

PROVINCE OF BRITISH COLUMBIA

Seventy-first Annual Report of the
**Public Health Services
of British Columbia**

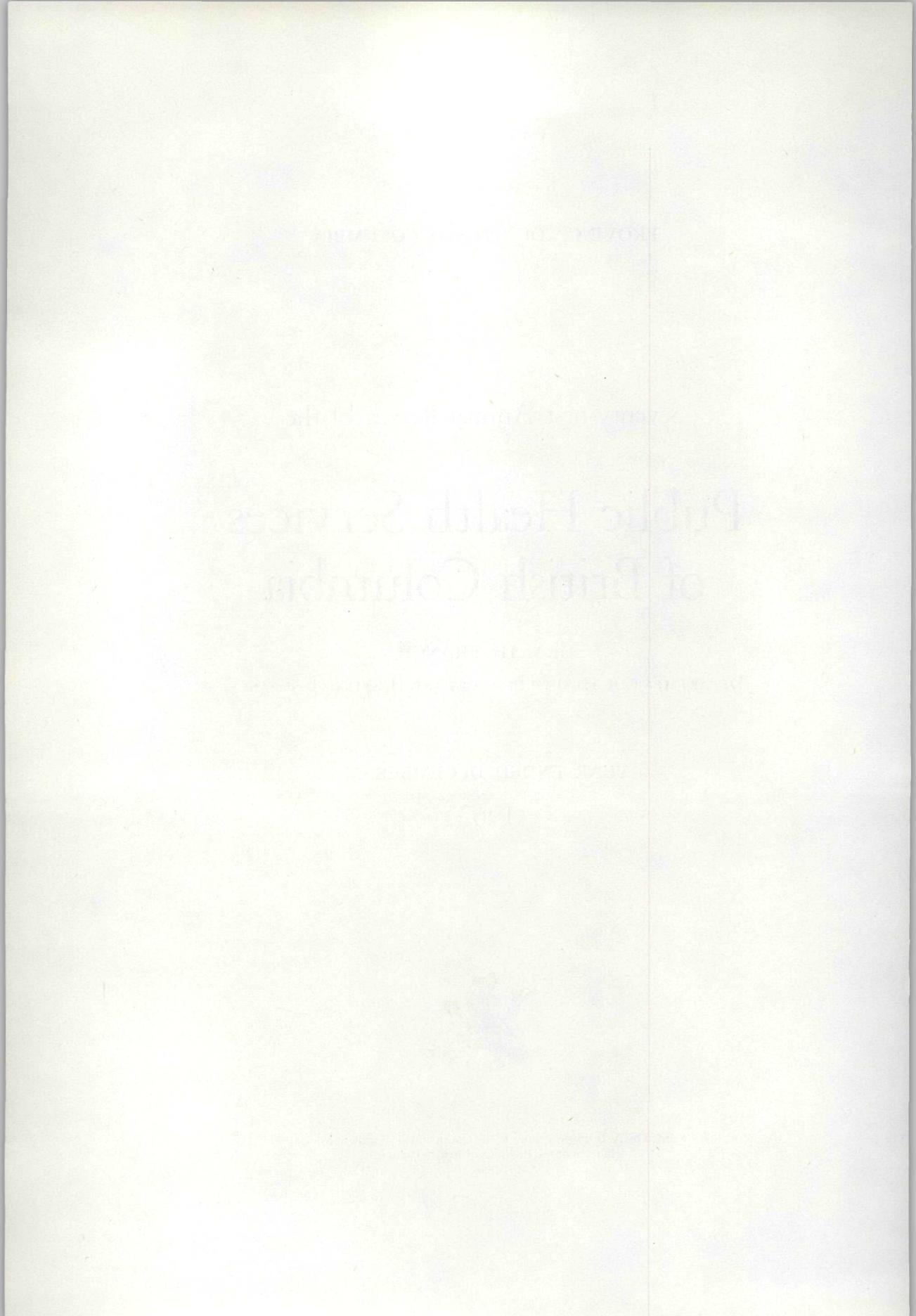
HEALTH BRANCH
DEPARTMENT OF HEALTH SERVICES AND HOSPITAL INSURANCE

YEAR ENDED DECEMBER 31

1967



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1968



OFFICE OF THE MINISTER OF HEALTH SERVICES
AND HOSPITAL INSURANCE,

VICTORIA, B.C., January 10, 1968.

