Plans have been approved and work is under way, or contemplated for prosecution, at Billings, Bozeman, Browning, Chinook, East Helena, Great Falls, Havre, Helena, Malta, Plentywood, and Shelby.

Plans for new sewer systems have been reviewed and approved for Broadus, Cascade, Chester, Culbertson, Dutton, Hot Springs, Lodge Grass and Sheridan.

Treating plants for sewage on systems already built and in use are planned for Billings, Bozeman, Chinook, Havre, Plentywood, Conrad and Choteau.

Populations affected in the above two categories is about 56,000.

The citizens of some communities are seriously contemplating the need for improved sanitary facilities, and some preliminary surveys and studies have been made of Boulder, Darby, Drummond, Froid, Gardiner, Harlem and Rudyard. In some instances Federal aid has been applied for in these communities, so that the necessary engineering may be accomplished.

Stream Pollution Studies

Our studies of stream pollution problems have continued much as they were conducted during the previous biennium. Further observations and investigations were made on the Yellowstone River at Laurel and Billings, to a distance of approximately thirty miles downstream.

An intensive study was made of the stream pollution situation at Great Falls on the Missouri River.

Further studies were made of the Milk River, not only from Havre through Harlem, but on the lower reaches, especially in the vicinity of Malta, and downstream therefrom.

Studies were also made on the Big Muddy in the northeast part of the state, which will be affected profoundly by the program of the U. S. Reclamation Service under the Missouri Basin Program.

Some isolated points on various streams have been viewed and studied where the streams might be affected by local circumstances due to some contemplated waste disposal. Conditions were thus observed on the Clark Fork of the Columbia, the Flathead, the Ruby, the Beaverhead, the Boulder, and the Powder Rivers.

There has been little expansion in industrial activity which pertains to stream pollution. There is much indication, however, that industrial expansion is contemplated, and already the State Board of Health has been contacted by industrial processors to determine their responsibilities and our attitudes concerning various projects.

On the Rattlesnake Creek in Missoula County there are located a rendering plant and a slaughter and meat processing plant. Because the wastes from these establishments were discharged to the stream, users of the stream waters lodged complaint. Court action was finally necessary before the practice was stopped, the district court issuing a permanent injunction in the circumstances.

The State Legislature, in 1945, amended the state law relative to stream pollution in an attempt to protect and preserve the rights of individual water users in addition to the rights of public water supply users. This amendment is having a far reaching effect, and is proving the necessity of a closer control, since the streams in Montana are so intimately associated with the health and well-being of our rural

citizens. In fact, this amendment is the reason for a considerable volume of the stream pollution work which has been done during the biennium just closing.

Drainage Problems

In our last report we called attention to troubles which are commonly encountered due to the presence of high ground waters in our various communities. These problems continue to bother us and city officials, and, in one case particularly, will be responsible for an added cost of sewage treatment, estimated by the engineer at approximately 25% over the cost which would otherwise have to be met.

In another case in which the city is obliged to pump the sanitary sewage, the volume of ground water infiltrating to the sewer system is, in effect, overloading the pumping plant, and is causing an excessive pumping cost.

This is a problem with which most built up communities are confronted, and it is necessary to establish policies regarding such problems to the end that the burdens caused by such high ground water will be reduced and the troubles controlled.

It is our opinion that the engineering problems confronting the community engineers and administrators should be thoroughly studied, various methods of control should be planned, and the cost evaluated. The treatment of large volumes of infiltration water where sewage treatment is required is an unreasonable financial burden. All infiltration water should be excluded from new sewers, and ground waters should be lowered by proper drainage, by other means than through the sanitary sewage system.

Miscellaneous Activities

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

On December 11, 1944, your Director was invited to talk to the Montana Society of Engineers, holding a meeting in Butte. On this occasion the topic was "Public Water Supplies—Big Business." The subject matter presented was regarding all the water supplies in the state, the volumes of water delivered, and the population served. It was shown that through improvement in the sanitary quality of public water supplies, the death rate from water borne diseases had greatly decreased.

In January of 1945 a trip was made to New York City in connection with a meeting of Secretaries of various sections of the American Water Works Association. Being secretary of the Montana Section, your Director attended this two-day conference. It was productive of much value in the conduct of the American Water Works Association Section.

In October, 1945, the Red Cross held a conference in St. Louis to which were invited the State Sanitary Engineers of this area. Your Director attended this conference and took part in the discussions which had to do primarily with the subject of disaster relief. From the dis-

cussions there developed a better understanding of the respective functions of sanitary engineers in health departments, and of Red Cross workers where they are called to assist in disaster relief.

On three occasions talks were given to Public Health Nurses regarding the work of the Sanitary Engineering Division. The purpose of these meetings was to acquaint the Public Health Nurses with the functions and scope of work so that, in their contacts with the people in their respective districts, they could intelligently advise concerning assistance to be obtained in respect to sanitation of water supplies, sewage disposal, and school houses.

At the instigation of this staff, an invitation was sent to all drillers of water wells in Montana to attend a conference in Helena, at which various subjects might be discussed to the material benefit of the well drillers and the State Board of Health. This meeting was held in Helena on March 22 and 23, 1946, with 23 well drillers in attendance. The total registration, made up of well drillers, State and Federal officials, and others interested, was 44. Out of this meeting came the expression, on the part of the well drillers, of a desire to form a State Association. A president and secretary were elected, and an agreement was made to meet, as an association in November of this year.

In July of 1946, at the request of the people at the State College in Bozeman, your Director attended and spoke to the conference of health workers. The subject was "Rural Sanitation," and the occasion was the meeting of the Health Education Workshop. A model farm house, surrounded by a fence, and with a well, cistern, and septic tank was used for illustration.

In September of 1946, at the invitation of the U. S. Army Officers stationed at Fort Peck, your Director attended a conference at which plans for the development of recreational areas around the shores of the Fort Peck reservoir were explained. Our expressed opinion was that the plans, as outlined, should result in expanded recreational facilities for a large number of Montanans, and the surroundings will be healthful.

In October, 1946, at the invitation of the Program Committee of the American Society of Civil Engineers, a brief write-up of Sanitary Engineering in the Missouri River Basin was prepared to be presented to that Society when they met in annual convention in Kansas City.

In addition, there have been many conferences with city engineers, health officers, and city councilmen regarding various matters of municipal sanitation.

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 interstate carriers. The work of these officials has largely been in the inspection of watering point sanitation. We have made the water supply inspections. In 1944, seventeen reports and recommendations were made, calling for 14 approved and 3 provisional certificates. In 1945 we made reports and recommendations covering 17 supplies, 14 of which were

approved and 3 of which were provisional. The work for 1946 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.	Per Cent of Total
Inspection of Public Water Supplies	299	44.8
Inspection of Private Water Supplies	23	3.4
Inspection of Sewage Disposal Systems	160	24.0
Inspection of Swimming Pools	12	1.8
Miscellaneous Inspections	173	26.0
Total	667	100.0

For the State Planning Board

At the request of Governor Ford, special studies were conducted at the State Training School at Boulder and the State Orphans' Home at Twin Bridges. The facilities given special consideration were water supply and sewerage, and recommendations were made and presented to the State Planning Board.

At Boulder, where the gravity flow line from South Fork of the Boulder River is badly deteriorated, recommendation was made to develop the total water supply from three wells to be drilled on the ground of the institution.

Also, at that institution, the sewerage should be improved to collect all sewage from the two school areas at a common point, there to construct a suitable treatment plant of the mechanical type.

At Twin Bridges, chemical treatment of the present water to prevent corrosion is the recommendation. This treatment, using a metaphosphate in the form of a ball, is now being applied. It is too soon to conclude as to all the advantages but improvement is said to be noticeable after but a few weeks of use.

The sewage from this institution should be treated (it is now discharged untreated to the Beaverhead River) and recommendations were made to collect all wastes at a common point, there to treat them. It is hoped that, after treatment, no discharge to the river will be necessary, but that the plant effluent may be spread on adjacent land.

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 includes 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, 1945, (fiscal year 1944-1945) $3,720.00 had thus been collected, and by July 1, 1946 (fiscal year 1945-1946) $3,260.00 were collected.

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

Examination of Plans

A total of 88 plans were examined during the past 24 months, classified according to the following tabulation:

New City (Public) Water Systems	1
Extensions and Improvements to Existing Public Water Systems	18
New City (Public) Sewer Systems (Including Treatment Plants)	10
Extensions and Improvements to Existing Public Sewer Systems	30
Other Industrial Sewage Disposal Systems	1
New and Additions to Public School Buildings	17
Miscellaneous (Mostly Public Buildings)	5
Sanitation of War Housing	2
Total	88

Montana Section, American Water Works Association

Our Section of this national association is active. Its 20th and 21st annual sessions were held in Lewistown in 1945 and in Butte in 1946. After 20 years as Secretary-Treasurer (one year as Chairman) your Director resigned and Mr. Brinck, of the staff, was elected to succeed to the position.

Montana Sewage Works Association

This association, formed in 1944, held its second meeting in Butte in 1946.

The membership now numbers 34. We are a member of the Federation of Sewage Works Associations, a nationwide organization. Your Director is Secretary-Treasurer.