To Major-General the Honourable GEORGE RANDOLPH PEARKES,
V.C., P.C., C.B., D.S.O., M.C., C.D.,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

The undersigned respectfully submits the Seventy-first Annual Report of the Public Health Services of British Columbia for the year ended December 31, 1967.

W. D. BLACK,
Minister of Health Services and Hospital Insurance.

DEPARTMENT OF HEALTH SERVICES AND HOSPITAL INSURANCE
(HEALTH BRANCH),

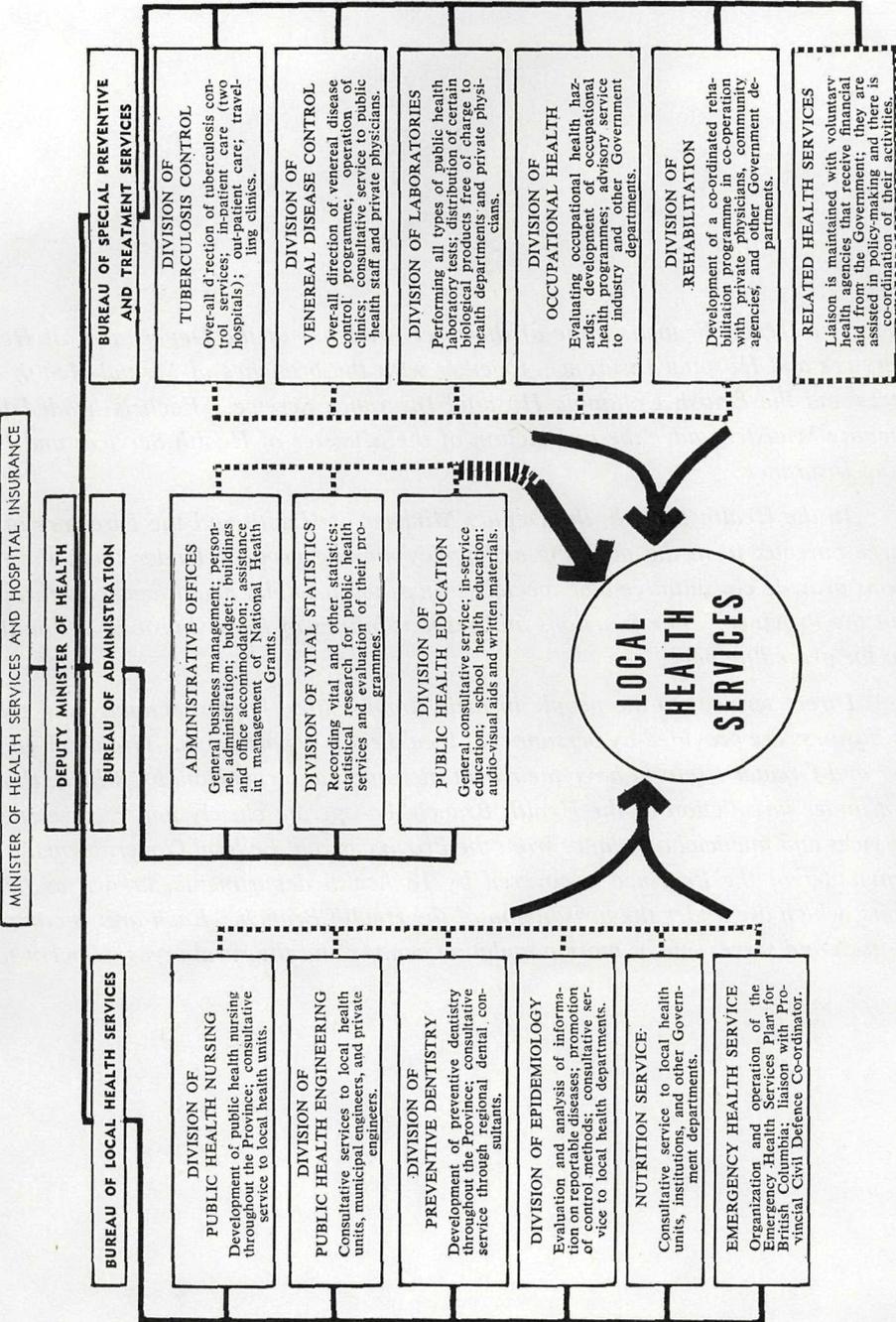
VICTORIA, B.C., January 4, 1968.