Personnel

Mr. C. W. Brinck, Sanitary Engineer and Assistant Director, returned on January 1, 1946, to the Division, following his service in the Army during the war.

Miss Grace Taylor has served as stenographer since January 1, 1946.

Dean W. M. Cobleigh has served as Consultant, doing much of the field and report work in connection with our stream pollution study activities.

Mr. H. E. Garber, and Mr. Milton Brown have continued on the staff.

All members of the staff have given full measure of service during this period.

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 690 samples, 402 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 (not counting the special work of two years ago in connection with arsenic poisoning). 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 additional chemist is needed.

Another Sanitary Engineer should be employed full time to meet adequately 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.

BIENNIAL REPORT OF THE FOOD AND DRUG DIVISION

November 1, 1944 to October 31, 1946

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, 1944 and ending October 31, 1946.

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 foods 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. In the bienniums 1942-1944 and 1944-1946 no inspections of this type were 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 long periods 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.

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 inspections made by local health officers have remained at approximately the same level as during the previous biennium. Part time and local health officers, generally speaking, do not make inspections as required by law. The State of Montana is still suffering from a severe shortage of doctors and most local health officers are on a part time basis, and the press of private practice does not allow time for adequate inspection programs.

Five counties of the state operate under the county-city health unit plan. However, of these five counties, at the present time there are only four that have full time sanitary inspectors. Despite this fact, these four sanitary inspectors furnish the larger share of the reports re-

ceived from the county officers. In one city of the state there is a city inspector who reports regularly to the State Board of Health. This city is in a county which does not have a full time city-county unit.

During the past two years we have received from health officers and inspectors a total of 12,676 inspections. The bulk of these have come from those departments maintaining full time sanitarians. It is the experience of this department that adequate inspections are made only when a full time sanitarian is employed. The full time local health officer has too many matters of medical importance to allow him to spend the time necessary for good inspections. In the past two years, the number of state made inspections has fallen considerably. The total number of inspections made by state inspectors was 2,468. There are a number of reasons for this decrease in state inspections. Of primary importance is the lack of personnel. From September, 1945 to November, 1945 the state department had no inspectors. From April, 1946 to May, 1946 there were no inspectors, and since September 1, 1946 the state office has not had any personnel in the field. At no time since 1944 has the state had more than one inspector. Lack of transportation, adequate salaries, and trained men has made it impossible for the Food and Drug Division to maintain any field force of any consequence. This condition has existed, even though the amount of work which we have been required by law to do has increased considerably.

Tourist camp inspections and tourist camp licensing decreased during the year 1945. In 1945 there were licensed 380 tourist camps and guest lodges. The year 1946 showed an increase over 1945, but is still below the licensed camps operating in 1941. In 1941 the division licensed 532 camps and in 1946 licensed 475. Due to the severe housing shortage existing in most communities throughout the state, a great many tourist camps are operating on a full time rental basis and because of this fact are not subject to the license laws of 1929. Prior to 1941 all tourist camps in the State of Montana were graded on an A, B, C, rating. Since 1941 no camps have been graded, and it is doubtful whether such grading can be resumed for the year 1946. The Montana Tourist Camp Owners Association relied on these grades to establish membership in their organization, and in a recent conversation with the past president of the organization I learned that the maintenance of membership will again be based on our graded ratings. We have, however, furnished to various persons lists of tourist camps operating within the state, and these lists have been used for advertising purposes. Lists are furnished to the Montana State Chamber of Commerce each year.

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.

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	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
1945	4,561	380	9,882
1946	5,163	475	11,276

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.

In 1946 the number of licenses issued increased considerably over 1945. This, we believe, is due to two factors: first, a large turn-over in ownership of establishments, and second, an actual increase in the number of establishments. During the biennium 1943-1944, there was a steady decrease in the number of establishments. This figured out approximately 13%. This decrease corresponded quite closely to a decrease in population of the same percentage. At the present time, the Vital Statistics Department is using the 1940 census as a basis for their figures. Therefore, the increase in the number of licensed establishments corresponds closely to the increase in population. More public eating place licenses have been issued in 1946 than in any year previously. It is expected that with the lifting of war time restrictions our license figures in 1947 should correspond very closely with the peak year of 1940.

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 con-

dition 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, diphtheria, tuberculosis, measles, influenza, cerebrospinal fever, whooping cough, Vincent's Angina, lobar pneumonia, common colds, scarlet fever, and German measles.

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 is 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.

Only one complaint against a food handling establishment has been filed in the past biennium. The case was tried in a justice court and a conviction was obtained against the offender. The place in question has since been sold and is now being operated in conformity with the laws of the State of Montana. The department has still continued the policy of notifying offenders by way of the county attorney, who informs them of the consequences if violations are continued.

As mentioned before, the shortages existing in building materials and equipment for food handling establishments has resulted in a more liberal policy on the part of the department in the prosecution of offenders. We realize that it is next to impossible for establishments to obtain materials which they need to improve the sanitary conditions of their establishments. Until the establishment of the Civilian Production Office, the Food and Drug Division was able to certify establishments for materials. However, since the freezing of materials for veterans' housing, the department is no longer able to certify for building materials, and as a result, we have tried to relax our regulations sufficiently to allow operation of establishments, even though they are not in the best of condition. We have confined our sanitary inspection work mainly to proper dish washing facilities, and proper handling of food. Good sanitary conditions can be obtained in most any establishment when these two features are observed.

The sanitary condition of food handling establishments is about the same as it has been during the preceding biennium. We have tried to carry on in the field a limited educational program to aid employers and employees.

LABORATORY

In the past two years the laboratory has analyzed 1,780 samples. The following table shows how these samples were classified in the laboratory.

1944-1946

	Passed	Not Passed	Investi-gational	Un-official	Referred	Total
Meat and Meat Products	298	96				394
Carbonated Beverages	31	11				42
Drugs	1	2		1	3	7
Dairy Products					738	738
Fruits and Vegetables	4	4	1			9
Liquor					12	12
Poisons			5	5	5	15
Miscellaneous	1	1	4	5	3	14
Water Samples					549	549

Chemical analysis of water samples are added in the total inasmuch as the work is done in the Food and Drug Laboratory by Food and Drug Personnel. Further tabulation of water samples will be found in the report of the Sanitary Engineering Division.

Although the total number of samples analyzed in the laboratory decreased from the previous biennium, the total number of tests made in the laboratory remained about the same. This means that the work which we are now doing is more complete and that there are not as many routine samples run as has been done previously. Chemical analyses in the laboratory are becoming more specialized.

In addition to the work done directly for the Food and Drug Division and the Sanitary Engineering Division, the laboratory also does analysis work for the Dairy Division and the Horticulture Division of the Department of Agriculture, analyses for the Liquor Control Board, the State Purchasing Agent, and upon request, for law enforcement officials. The results of our meat analyses in 1945 were sent to the Office of Price Administration to aid in fact finding and enforcement.

Miscellaneous analyses included samples of:

Lunch Meat
Tallow
Soft Drinks
Disinfectants
Soap
Olive Oil
Black Pepper
Peaches
Liquid Soap
Popsicles
Bone Meal
Other Items

Aid was given to several law enforcement officials in the analyses of drugs suspected of causing poisoning, and aid was given also to sev-

eral officials in autopsy work. Three samples were run for the sheriff of Park County, and in one sample the laboratory found barbiturates. The specimens analyzed were found on a man suspected of kidnaping. Tests for poisons were run on samples sent in by Doctor Farr of Billings. The results of these tests were negative. A sample of meat was analyzed for Harry Ramsey, sanitarian of Fergus County, who reported a considerable amount of dog poisoning in the City of Lewistown. The results were negative. A sample of reducing pills was run for dinitrophenol. A sample of insecticide was analyzed upon complaint of a user who was burned severely. This case was investigated in cooperation with the Federal Food and Drug Administration. A sample of wine suspected of poisoning was analyzed for the Chief of Police of Kalispell, Montana. A stomach and its contents were analyzed for the County Attorney of Madison County. A sample of tooth powder and stomach contents were analyzed for the sheriff of Lewis and Clark County and a positive test for strychnine was obtained. A sample of viscera sent in by Doctor Ohlmacher of Missoula was analyzed and traces of phenobarbital were found in the brain. In all, a total of fifteen samples were anaylzed for poisons of various types.

The following table shows the official action taken by the laboratory on samples analyzed in our laboratory during the previous five bienniums.

	1937-38	1939-40	1941-42	1943-44	1945-46
Samples Passed	183	1,775	1,549	957	335
Samples Not Passed	143	1,325	778	353	114
Unofficial	28	385	39	12	11
Investigational	167	95	102	41	10
Referred to Other Depts.			447	668	761
Water Samples			208	634	549
	521	3,580	3,119	2,666	1,780

SPECIAL INVESTIGATION

Special investigations were carried out in cooperation with the Federal Food and Drug Administration. Samples were collected in Butte, Great Falls, and Billings of Colusa Oil. This oil is a pure, unrefined petroleum product and bore false claims as to curative powers. Vinegar samples were collected in Butte at the request of the Federal Food and Drug Administration.

The Federal Food and Drug Administration called on the Food and Drug Division for assistance in inspections of the Eddy Cake Factory in Helena, Montana. Inasmuch as the Federal Food and Drug Administration did not have any representative in the State of Montana, the Food and Drug Division and its personnel were deputized to carry on investigations at their request. The cake factory was inspected on June 27, again on July 20 and on October 23, 1945. Two of these inspections were made in company with federal inspectors. In connection with the inspections made of the Eddy Cake Factory, the director of the Food and Drug Division and Mr. Flemming, inspector of the Food and Drug

Division were subpoenaed as witnesses at a Federal Court hearing on August 7, 1945. The Food and Drug Division called for aid from the Federal Food and Drug Administration in the sampling of three thousand pounds of coffee delivered in Helena. This coffee was reported as being contaminated by an arsenic moth spray en route. The Director of the Division, in company with Mr. McKinlay of the Federal Food and Drug Administration sampled the coffee and samples were analyzed in the laboratory in Helena. Negative results were obtained and the coffee was returned to the shipper. At the request of the Federal Food and Drug Administration, the director of the division supervised the destroying of two hundred eight packages of fig bars which were found to be moldy. Mr. Purvis, sanitary inspector for Missoula County, supervised the relabeling of canned beans in a warehouse in Missoula. These beans were incorrectly labeled and the Federal Food and Drug Administration asked for aid in supervising the relabeling. Mr. Shea, Sanitarian for Cascade County, ordered the destruction of wormy peanuts found in a warehouse in Great Falls.

At the request of Mr. McMaster of the Dairy Division of the Department of Agriculture, the director of the Food and Drug Division, in company with Mr. Foote of the Sanitary Engineering Division, investigated the water supply and sewage disposal at the Central Park Cheese Factory in Gallatin County. Special investigations were also made by the director of the division at the canning plants of the Red Lodge Canning Company in Stevensville and Red Lodge. These inspections were made prior to the beginning of the canning season at the request of the canning company. A special investigation was also made at the Bitterroot Canning Company in Hamilton. Mr. Bain, Sanitarian for the City of Billings, embargoed fifty-four gallons of orange concentrate containing monochloracetic acid. Samples of canned peas were collected in Great Falls at the request of the Federal Food and Drug Administration. Since November 1, 1945, the Federal Food and Drug Administration has a resident inspector assigned to the State of Montana. This was done largely at the request of the director of the Food and Drug Division in order that more efficient administration of the federal laws could be made in the state. At the same time, the State of Montana was placed solely under the supervision of the Seattle Station of the Federal Food and Drug Administration.

At the request of the United States Public Health Service, the division also conducted investigations concerning garbage disposal in cities throughout the state. A questionnaire was sent out to the cities, tabulations were made of the results, and put at the disposal of representatives of the Public Health Service. Three special inspections were made of the Havre Bottling Works in Havre, Montana. This work was done because of complaints arriving from users of products of the plant. Extraneous material of one type or another was reported to this office and it is hoped that the situation has now been corrected.

HOTEL INSPECTION

The Montana Hotel Law provides that the State Board of Health shall adopt rules for the enforcement of the Act and also shall have au-

thority to engage or appoint such assistants or inspectors as may be needed in enforcing the Act. Under this authority it has been made the duty of each city, county, or reservation health officer to make an annual inspection of all hotels in his district. Blanks are furnished the health officer by the State Board of Health so that a report can be submitted as to the condition of the establishment. Copies of the state hotel laws and regulations are furnished for distribution. Particular stress is laid on cleanliness, length of sheets, ventilation, fire escapes, and general sanitation.

CLERICAL WORK

Since the Food and Drug Division has been able to employ a full time stenographer the office work has increased considerably. Collection reports concerning the analyses of samples collected are returned more promptly. All food handling establishments having a grade below 90 are written and have letters concerning conditions which must be met to satisfy the regulations. These letters are now sent out within two weeks after the inspections have been made.

By revising our license forms and application forms, the mailing of licenses and the handling of moneys collected is more efficient and accurate.

Due to the fact that the division has several new duties, the actual office administration has become increasingly heavy. It is necessary that mimeographed copies of various laws be made available to all interested persons and this requires a considerable amount of time spent in mimeographing and mailing. With the increase in special investigations required by these laws, it is also necessary that long reports be made to other agencies in the state, and this, in turn, necessitates additional work. Since the end of the war, inquiries have become increasingly heavy concerning insecticides and fungicides and their laws. Special files have been set up to handle the amount of work caused by these inquiries. Development during the war of new insecticides and fungicides and disinfectants has caused a tremendous increase in the number of inquiries concerning these products.

MISCELLANEOUS ACTIVITIES

During the 1945 session of legislature, the Food and Drug Division again attempted to have enacted a Uniform Food, Drug and Cosmetic Act. Copies of the proposed act were prepared and mailed to all legislators prior to their arrival in Helena. The bill was introduced in the Senate by Sherman Smith, Senator from Lewis and Clark County. The director of the division was required to appear at a hearing concerning this act. The main opposition arose because of the fact the Federal Food and Drug Act was used as a model, the main contention being that in using federal regulations as a standard, the Food and Drug Division would in turn be indebted to the federal government and become a sounding board for them. It was admitted by various members of the committee hearing this bill that the opposition was unfounded. However, the bill was killed in committee. During the past biennium the

director of the division has been called upon to make more and more personal appearances before groups interested in public health. Addresses were delivered to two bottlers conventions, to the meat packers association, and to the Home Economics classes at the Montana State College. In addition, talks were given to three public health nurses' institutes and to nurses in training at Great Falls. One talk was delivered to the public health nurses during the Public Health Association meeting held in Helena in 1946. This talk was concerned with the proper sanitary operation of school lunch programs. In 1945, the director of the division was appointed to serve on the Montana Nutrition Committee and has attended four meetings held in Bozeman. The director also appeared before the Medical Association Auxiliary of Lewis & Clark County and two special meetings of the Parent-Teachers Association of Helena. As a result of pressure brought to bear on the Board of Health of Lewis & Clark County, a sanitarian was appointed in April of 1946. Several meetings were held with the local Board of Health and the Parent-Teachers Association concerning this program. Special investigations were made of the Montana Home for the Aged at Billings, as required by an act of the 1945 legislature. Two other inspections were made, one in Three Forks, and one in Bozeman of homes for aged. Reports of these inspections were made to the Department of Public Welfare. A talk was delivered to the Montana Federation of Labor at their annual meeting in Billings in 1945. An explanation was given to the federation of the difficulties involved in adequate restaurant inspection and enforcement of the 1945 law. It was explained to the federation that because of the lack of personnel and the inability of restaurant operators to remodel their establishments, a considerable time would have to elapse before adequate enforcement of the law could be attained.

PERSONNEL

During the past two years there has been considerable turnover in personnel in the Food and Drug Division. As explained previously, it is difficult to get men to work in the field. Lack of adequate financial means prevents the payment of salaries necessary for the hiring of good, trained men, and in some instances when men were willing to work, lack of transportation prevented their employment. Credit must be given to R. M. Fleming, who served with the Department until September, 1945, to John Martello, who served as an inspector from November, 1945 to April 1, 1946, and to Hugh Butler, who served from May 1, 1946 to September 1, 1946. The bulk of the laboratory work during the past biennium was done by L. S. Champa, Senior Chemist, who has since transferred to the Industrial Hygiene Division. Since March 1, 1946 Matt A. Klein has been serving as Junior Chemist in the laboratory. The director of the division and Marjorie Kennett, Senior Stenographer, are the only ones of the personnel who have served completely through the biennium.

The present trend in food and drug work indicates that certain changes should be made in the present operating program of the division. Experience has shown that sanitary inspections should be made more frequently if the sanitation program is to be successful. Trends

also indicate that the division should expand its educational activities and should extend to those persons working in food handling establishments a planned course of study, administered by local or state health departments, in order that they may learn proper sanitary procedures. Cooperation of employers and employees is essential in a program of this type. If the maximum efficiency is to be obtained, the division must increase its field force. This increase is necessary until such time as there are provided more fulltime local health units employing full time sanitarians. It is to be hoped that with the enactment of the new districting law more counties will avail themselves of the opportunity of having full time health districts. Inspections should be made of all food handling establishments at least once each thirty days in every town and city throughout the state. In this way, and this way only, can adequate inspection program be attained.

With the increased variety of work handled in the laboratory, and presuming that our field personnel will again be at strength, more space and more equipment is needed for the carrying on of proper laboratory routines. Our present laboratory can adequately accommodate two chemists, and at times conditions become crowded with only two men. Changing methods of analyses require the purchase of new equipment from time to time. Under present conditions, it is impossible to house new equipment needed. With an increase, either in the state staff, or an increased number of sanitarians due to the establishment of local health units, the administration problems will increase. If our work is to be properly carried on, more clerical help will become essential. This is particularly true because of the increase of duties imposed on the department by new legislation. Present facilities could not possibly provide adequate space if the department is to carry on all its work to the best benefit to the people of the state. It is hoped that the legislature will see fit to consider the establishment of a combined laboratory building in which the Food and Drug Division could be housed.