*The Honourable W. D. Black,
Minister of Health Services and Hospital Insurance,
Victoria, B.C.*

SIR,—I have the honour to submit the Seventy-first Annual Report of the Public Health Services of British Columbia for the year ended December 31, 1967.

J. A. TAYLOR, B.A., M.D., D.P.H.,
Deputy Minister of Health.

HEALTH BRANCH ORGANIZATION



The Health Branch is one of the three branches of the Department of Health Services and Hospital Insurance, together with the branches of Mental Health Services and the British Columbia Hospital Insurance Service. Each is headed by a Deputy Minister under the jurisdiction of the Minister of Health Services and Hospital Insurance.

In the Health Branch, the Deputy Minister of Health and the Directors of the three bureaux form the planning and policy-making group. Under them the divisions provide consultative and special services to all public health agencies throughout the Province. The functions and responsibilities of these divisions are outlined on the preceding page.

Direct services to the people in their communities, homes, schools, and places of business are provided by personnel of local health departments. Greater Vancouver and Greater Victoria have their own metropolitan organizations, which, though not under jurisdiction of the Health Branch, co-operate closely and receive special services and financial assistance from the Provincial and Federal Governments. The remainder of the Province is covered by 18 health departments, known as health units, which are under the jurisdiction of the Health Branch. Each unit is complete in itself and serves one or more population centres and the rural areas adjacent to it.

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Seventy-first Annual Report of the Public Health Services of British Columbia

HEALTH BRANCH

DEPARTMENT OF HEALTH SERVICES AND HOSPITAL INSURANCE

YEAR ENDED DECEMBER 31, 1967

For 71 years a department of Government has been encouraging the development of effective preventive medical services throughout the Province. Primarily this has been designed to reduce the volume of preventable disease and to promote the evolution of maximum community health as much as possible. Toward this goal, efforts have been made to foster the organization of adequate local health services at the community level through a system of health units employing technical staffs who would concentrate attention on attainment of an ideal healthful environment. This pattern of health services was continued through the past year, resulting in some accomplishments, among which certain highlights can be mentioned.

- The mid-year POPULATION was estimated at 1,947,000, which is over 3 per cent more than the final 1966 figure of 1,873,674 for the Province. In a period since 1945 the growth pattern has exhibited some significant changes; those aged under 20 have increased in numbers by over 150 per cent, while those from 20 to 59 gained about 70 per cent and those 60 and over by about 85 per cent. These changes in population distribution pose some considerations for the types of community health services that should be emphasized.

- The MARRIAGE RATE, at 8.2 per 1,000 population, was somewhat below the 1965 rate of 9.6 but higher than any other rate since 1957.

- A BIRTH RATE of 17.3 births per 1,000 population was a further decline, maintaining the decrease that has been in effect since 1957.

- The crude MORTALITY RATE attained a record low at 8.3 deaths per 1,000 population, the lowest rate since the early 1920's. Taking into account the changed age structure of the population since that time, it may be stated that the Province in 1967 enjoyed a more favourable mortality rate than at any other time in its history.

- A striking decline has occurred in deaths from HEART DISEASE during the last few years. In 1964 the rate reached a record high of 350 per 100,000 population, but it has declined each year since and in 1967 was at the lowest point in more than 20 years at 303 per 100,000 population.

- CANCER deaths revealed a mortality rate of 151 per 100,000 population, substantially unchanged from the figure of last year.

- Deaths from CEREBROVASCULAR lesions (strokes) were slightly lower at 93 per 100,000 population.

- ACCIDENT mortality was at about the same level as a year ago, with 69 deaths for each 100,000 people in the Province. Increases in deaths from burns and drownings were offset by a decline in the number of fatal falls.

- The SUICIDE death rate remains fairly constant with that of recent years, at 14.1 for each 100,000 population.