The program of the Food and Drug Division during the past two years has suffered severely because of lack of personnel caused by a shortage of funds and transportation facilities. The program of the division has been cut down to contain the most essential items, and it is the belief of the director of the division that these essential items have been handled to the best advantage of all concerned.

The department gratefully appreciates all cooperation received from all divisions of the State Board of Health and from all local health units.

Respectfully submitted,

ELTON M. ANDREW,
Director,
Food and Drug Division.

REPORT OF THE HYGIENIC LABORATORY DIVISION

Biennial Period 1944-1946

Edith Kuhns, B.S., Director.

Harry P. Gelsing, B.A., Assistant Director

Helena Wolfe, B. A., Senior Bacteriologist.

Florence V. Goedert, B. S., Junior Bacteriologist.

Kathryn Deloughery, B. S., Junior Bacteriologist.

Harold Barnes, Laboratory Assistant.

Annabelle Houchin, Intermediate Stenographer.

Lynette R. Johnson, Junior Stenographer.

Ina Kay Scott, Typist.

Jack Breckenridge, Laboratory Helper.

To Dr. B. K. Kilbourne, Executive Officer:

The report of the activities of the Hygienic Laboratory is herewith submitted for the biennial period ending Nov. 1, 1946.

The functions of the Laboratory continue to be as outlined in the previous biennial reports with the exception of a few additional activities as discussed below.

The figures upon the volume and scope of the activities during the past two years are based upon the fiscal periods from July 1, 1944 to July 1, 1946 since our records are more complete for this period than if they were extended to Nov. 1, 1946.

No attempt has been made to evaluate the statistics upon the positive reactions obtained, for it is not known how many individuals are represented since several samples are often submitted from the same person. This is especially true in the case of blood and spinal fluid specimens submitted for serological tests for syphilis, particularly when the patient is under treatment. Furthermore, individuals suffering from other illnesses may sometimes give false reactions so that the laboratory findings do not constitute a diagnosis. This same may hold true in diseases other than syphilis. Therefore, no conclusion as to prevalence of various diseases may be drawn from the results.

A slight decline was shown in the number of examinations made under those of the previous corresponding biennial. A total of 215,606 examinations were completed for the fiscal years 1944-1946 as compared with 251,373 for 1942, 1944, a decline of 36,766 examinations. This was due almost in its entirety to the decrease of blood specimens submitted by the Selective Service and was to be anticipated. This was counterbalanced in a small sense by the submission of prenatal blood specimens after the law requiring such tests became effective July 1, 1945.

Tables I, II, III, and IV are presented for your consideration and were formulated to indicate the trend of work completed during the past two years. They are self explanatory.

Table I shows a comparative classification of examinations for years 1944-45 and 1945-46.

TABLE I

Comparative Classifications of Examinations 1944-1946

	1944-45	1945-46	or Loss Gain
Total Syphilis	90,748	100,189	+9,441
Blood and Spinal Fluid Wassermann	45,182	49,844	+4,662
Blood and Spinal Fluid Kahn	44,791	49,408	+4,617
Treponema, Smears and Sera	7	3	— 4
Spinal Fluid, C. C. and Globulin	768	934	+ 166
Total Gonorrhea	954	1,260	+ 306
Smears	953	1,256	+ 303
Cultures	1	4	+ 3
Tuberculosis	1,122	1,202	— 102
Spurtum, Microscopic	919	851	— 68
Other Body Fluids, Microscopic	25	11	— 14
Guinea Pig Inoculations	157	146	— 11
Cultures	21	12	— 9
Agglutinations	5,374	8,188	+2,814
Typhoid-Paratyphoid Fevers	2,864	4,160	+1,242
Undulant Fever	944	1,350	+ 406
Tularemia	926	1,356	+ 430
Proteus OX-19	17	26	+ 9
Heterophile Antibodies	623	1,350	+ 727
Blood Cultures	910	1,254	+ 344
Stool and Urine Cultures	414	306	— 98
Diphtheria	1,262	1,573	+ 311
Miscellaneous	866	466	— 400
GRAND TOTAL	101,350	114,256	+12,906

Table II gives a detailed tabulation of examinations.

TABLE II

HYGIENIC LABORATORY

Report of Laboratory Examinations for July 1, 1944 to July 1, 1946

	Positive	Doubtful	Negative	Unsatisfactory	Unclassified	Total Specs.	Total Specs.
Syphilis							
Kolmer Comp.-Fix. Test							
Blood	4,071	355	87,374	2,364		94,164	94,164
Spinal Fluids	115	31	652	64		862	862
Pleural & Other Fluids							
Kahn Precipitation Test							
Blood	3,285	664	82,541	8,709		94,199	36
Spinal Fluids							
Pleural & Other Fluids							
Spinal Fluids							
Colloidal Gold					850	850	1
Globulin					852	852	
Treponema Pallidum							
Darkfield			10			10	10
Stained Smears							
Gonorrhea							
Smears	381	41	1,779	8		2,209	2,209
Comp.-Fix. Test							
Cultures			4	1		5	5
Typhoid-Paratyphoid Fevers							
Blood							
Micro-Agglutination Test							
B. Typhosus				1		1	1
B. Paratyphosus "A"							
B. Paratyphosus "B"							
Macro-Agglutination Test							
B. Typhosus							
"H" Aggl.	78	71	2,118	26		2,293	2,293
"O" Aggl.	33	43	2,186	30		2,292	
B. Paratyphosus "A"		2	86	4		92	
B. Paratyphosus "B"	10	11	2,061	210		2,292	
Blood Cultures							
B. Typhosus	7		2,135	20		2,162	
B. Paratyphosus			2			2	
Feces							
B. Typhosus	55	2	532		2	591	591
B. Paratyphosus						1	1
Urine							
B. Typhosus	2		5			7	7
B. Paratyphosus							
Bile							
B. Typhosus							
B. Paratyphosus							
Water							
B. Typhosus							
B. Paratyphosus							
Milk							
B. Typhosus			2			2	2
Dysentery							
Amebic							
Feces			27			27	27
Bacillary							
Blood for Aggl.			2	12		14	
Feces	25		90			115	115
Urine	1		5			6	6
Bile							
Swabs. Rectal			6			6	6

TABLE II—(Continued)

Report of Laboratory Examinations for July 1, 1944 to July 1, 1946

	Positive	Doubtful	Negative	Unsatisfactory	Unclassified	Total Exams	Total Specs.
Brucella Infection							
Blood Agglutination	28	32	2,210	24		2,294	8
Blood Cultures	1		2			3	3
Opsonocyptophagic Test							
Tularemia							
Blood Agglutination	48	38	2,142	54		2,282	7
Blood Cultures			1			1	1
Animal Inoculations							
Streptococci							
Beta Hemolytic							
Throat & Nose Cultures	3		14			17	17
Other Cultures	1		1			2	2
Non-Hemolytic							
Throat & Nose Cultures	3	1		2		6	6
Other Cultures							
Meningitis							
Meningococcus							
Spinal Fluids	1		2			3	3
Throat Cultures							
Other Types							
Other Types							
Spinal Fluids							
Parasitic Diseases							
Ova & Parasites							
Feces	6	6	127		139	139	139
Specimens for Identificat'n					5	5	5
Fungi							
Direct Microscopic			25		1	26	26
Cultures			14	1	5	20	20
Diptheria							
Direct Smear	3	2	12	1		18	18
Cultures	343	103	2,287	66		2,799	2,799
Virulence Test	11		3	4		18	18
Tuberculosis							
Blood							
Comp-Fix. Test							
Spinal Fluid							
Comp-Fix. Test							
Sputum							
Microscopic	152	6	1,544	60		1,762	1,762
Direct Smear			7		1	8	8
Animal Inoculation						23	23
Culture			7			22	18
Urine							
Direct Smear							
Microscopic					9	9	9
Animal Inoculation				2	189	191	189
Culture					7	7	7
Body Fluids							
Culture					3	3	3
Direct Smear			3			3	3
Microscopic	1		13	1	4	19	19
Animal Inoculation				3		71	68
Spinal Fluids							
Microscopic	1		1			2	6
Animal Inoculation						11	11
Culture					1	1	1
Feces							
Microscopic			3			3	3
Animal Inoculation							
Gastric Contents			4			4	4

TABLE II—(Continued)

Report of Laboratory Examinations for July 1, 1944 to July 1, 1946

	Positive	Doubtful	Negative	Unsatisfactory	Unclassified	Total Exams	Total Specs.
Pneumonia							
Typing Neufeld (Direct)					1	1	1
Typing Mouse Inoculation							
Transudates & Exudates							
Typing Neufeld (Direct)							
Typing Mouse Method							
Vincent's Infection							
Smears	82		39			121	121
Cultures	1					1	1
Malaria							
Blood Smears	42	1	52	4		99	98
Whooping Cough							
Cough Plates			2			2	2
Vaccines Prepared Autogenous							
Special Investigations							
Food Poisoning							
Bacteriological			1		6	7	7
Toxic					1	1	1
Microscopical Examinations							
Bacteriological Examinations							
Serological							
Chemical							
Animal Tests			1		3	4	4
Discharges-Pus, Sputum, Etc.							
Microscopical					2	2	2
Bacteriological					2	2	2
Pleural & Other Fluids							
Blood							
Cultures (Not Typhoid)			1		7	8	4
Red Cell Count					1	1	1
White Cell Count					2	2	1
Diff. Count					14	14	14
Smear, Stippling					1	1	1
Spinal Fluid							
Microscopical							
Cell Count					4	4	
Bacteriological			1		34	35	26
Chemical					1	1	1
Urine Analysis							
Microscopical					12	12	12
Physical Chemical					1	1	1
Pregnancy Test				3		3	3
Bacteriological					1	1	
Nasal Smears							
Eosinophiles							
Organisms							
Miscellaneous Examinations							
Feces for Occult Blood	8		12			20	20
Cultures for Identification					8	8	8
Specimens for Identification					3	3	3
Milk for B Coli	1					1	1
Smears for Organisms			2		41	43	48
Cultures for Organisms			18		131	149	145
Hetrophile Antibodies	30	47	1,838	58		1,973	10
Blood for Typing					150	150	150
Animal Tests (Autopsies)							
Proteus OX-19	1	2	38	2		43	2
Unclassified					12	12	11
Blood Rh. Factor				2	39	41	22
Culture for Fungi					2	2	2
Culture for Anthrax			2		1	3	3
Stool for Amoeba			6			6	6
TOTAL						215,606	106,270

The greater part of the work continues to be concerned with examinations of specimens for venereal diseases since at the present time 89.4% of the total number of examinations may be thus classified. Table III presents the picture clearly.

TABLE III

Total Examinations for Venereal Diseases 1944-1946

	1944-45	1945-46	Total 1944-46
Total Syphilis	90,748	100,189	190,937
Wassermann	45,182	49,844	95,026
Kahn	44,791	49,408	94,199
Treponema, Smear and Darkfield	7	3	10
Spinal Fluid, C. G. and Globulin	768	934	1,702
Total Gonorrhea	954	1,260	2,214
Smears	953	1,256	2,209
Cultures	1	4	5
TOTAL VENEREAL DISEASE EXAMINATIONS	91,702	101,449	193,151
OTHER TYPES EXAMINATIONS	9,648	12,807	22,455
EXAMINATIONS, GRAND TOTAL ALL TYPES	101,350	114,256	215,606
SPECIMENS, GRAND TOTAL ALL TYPES	50,422	55,848	106,270

Requests for shipping containers continue to increase and it is felt that many are standing idle upon the shelves in the offices of physicians and hospitals throughout the state. A check will be made of outgoing and incoming containers to the various individual offices as soon as clerical help permits, since such a comparative study usually results in the recovery of a large number of non-circulating containers. Table IV gives the total number distributed for the years 1944 to 1946.

TABLE IV

Specimen Containers and Materials Shipped During July 1, 1944 to July 1, 1946

	1944-45	1945-46	Total 1944-46
Vials, Blood	33,709	45,486	79,195
Containers, Mailers for Blood Specimens	12,395	17,661	30,056
Cultures, Loefflers	1,810	2,317	4,127
Swabs, Sterile	1,850	2,347	4,197
Containers, Mailers for Throat and Nose Specimens	816	683	1,499
Slides, Glass	1,558	2,198	3,756
Containers, Glass Slide	795	964	1,759
Jars, Sputum	1,519	1,208	2,727
Containers, Sputum Jar	1,552	1,293	2,845
Jars, Feces	429	376	805
Containers, Feces, Jars	380	329	709
Darkfield Outfits			
Blood Culture Outfits	11	13	24
G. C. Culture Outfits		2	2
Intestinal Parasite Outfits			
Brucella Culture Outfits			
Keidel Vacuum Tubes	769	1,105	1,874
Miscell. History Slips	130	674	804
Positive Syphilitic Serum	3	50	53
Miscellaneous Media			
Culture Media, Sabourauds	4	12	16
Chocolate Agar Plates		9	9
Blood Agar Plates		4	4
S. S. Agar Plates	20	10	30
Agar, Plain, Slants		12	12
Antigens, Various			
Tularense		1	1

PERSONNEL

The personnel of the division has remained on a permanent basis for over one year with the exception of several changes in the office staff. One of the former senior bacteriologists returning from the Service in March, 1946 resumed his duties at that time but resigned to enter medical school in September. It proved of material assistance to have one extra person available to serve as a fill-in for the various vacancies during vacation periods. Funds are available at the present time for one full-time Senior Bacteriologist if a competent person can be found. A definite need will exist if the plans discussed later are to materialize.

Report of Scientific Work

Syphilis: A total number of 190,937 examinations were conducted during 1944-46 for syphilis. Of these 95,026 were Kolmer Wassermanns and 94,109 were Kahn Standard tests. The balance consisted of 1702

examinations of spinal fluids for Collodial Gold Curves and Globulin and 10 examinations for Treponema.

Evaluation of the performance of both the Kolmer and Kahn tests in our laboratory was again requested and granted by U. S. Public Health Service. The ratings were as follows:

Kolmer Simplified Compliment-Fixation Test

	Sensitivity	Specificity
Control Laboratory	88.4%	100 %
Montana Laboratory	83.9%	99.6%

Kahn Standard Precipitation Test

	Sensitivity Sensitivity	Specificity Specificity
Control Laboratory	83.1%	100.0%
Montana Laboratory	79.4%	100.0%

A law was established by legislative action effective July 1, 1945 requiring that a sample of blood be taken from every pregnant woman and submitted to an approved laboratory for a standard serological test for syphilis. The term "approved laboratory" shall mean a laboratory approved for this purpose by the State Board of Health, a "standard serological test" shall be a test recognized as such by the State Board of Health. Passage of this law has brought in an estimated 10,000 additional blood specimens in the first year of its operation.

Gonorrhea

A total of 2,214 examinations for gonorrhea were performed, of which 2,209 were a study of smears: A shipping outfit for the culturing of gonococci, designed after that employed by New Jersey, which has proven to be of practical value, has been adopted and is now ready for distribution upon request to those physicians desiring it.

Tuberculosis

The culturing of sputum and various body fluids for tuberculosis has been established and is now being done upon request. This will be adopted as a routine measure as soon as personnel is sufficient to assign to this duty. It is anticipated that the modified Lowenstein's Media as advocated by the Tuberculosis Division of the USPHS will be employed with Corper's media as an accessory media.

Agglutinations

Requests for agglutinations of all types have increased materially within the past year. All bloods submitted for a Widal test are now subjected to an agglutination test for the typhoid-paratyphoid group, undulant fever, tularemia and for the presence of heterophile antibodies. The latter measure was adopted routinely about a year ago but the low percentage of positive reactions encountered, less than 1%, renders the performance of this test of doubtful value as a routine procedure. All blood clots are cultured after removal of the sera.

There have been no outbreaks during this biennum, of a serious nature aside from a few cases of diarrhea in several of the institutions. Special materials for culturing were furnished upon request of the medical officer in charge in each of the cases.

Special studies have been undertaken in several cases of suspected mycotic infections, both cutaneous and respiratory. Since this service is inadequately provided for in most hospital and clinic laboratories, we feel justified in devoting as much time as necessary to assist the physicians in the diagnosis of those often obscure conditions.

No other special studies have been accomplished.

Physical Equipment

Very little new physical equipment has been secured since the previous report. A Steiger-Stimpson Slit Lamb for assistance in reading the Kahn tests has been of material value to us as a time saving device. A new Spencer Medical Microscope complete with carrying case was secured, together with a Spencer Microscope Lamp. These, together with several new reference books and additional publications, aside from the regular stock supplies, constitute the acquisitions to the permanent equipment for the past two years.

An attempt will be made within the next year to procure 1 new centrifuge, a larger steam sterilizer, a new Kahn shaker to replace the present outworn machine, as well as several other replacements for basic equipment that has passed its expected efficiency and upon which a great deal of time and repairs must be spent at the present time to keep them in running order.

Proposed Future Development of Diagnostic Services

Any discussion of future plans must of necessity be influenced naturally by the conditions under which these are formulated.

The Hygienic Laboratory Division created on October, 1917 continues to carry on its work in the same quarters assigned to it at that time with the exception of one additional room which serves as office space. It is evident that assignment of further duties to this division must be considered carefully in the light of the cramped conditions under which the present and anticipated increasing volume of work is undertaken.