- The INFANT MORTALITY RATE decreased to 21.2 per 1,000 live births, slightly above the record low exhibited in 1965.
- DIPHTHERIA reappeared for the first time in four years as one fatal case occurred early in the year.
- The favourable situation in POLIOMYELITIS was maintained, as four years have now elapsed without a recorded case.
- A TYPHOID FEVER outbreak occurred in one area of the Province, resulting in 14 cases of the disease involving residents and visitors to British Columbia.
- Active cases of TUBERCULOSIS have increased by about 20 per cent as 50 cases are being discovered each month. There are 20,000 known cases of tuberculosis under continuing follow-up supervision throughout the Province.
- Patient occupancy in TUBERCULOSIS SANATORIA has been almost static over the past three years, at about 90 per cent occupancy of the available 173 beds.
- A favourable downward trend in VENEREAL DISEASE was established as infectious syphilis occurred in 64 cases, for a rate of 3.4 per 100,000 population, the lowest in the past seven years but still significantly higher than the record low of 0.4 in 1956. Gonorrhœa exhibited a slight decrease at 4,700 cases, for a rate of 240.0, a significant advance over the past three years.
- VITAL STATISTICS registrations increased by about 5 per cent, mostly marriages and divorces, while vital statistics certificates rose from 87,748 last year to 93,093 this year, about 6 per cent more.
- Licensing of PRACTICAL NURSES, which commenced in 1965, has resulted in nearly 3,000 becoming licensed from among the slightly more than 3,600 applications received.
- HEALTH EDUCATION introduced information on drug misuse by preparation of a pamphlet on LSD and distribution of a filmstrip entitled "Drug Misuse and Your Health" and a film named "Drugs and the Nervous System."
- PUBLIC HEALTH ENGINEERING was nearing completion of a two-year sampling programme of the Okanagan Lake system, introduced to gauge the eutrophic stage of the lakes.
- AIR SAMPLING to establish baselines on air quality was under way at Prince George, Nelson, and Sparwood-Natal-Michel.
- New regulations to promote improvement in the SANITARY ENVIRONMENT were introduced, involving public swimming-pools, sewage-disposal methods, tent and trailer camp-sites, mobile-home parks, and summer camps.
- Over half a million IMMUNIZATIONS were provided by public health nurses to infant, pre-school, school, and adult members of the Province.
- HOME NURSING visits were made on some 68,000 occasions, an increase of 20 per cent over last year. About 68 per cent were to patients aged over 65.
- SCHOOL HEALTH SERVICES led to approximately 77,000 teacher-nurse conferences, 255,000 direct pupil services, 44,000 home visits, and 9,000 visits on emotional problems of school-children.
- In the field of MENTAL HEALTH, the public health nurses made some 17,000 visits, about a 4-per-cent increase over last year. Of all the patients attending mental health clinics, about 71 per cent were referred by public health nurses.
- EMERGENCY HEALTH programmes were maintained, concentrating on pre-positioning of emergency hospitals to deal with needs under civil disaster. There are now five centres so equipped and two more in the process, while 20 advanced treatment centres and 33 casualty-collecting units are available.

- In the field of **NUTRITION**, a survey of food costs was undertaken, standards for meal service in boarding homes were established, and teaching-tools developed as a guide to family food purchasing.

- Shellfish surveillance continued to check on the quality of oysters and clams harvested for the domestic and export consumer market. Some 854 routine samples were collected for analysis of bacterial quality by the laboratories.

- **PREVENTIVE DENTISTRY** programmes were supported at the local community level. The introduction of a 3-year-old birthday-card reminder promoted dental care for this group, showing an increase of 75 per cent over last year.

- **FLUORIDATION** of public water supplies has not gained popular support but is in effect in 14 communities, serving 6 per cent of the total Provincial population. The introduction of a **FLUORIDE DROP** programme in the Kootenays has proven unreliable as only 23 per cent maintained use of the prescribed drops. A test of **FLUORIDE GUM** in another community is under way, in which pupils will chew three sticks of gum containing dicalcium phosphate fluoride each day under classroom supervision.

- **CANCER** treatments were provided to 1,870 new patients at the Cancer Institute, while 217 new patient and 4,083 follow-up examinations were given through the 13 consultative clinics throughout the Province. One new consultative clinic became established at Creston.

- There were 293 adults and 149 children admitted to the **G. F. STRONG REHABILITATION CENTRE**, while 298 and 123 respectively were discharged. About 30 per cent of the admissions were the direct result of accidents, of which motor-vehicles accounted for about half.

- General **REHABILITATION SERVICES** operated through community rehabilitation committees in major centres of the Province. Of the 1,540 cases screened, 267 were placed in employment, 88 received maximum benefit, 355 were incapable of rehabilitation, and 690 continued under assessment.