The Blood Bank Division established with an initial appropriation of $20,000 by Legislative action February, 1944 for the purpose of producing human blood plasma, and placed under the supervision of the Hygienic Laboratory, has not been developed and set up due to the difficulties of various nature encountered ever since its inception. Since no space adjacent to the Hygienic Laboratory was available, even on any of the other floors, although the ground floor is at present occupied in its entirety, by one of the other state departments, it became necessary to seek quarters elsewhere. The only space available which seemed suitable for its needs was situated in a building about two miles distant,

near the airport. This building, formerly used as an N.Y.A. dormitory and now owned by the city of Helena, possessed built-in refrigeration space, ample store room, and kitchen facilities for cleansing of the glassware. It was accordingly leased from the city with the intentions of immediately renovating and reconverting it into a laboratory suitable for carrying on the functions of the newly established Blood Bank Division. However, it was found that even if the materials needed were available and many of them including suitable radiation were not, the cost of reconversion alone, under the inflated building costs would entail the expenditure of the greater part of the $20,000 appropriated for the fiscal years 1944-46 for both the establishment and maintenance of the bank. Pending decision of the best course to follow, several pieces of basic equipment were purchased, when available, and placed in storage. The immediate establishment of this division was rendered less urgent by a factor which unexpectedly entered the picture, the distribution to the various states, beginning January, 1946 of large quantities of dried human plasma by the American Red Cross. This was surplus plasma returned to this organization by the Armed Forces after cessation of hostilities. It was estimated by the Red Cross at that time that the supply from this source would fill the needs of all states for at least wo years.

In view of the rapid developments in the field of blood and its derivatives and the limited funds available in a sparsely populated state such as ours, it is probably advisable to proceed rather conservatively into the program.

If additional funds could be obtained to provide for the reconversion of the entire building mentioned above and also for a separate animal unit to care for the transfer of the entire Hygienic Laboratory Division to this location, ample space would be available to care for its present activities and also allow for material expansion for some years to come. The housing of these two units adjacent to each other would result in much lower administrative costs than if separated.

Plans were considered by a group designated as the Laboratory Planning Commission, for the construction of a building to care for all the combined laboratory units of all State Divisions including those of the State Board of Health. However, building costs and lack of materials would seem to prohibit such construction for some years to come.

Hence, the plan discussed above, namely the reconversion of the building above described, appears to be the most practical solution to our immediate crowded conditions as well as to the establishment of the Blood Bank Division. Since actual separation of certain other divisions from the building housing the Administrative Division of the State Board of Health has already been necessary and further moves seem enevitable, the anticipated separation of this division is not establishing a precedent.

The proposed move as planned would provide also for expanded facilities for animal quarters. The need for such expansion will be urgently felt if the plans of the Tuberculosis Division materialize as anticipated when the Laboratory will be called upon to verify by animal inoculation many of the suspicious cases of tuberculosis encountered in

the state-wide survey being made at the present time by the mobile unit. Additional animal stock will be needed also, after establishment of the Blood Bank, for checking of all lots of plasma for toxicity. The request for an appropriation of $5,000 for the erection of an animal house was rejected by the 1944 Legislature.

A companion bill to the prenatal law enacted in 1945 requiring every applicant for a marriage license to undergo a serological blood test for syphilis was introduced for consideration in 1945 but failed in passage by a narrow margin. It is hoped that the bill would be reintroduced at the 1947 session since Montana is one of the few states which does not require this protective health measure.

There is a great deal of discussion at present concerning Rh typing and whether this procedure should be adopted as a state service. Lack of adequate typing sera is the greatest handicap thus far to the development of this program. It may be advisable to assist the hospitals and clinics to establish their own typing programs rather than attempt to develop it as a function of the state laboratory.

Evaluation of intra-state hospital and clinic laboratories has not been undertaken as desired due to lack of adequate personnel to assign to this function. To carry on this project effectively would entail nearly the entire time of one senior bacteriologist. However, it is planned definitely to begin in January, 1947 the submission of blood sera specimens to various of the hospital laboratories requesting this service, for the purpose of evaluating their performance of serological tests for syphilis. It is hoped then to extend the evaluation to microscopic staining techniques and materials since it is believed this may be of direct benefit to those laboratories who have limited opportunity for the study of certain of the communicable diseases. Representative slides of the various organisms are being collected at the present time for this purpose.

There is difinite need for a Director of Public Health Education not only in this division but in the others as well, to facilitate the dissemination of educational information concerning all health measures and to act as a liason agent between the State Board of Health and many of the other agencies and individuals interested in the field.

Recommendations

Most earnest consideration should be given to the plans for expanding the housing facilities of the laboratory with its various activities. Upon this one factor depends to a large extent the ability of the division to undertake any new work or perform with efficiency the duties now assigned to it.

We wish to thank you for your cooperative assistance with our problems when presented to you and for your guidance in the months just past.

Respectfully submitted,

EDITH KUHNS, Director.

DIVISION OF INDUSTRIAL HYGIENE

Paul M. Giever, Director

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.

J. J. Carrigan, General Manager of Mines, Anaconda Copper Mining Company, Butte.

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

Dr. A. T. Haas, Chairman, Committee on Industrial Hygiene, Montana Medical Association, Missoula.

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

The following report presents a summary of the activities of the Division of Industrial Hygiene for the period from December 1, 1944 to October 30, 1946.

The Division has continued to carry out the program as originally planned for the department with special sections of that program receiving greater attention as deemed necessary for the war effort. The object of the department has at all times been to assist labor and management in achieving and maintaining the most healthful working conditions possible through the recognition, evaluation, and assistance in the control of occupational health hazards.

Two meetings of the Advisory Board have been held and much valuable assistance has been received from this committee in the way of suggestions and recommendations on policies and procedures.

On December 1, 1944 the personnel of this department consisted of Dohrman H. Byers, Acting Director, on loan from U. S. Public Health Service, Mr. Hilmer N. Hansen, Industrial Chemist, and Miss Solveig N. Lee, Senior Stenographer. Mr. Byers was recalled by the U. S. Public Health Service and Mr. Paul M. Giever was appointed Director and Industrial Hygiene Engineer effective August 21, 1946. Mr. Hilmer Hansen resigned June 15, 1946 and Mr. Ludwig S. Champa, Analyst for the Food and Drug Division, was transferred to the Industrial Chemical Laboratory on July 1, 1946.

A continued effort has been made to procure necessary equipment for engineering field studies and for the chemical laboratory. At the present time, the laboratory is quite adequately equipped but several important pieces of field apparatus are still required to completely equip the engineering section.

OCCUPATIONAL DISEASE REPORTING

The reporting of occupational diseases is still not being accomplished satisfactorily. This phase of the industrial hygiene program has not to date received the complete cooperation of members of the state medical profession. An extensive campaign to improve this condition was made but resulted in no change. In this campaign, letters

and occupational disease report blanks were sent to all doctors in the state. Now that the extreme shortage of physicians in the state is somewhat relieved, a new effort will be made to make this phase of the industrial hygiene program function.

Three occupational disease reports were received in the twenty-three month period covered by this report. One was a case of occupational undulant fever, and the other was a possible carbon monoxide poisoning. One probable occupational disease case is being worked on at the present time. This case was reported by the patient and is probably an occupational arsenic poisoning.

ATTENDANCE REPORTING

At the present time, monthly reports of attendance records are being received from two industrial plants employing approximately 1,500 persons. This service was instituted by the Industrial Hygiene Division in an effort to encourage management to locate causes of industrial illnesses and industrial health hazards within the plant. This division prepares a yearly critical graph analyses for the companies submitting these records. This analyses assists in evaluating sick absenteeism problems. This program will be continued although much of the pressure on absenteeism has been relieved since the close of the war.

EDUCATION

Education is one of the important phases of the industrial hygiene program and has been carried on through the use of motion pictures and addresses by members of the staff before various groups at frequent intervals. An extensive poster and literature campaign was carried on during the war but has been dropped in the past year.

It is recognized that much more work is necessary along the lines of education to adequately establish the industrial hygiene program to the point where all occupational diseases are reported and management and labor request industrial hygiene surveys for every suspected health hazard in their operation.

FIELD STUDIES

The Industrial Hygiene Division conducted field studies in 119 plants involving 6,228 workers; made 23 follow-up visits to render further assistance and to re-evaluate hazards by checking proficiency of corrective measures installed. Recommendations for elimination or control of health hazards were made which affected 4,462 persons. Of the 119 field studies made, 21 were at the request of industry or labor, and 3 were made as a result of occupational disease reports.

A survey of most of the newspaper shops was conducted in 1945 and early 1946. This survey covered 32 establishments and approximately 300 persons. It was gratifying to determine that in nearly all these establishments, little or no lead hazard existed. This was due to the fact that lead melting operations conducted at a relatively low temperature produced a minimum amount of exposure to a limited number of persons.

The carbon monoxide survey of garages started in 1944 was continued and in nearly all commercial garages a pertinent carbon monoxide hazard was found to exist, or conditions were found which would indicate that such a hazard could exist under normal winter operating conditions.

Members of the Industrial Hygiene Division accompanied a survey team from the offices of Admiral Boone in a survey of housing, sanitation, welfare and recreational facilities in several of the coal mines in the state which had been taken over by the Government. Administration of these mines is in the hands of Navy Personnel under Admiral Boone.

A study of oxygen administration in infant incubators was continued for the Public Health Nursing Division. This work has been conducted intermittently for the past four years. In this experiment, determinations of the characteristics at various rates of oxygen flow were made on a Gordon-Armstrong Incubator.

LABORATORY AND FIELD ANALYSES

Arrangements were made with the Industrial Accident Board whereby the Industrial Hygiene Division would do the necessary laboratory work to analyze coal and dust samples for rock dust and ash content, and also mine air samples for methane and oxygen. Several groups of these samples have been analyzed.

From samples collected in field studies, 1,102 chemical analyses were made. This number is exclusive of control and development work on chemical methods. A total of 1,470 field determinations were made by portable test apparatus or direct reading instruments. A total of 2,572 laboratory analyses and field determinations were made.

A summary of this work according to constituents is presented in the following table:

TABLE I

Summary of Chemical Laboratory and Field Analyses

Materials Analyzed	No. of Study Analyses
Dust Counts—	
Silica	9
Coal	4
Nuisance	8
Lead	445
Arsenic	30
Zinc	28
Cadium	41
Oxides of Nitrogen	218
Oxygen	91
Chlorinated Hydrocarbons	11
Methane	24
Sulphur Dioxide	23
Organic Solvents	1
Manganese	36
Carbon Dioxide	133
Field Determinations—	
Illumination	2
Carbon Monoxide	1,180
Air Velocity	126
Relative Humidity	48
Combustible Gases	20
Temperature	94

DIVISION OF TUBERCULOSIS CONTROL

Biennial Report 1945-46

Personnel as of November 15, 1946:

Arthur E. Rikli, M. D., Director.

Henry Arnoux, Photofluorographic Operator.

Opal Arnoux, R. N.

Louise T. Betzner, Senior Stenographer.

Evelyn Beecher, Junior Stenographer.

Hollie Morey, Junior Clerk-Typist.

I. Creation of the Division of Tuberculosis Control.

The 29th Legislative Assembly of the State of Montana created in the State Board of Health a Division of Tuberculosis Control. In Chapter 170 of the 1945 Session Laws, the Act is described as follows:

"An act relating to public health, establishing a Division of Tuberculosis Control in the State Department of Health, providing for a director of such division, providing for acceptance of grants or other funds and making an appropriation by the State for carrying out provisions of this act." It was approved March 5, 1945.

This act was instigated by the State Medical Association, the Montana Tuberculosis Association and many other public spirited, health-minded groups. These groups are now integrating their forces to assist in carrying out the intentions of this act.

II. Appointment of the Director.

It was not until April, 1946 that the present director was obtained on loan from the U. S. Public Health Service. This was done after many months' delay during which the State Board of Health was unable to find a qualified man to act as director of this division. The loan will continue until such a man is found to assume the responsibility.

III. Montana Tuberculosis Association Presents Mobile Photofluorographic Unit.

On April 25, 1946, Dr. E. M. Larson, president of the Montana Tuberculosis Association, presented to Dr. B. K. Kilbourne, Executive Officer of the State Board of Health, a $25,000 mobile, photofluorographic unit. It was purchased with funds obtained from the sale of Christmas Seals. The unit is to be operated by the Division of Tuberculosis Control throughout the State of Montana. It will make free miniature chest X-ray facilities available to all communities. This unit is capable of taking 100 miniature chest X-rays per hour; it is not necessary for the subject to disrobe.

IV. Purpose of the Mobile Unit.

A chest X-ray is the only way that one can be sure that he does not have the contagious disease, pulmonary tuberculosis. It is the most efficient means of detecting this potentially fatal disease in its early stages. Tuberculosis in its early stages is most surely and rapidly arrested, thus preventing the infected person from giving this disease to another individual. The person who has early tuberculosis is unaware of his symptoms and is not likely to go to his family physician for his annual physical examination, including a chest X-ray. This unit will assist in taking chest X-rays of every individual who wishes to take advantage of the service.

V. Availability of the Mobile Unit.

This service has been made available only to those communities which have requested it. Priority has been shown to those communities near or in which the incidence of deaths due to tuberculosis is highest, to those communities from which requests have come from both the people of the community and its medical group, and to those communities where there are the best facilities available for following up the tuberculosis case finding program.

VI. Mechanics of the X-ray Program.

Following requests from the community, the Division of Tuberculosis Control obtains approval and sponsorship for the program from the local health department, medical society and tuberculosis association. The field secretary from the Montana Tuberculosis Association then goes into the community to assist in the organization of a health education program to prepare the community for the arrival of the mobile unit. Upon the arrival of the X-ray unit and its technicians, along with clerical assistance furnished by the community, miniature chest X-rays are taken of those persons wishing to take advantage of the service. They first register, giving their name and those of their family physicians. The X-ray report, if there are no significant abnormalities visualized, is given directly to the subject. If significant abnormalities are found, the X-ray report is given by the health department to the subject's family physician. A request is then sent to the subject asking him to go to his family physician for diagnosis and disposition. The follow-up of each case is carried out by the cooperative efforts of the family physician, the public health nurse and the health department.

VII. Progress of This Program.

The mobile unit was first put into action on June 3, 1946. Since that time it has given service to 6 state institutions, 10 counties and 24 communities, taking a total of 19,666 chest X-rays during the period ending October 10, 1946. A summary of these projects is as follows:

Total number of films taken	19,666
Number of unsatisfactory films	545
Total number of persons examined	19,121
(Difference between preceding two items)	

Of this total, there were		Percentage of Total Persons Examined
Essentially negative	18,568	97.10%
Definite tuberculosis	44	0.23%
Suspected tuberculosis	212	1.10%
Other pathology	297	1.55%

These figures are obtained from our primary impression on the survey films.

VIII. Tuberculosis Cases Reported.

Recognizing the fact that no health department, state or local, can effectively prevent or control disease without knowledge of when, where and under what conditions cases are occurring, tuberculosis, a contagious and potentially fatal disease, was made reportable to the Health Department by the physician treating or examining the case by Section 1500 of the Public Health Laws, effective February 13, 1913. The following table is an analysis of the source of the original report.

Sources of Original Report of Tuberculosis Cases
In 1944 (3 mo.), 1945 and 1946 (9 mo.)

Year	Local Physician	Sanatorium	Death Certificate	Other	Total
1944 (3 mo.)	65	43	24	...	132
1945	107	148	73	45	373
1946 (9 mo.)	59	125	64	25	273
TOTAL	231	326	161	70	778

From this table we make the following observations:

1. Less than 30% of the cases are first reported by local physicians.
2. Approximately 50% are first reported upon their admission to the Sanatorium.
3. Over 20% of the cases are not reported till they die.

A further breakdown of the table above as to age and sex of those cases reported is as follows:

Tuberculosis Cases Reported in 1944 (3 mo.), 1945-1946 (9 mo.)
By Sex and Age Groups

Age Groups	1944 (3 mo.) Male	Female	Total	1945 Male	Female	Total	1946 (9 mo.) Male	Female	Total
0-4	3	----	3	8	6	14	4	4	8
5-9	----	----	----	----	2	2	2	3	5
10-14	----	4	4	5	1	6	----	1	1
15-19	----	6	6	3	9	12	2	----	2
20-29	8	9	17	19	14	33	14	11	25
30-39	4	5	9	14	7	21	8	6	14
40-49	6	1	7	20	6	26	10	6	16
50-59	12	----	12	26	8	34	13	2	15
60-69	6	2	8	25	6	31	14	4	18
70-Over	1	1	2	13	4	17	9	4	13
Age Not Given	48	16	64	99	61	160	83	52	135
Sex Not Given	----	----	----	----	----	17	----	----	21
TOTAL	88	44	132	232	124	373	159	93	273

From this table the following observations are made:

1. That the age analysis is based on less than 50% of the cases because the age was not given when the disease was reported.

2. That the age group at which most cases are reported is between 20 and 29.

3. Sex was not given in 38 of the 778 cases reported.

4. There are 479 reported cases of men to 260 women, a ration of less than 2 to 1.

IX. Ratio of Cases Reported Per Annual Death.

There has been no attempt to differentiate active and inactive cases or pulmonary and extra pulmonary. All have been classed just as tuberculosis.

Ratio of Cases Reported Per Annual Death From Tuberculosis From 1920 to and Including 9 mo. of 1946

	Deaths	Cases Reported	Ratio of Cases to Deaths
1920	419	863	2.06
1921	356	568	1.59
1922	383	368	0.96
1923	395	604	1.53
1924	434	648	1.49
1925	396	620	1.56
1926	377	528	1.40
1927	373	463	1.24
1928	357	448	1.26
1929	357	536	1.50
1930	337	534	1.59
1931	329	579	1.76
1932	307	568	1.95
1933	282	465	1.65
1934	265	638	2.40
1935	257	432	1.69
1936	220	497	2.26
1937	235	486	2.06
1938	239	515	2.16
1939	239	455	1.91
1940	225	451	2.00
1941	201	466	2.31
1942	195	402	2.06
1943	199	386	1.95
1944	167	508	3.05
1945	166	373	2.25
1946 (9 mo.)	108	273	2.53

From the above table we observe

1. Reporting of cases has improved during the past five to ten years.

2. It has been estimated * that there are "as low as three and as high as twelve living cases per annual death" and that an average for most communities would fall around nine cases per annual death. From these estimates, we might conclude that we have yet to find in Montana from five to seven cases of tuberculosis per annual death from the disease. We hope that our chest X-ray program will help us find those cases.