- Financial assistance for **RENAL DIALYSIS** was expanded through the vocational rehabilitation programme to an amount of \$24,000.

- The **ARTHRITIS and RHEUMATISM SOCIETY** employed 43 therapists to treat over 6,000 patients, 66 per cent as out-patients, 13 per cent in home care, and 21 per cent in hospitals. Over 2,000 of these had disabling conditions other than arthritis.

- Supportive service in **EPILEPSY** conditions was given to 152 individuals and their families through the British Columbia Epilepsy Society.

- The **BRITISH COLUMBIA HEART FOUNDATION** provided funds to 22 research projects.

- Drugs and treatment for children with **CYSTIC FIBROSIS** to the amount of \$1,000 per month were administered through the British Columbia Cystic Fibrosis Society. A diagnostic and assessment unit became established at the Health Centre for Children.

- The **CEREBRAL PALSY ASSOCIATION**, faced with increasing case loads, is promoting expansion on Vancouver Island and on the Lower Mainland.

- Preventive medical care in **OCCUPATIONAL HEALTH** was given to 11,183 patients employed in Government services.

- **RADIATION PROTECTION** was exercised by the provision of 224 surveys, 127 consultations, and 1,033 inquiries on radioisotopes and X-ray units. The first visit of an atomic-powered submarine to British Columbia coastal waters required the organization of radiation surveillance measures.

- The routine work load of the LABORATORIES increased by 2 per cent, from 1,040,000 units to 1,065,000 units, while chemical analyses increased by 10 per cent, from 52,400 to 57,500. The virology section promoted identification and isolation of viruses on 63 occasions.

- RHEUMATIC FEVER prophylaxis was administered to 1,354 patients as a measure to prevent cardiac damage.

- PESTICIDE residue studies were continued to determine whether any ill health could be attributed to the prevalent use of these products.

- A POISON CONTROL programme was maintained through a poison control registry. New sets of information cards listing poisons in household products were developed, outlining the antidote measures that could be applied.

- Studies in MOTOR-VEHICLE ACCIDENT prevention in collaboration with the Motor-vehicle Branch were carried on, with particular emphasis on investigation of alcohol as a contributing factor.

- The Province began to assume more direct administration in INDIAN HEALTH SERVICES as Indian tuberculosis patients were admitted to Willow Chest Centre and Pearson Hospital. By the end of 1967, 45 patients had been transferred from the Indian hospitals at Nanaimo and Miller Bay, and 30 patients from Coqualeetza Indian Hospital were being screened for similar transfer.

- Additional surplus beds in the Pearson Hospital permitted expansion of the EXTENDED-CARE facilities in that institution to provide a total of 168 beds. There were 96 patients admitted to this service during the year. Every effort is made to provide as much rehabilitation as possible to these patients suffering from chronic conditions.

These highlights of the numerous programmes for the promotion of health are detailed in the pages that follow.

At the end of this volume appears a list of papers prepared by members of the Health Branch during the year.

ADMINISTRATION

The Bureau of Administration, which consists of the general offices in Health Branch headquarters in Victoria, the Division of Vital Statistics, and the Division of Public Health Education, is concerned with administrative matters affecting the Health Branch as a whole. The Bureau Director is a member of the Deputy Minister's central policy-making and planning group, and this report deals with the Health Branch's operations generally. Separate reports of the Divisions of Vital Statistics and Public Health Education appear in the pages immediately following.

An important development in the Bureau's staffing arrangements was the return of Mr. J. H. Doughty, Director of Vital Statistics, on completion of his two-year assignment with the Ford Foundation in India.

ORGANIZATION AND STAFF

The following table shows the various parts (divisions, offices, clinics, etc.) of the Health Branch with their locations and the approximate number of persons employed at the end of the year:—