X. Miscellaneous Activities Assisted by Funds Appropriated for the Control of Tuberculosis.

A. Division of Public Health Nursing.

1. Salary for some of the nurses of the Division of Public Health Nursing of the State Board of Health.

*Chadwick and Pope, "The Modern Attack on Tuberculosis."

2. Travel expenses, etc., for the Institute on Nursing in Tuberculosis.

B. Hygienic Laboratory
   1. Salary for technician and equipment to be used by the State Hygienic Laboratory.

C. Division of Industrial Hygiene.
   1. Equipment purchased for study of X-radiation by the Division of Industrial Hygiene.

D. State Sanatorium
   1. A photofluorographic attachment was purchased for the X-ray equipment at the State Sanatorium.

E. Silver Bow Tuberculosis Association
   1. Full payment of salary of a nurse and a photofluorographic operator, as well as for some of the X-ray supplies, for the Silver Bow Tuberculosis Association.

XI. Fundamentals of the Program of This Division.

As we are developing our **tuberculosis case finding program,** we are trying to stimulate the creation of more and better facilities for **medical care and isolation** of persons having tuberculosis. At the present time, recurrences of the disease are frequent. Until we have a drug or some treatment which will prevent these recurrences, we must rely upon **a rehabilitation program** which will assist in directing the arrested case of tuberculosis into activities which will not contribute to recurrence of his disease. As each community has assumed its responsibilities in assisting in the diagnosis and treatment of the tuberculosis patient, it must now recognize its responsibility **to the family of the patient with tuberculosis and protect them against social and economic distress.**

XII. The Aim of This Division.

It is the aim of this division to integrate the activities of the various forces now active in controlling tuberculosis and to supplement them where necessary so that there will be an acceleration in the decline of mortality and morbidity due to tuberculosis.

Respectfully submitted,

ARTHUR E. RIKLI, M. D.
Director, Division of
Tuberculosis Control.

ITEMIZED DIVISIONAL EXPENDITURES

October 1, 1944 to September 30, 1946

M. S. Stanley, Fiscal Agent

ADMINISTRATION	State	Federal	Grand Total
Salaries	$ 17,350.00	$ 11,457.09	$ 28,807.09
Travel	719.91	433.20	1,153.11
Office Supplies & Equipment	1,536.39	509.38	2,045.77
Insurance	1,288.26	330.99	1,619.25
Maintenance & Repairs	592.71		592.71
Miscellaneous	1,440.00		1,440.00
Totals	$ 22,927.27	$ 12,730.66	$ 35,657.93
EPIDEMIOLOGY & VENEREAL DISEASE			
Salaries	$ 5,654.12	$ 6,485.00	$ 12,139.12
Travel	937.61	668.85	1,606.46
Office Supplies & Equipment	645.60	658.02	1,303.62
Scientific Supplies & Equipment	55.31	81.08	136.39
Arsenicals	4,213.75		4,213.75
Biologicals	1,795.54		1,795.54
Miscellaneous	20.00	150.00	170.00
Totals	$ 13,321.93	$ 8,042.95	$ 21,364.88
HYGIENIC LABORATORY			
Salaries	$ 21,948.18	$ 17,835.72	$ 39,783.90
Travel	93.91	278.05	371.96
Office Supplies & Equipment	718.84	2,542.26	3,261.10
Scientific Supplies & Equipment	639.30	3,150.11	3,789.41
Animals & Expense	236.81	1,367.29	1,604.10
Maintenance & Repairs	343.21	62.25	405.46
Totals	$ 23,980.25	$ 25,235.68	$ 49,215.93
SANITARY ENGINEERING			
Salaries	$ 16,686.58	$ 12,374.83	$ 29,061.41
Travel	385.68	3,957.35	4,343.03
Office Supplies & Equipment	934.38	913.09	1,847.47
Scientific Supplies & Equipment	789.34	904.56	1,693.90
Maintenance & Repairs	208.66		208.66
Miscellaneous & Express	134.61	1,464.95	1,599.56
Totals	$ 19,139.25	$ 19,614.78	$ 38,754.03
VITAL STATISTICS			
Salaries	$ 17,417.66	$ 2,945.00	$ 20,362.66
Travel	218.62	44.20	262.82
Office Supplies & Equipment	1,080.42	1,553.01	2,633.43
Totals	$ 18,716.70	$ 4,542.21	$ 23,258.91
FOOD & DRUG			
Salaries	$ 11,215.00	$ 9,380.00	$ 20,595.00
Travel	686.08	1,156.22	1,842.30
Office Supplies & Equipment	846.13	924.85	1,770.98
Scientific Supplies & Equipment	753.50	262.39	1,015.89
Totals	$ 13,500.71	$ 11,723.46	$ 25,224.17
INDUSTRIAL HYGIENE			
Salaries	$ 9,529.73	$ 474.19	$ 10,003.92
Travel	1,548.50	22.90	1,571.40
Office Supplies & Equipment	945.50	131.70	1,077.20
Scientific Supplies & Equipment	1,920.91	150.54	2,071.45
Miscellaneous	837.50		837.50
Totals	$ 14,782.14	$ 779.33	$ 15,561.47
MERIT SYSTEM			
Totals		6,523.14	6,523.14
		6,523.14	6,523.14

ITEMIZED DIVISIONAL EXPENDITURES—(Continued)

	State	Federal	Grand Total
PLAGUE INVESTIGATION			
Salaries		$ 3,850.56	$ 3,850.56
Truck Expense		454.77	454.77
Supplies & Equipment		209.53	209.53
Totals		$ 4,514.86	$ 4,514.86
TRAINING			
Stipend		$ 5,545.50	$ 5,545.50
Tuition		1,150.10	1,150.10
Travel		209.15	209.15
Totals		$ 6,904.75	$ 6,904.75
MATERNAL & CHILD HEALTH			
Salaries	$ 12,586.62	$ 15,004.60	$ 27,591.22
Travel		3,703.17	3,703.17
Office Supplies & Equipment	572.85	1,617.61	2,190.46
Communications	33.25	2,627.64	2,660.89
Printing & Binding	7.74	3,023.28	3,031.02
Publications for Distribution		1,269.98	1,269.98
Scientific Supplies		700.86	700.86
Contingent		9.00	9.00
Totals	$ 13,200.46	$ 27,956.14	$ 41,156.60
PUBLIC HEALTH NURSING			
Administration—Salaries	7,624.84	12,640.04	20,264.88
County Nurses—Salaries		25,431.93	25,431.93
Travel	201.46	4,926.31	5,127.77
Totals	$ 7,826.30	$ 42,998.28	$ 50,824.58
PUBLIC HEALTH EDUCATION			
Salaries		$ 5,558.44	$ 5,558.44
Travel		1,651.41	1,651.41
Office Supplies Expense		114.92	114.92
Totals		$ 7,324.77	$ 7,324.77
CRIPPLED CHILDREN			
Salaries	$ 14,197.96	$ 4,709.44	$ 18,907.40
Doctors Fees & Treatment	14,553.70	14,587.86	29,141.56
Hospitalization	51,511.41	20,184.80	71,696.21
Travel	6,775.68	803.03	7,578.71
Appliances	2,248.13	960.95	3,209.08
Office Supplies & Equipment	734.01	120.18	854.19
Scientific Supplies & Equipment	455.28		455.28
Communications	111.73	326.80	438.53
Printing & Binding	27.27	57.98	85.25
Contingent	55.18	20.00	75.18
Totals	$ 90,670.35	$ 41,771.04	$132,441.39
BLOOD BANK			
Office Supplies & Equipment	$ 172.92		$ 172.92
Scientific Equipment	5,370.00		5,370.00
Repairs & Remodeling	917.20		917.20
Totals	$ 6,460.12		$ 6,460.12
TUBERCULOSIS CONTROL			
Salaries	$ 2,546.86	$ 1,050.00	$ 3,596.86
Travel	1,138.36		1,138.36
Office Supplies & Equipment	441.23	3.87	415.10
Scientific Supplies & Equipment	2,020.46	3,686.07	5,706.53
Totals	$ 6,116.91	$ 4,739.94	$ 10,856.85
CASCADE COUNTY			
Salaries		$ 19,080.56	$ 19,080.56
Travel		1,952.80	1,952.80
Totals		$ 21,033.36	$ 21,033.36

ITEMIZED DIVISIONAL EXPENDITURES—(Continued)

	State	Federal	Grand Total
FERGUS COUNTY			
Salaries		$ 3,295.29	$ 3,295.29
GALLATIN COUNTY			
Salaries		$ 6,375.61	$ 6,375.61
Travel		457.45	457.45
Totals		$ 6,833.06	$ 6,833.06
LEWIS & CLARK COUNTY			
Salaries		$ 810.00	$ 810.00
Travel		50.30	50.30
Totals		$ 860.30	$ 860.30
MISSOULA COUNTY			
Salaries		$ 10,111.80	$ 10,111.80
Travel		1,040.85	1,040.85
Totals		$ 11,152.65	$ 11,152.65
GRAND TOTALS	$250,642.39	$268,576.65	$519,219.04
EMERGENCY MATERNAL & INFANT CARE			
Medical Services & Hospitalization		$324,223.77	$324,223.77