Health Branch headquarters (Victoria), Legislative Buildings, Victoria	44	
Health Branch office (Vancouver), 828 West Tenth Avenue, Vancouver	39	
	—	83
Division of Vital Statistics—		
Headquarters and Victoria office, Legislative Buildings, Victoria	65	
Vancouver office, 828 West Tenth Avenue, Vancouver	21	
	—	86
Division of Tuberculosis Control—		
Headquarters, 2647 Willow Street, Vancouver	12	
Willow Chest Centre, 2647 Willow Street, Vancouver	117	
Pearson Hospital, 700 West 57th Avenue, Vancouver	309	
Victoria and Island Chest Clinic, 1902 Fort Street, Victoria	11	
New Westminster Chest Clinic, Sixth and Carnarvon, New Westminster	6	
Travelling clinics, 2647 Willow Street, Vancouver	13	
Survey programme, 2647 Willow Street, Vancouver	6	
	—	474
Division of Laboratories—		
Headquarters and Vancouver Laboratory, 828 West Tenth Avenue, Vancouver	82	
Nelson Branch Laboratory, Kootenay Lake General Hospital	1	
Victoria Branch Laboratory, Royal Jubilee Hospital ¹	—	83
Division of Venereal Disease Control—		
Headquarters and Vancouver clinic, 828 West Tenth Avenue, Vancouver	18	
New Westminster clinic, 537 Carnarvon Street, New Westminster ²	—	18
Local Public Health Services—		
Health units—		
East Kootenay, Cranbrook	25	
Selkirk, Nelson	14	
West Kootenay, Trail	19	
North Okanagan, Vernon	23	
South Okanagan, Kelowna	36	
South Central, Kamloops	28	
Upper Fraser Valley, Chilliwack	27	
Central Fraser Valley, Mission	24	

¹ Services are purchased from the Royal Jubilee Hospital, which uses its own staff to perform the tests.

² The New Westminster clinic has a part-time employee.

Local Public Health Services—*Continued*

Health units— <i>Continued</i>	
Boundary, Cloverdale	48
Simon Fraser, New Westminster	30
Coast Garibaldi, Powell River	14
Saanich and South Vancouver Island, 780 Vernon Avenue, Victoria	40
Central Vancouver Island, Nanaimo	48
Upper Island, Courtenay	22
Cariboo, Williams Lake	16
Skeena, Prince Rupert	24
Peace River, Dawson Creek	19
Northern Interior, Prince George	33
Nursing district—Telegraph Creek	1
	— 491
Total	1,235

The total number, 1,235, was 63 more than the number of employees reported at the end of 1966. Most of the increase occurred in the institutions. At the Willow Chest Centre there was an increase of 12, to strengthen the working force which had been temporarily reduced during 1966 when physical renovation of the building was in progress. At Pearson Hospital there was an increase of 42 employees. Most of these were required to staff one of the wards which had previously been closed and which was required for the programme of extended care.

There were also part-time employees in many of the places listed. These totalled the equivalent of approximately 76 full-time employees.

The approximate numbers of employees by major categories were as follows at the year's end:—

Physicians in local health services	21
Physicians in institutional and other employment	19
Nurses in local health services	307
Nurses in institutions	94
Public health inspectors	56
Dentists in local health services	5
Bacteriologists	24
Laboratory technicians	29
Public health engineers	5
Statisticians	7
Others	668
Total	1,235

TRAINING

During 1967, 12 employees of the Health Branch completed postgraduate training of one academic year's duration and 12 employees commenced such training, usually leading to a diploma or master's degree in one of the public health specialties. National Health Grants were used to defray part of the costs. In accordance with the usual policy, the trainees were required to sign agreements to return to employment with the Health Branch for specified periods following completion of their courses.

The types of training, the universities or other training centres attended (in parentheses), and the numbers trained were as follows:—

Completed training—	
Diploma in Public Health Nursing (British Columbia)	5
Master of Public Health Nursing (California)	2
Nursing Supervision and Administration (Toronto)	1

Completed training— <i>Continued</i>	
Diploma in Public Health (Toronto)	1
Master of Public Health (Minnesota)	1
Certification in Internal Medicine (Belfast)	1
Bachelor of Science in Nursing (Toronto)	1
Total	12
Commenced training—	
Diploma in Public Health Nursing (British Columbia)	8
Administration of Hospital Nursing Units (British Columbia)	1
Master of Public Health Nursing (Pittsburgh)	1
Master of Science in Nursing (California)	1
Total	12

In addition, it was again possible to provide some members of the Health Branch with shorter courses of training. National Health Grants helped to defray these costs also. The courses and numbers attending were as follows:—

<i>Short-term training—</i>	
Psychiatric Nursing Affiliation (Riverview Hospital, Essondale, and Woodlands School, New Westminster)	15
Nursing—Retarded Children (Woodlands School, New Westminster)	35
Occupational Radiation Protection (Ottawa)	1
Aphasia and Speech Therapy (University of Victoria, Victoria)	4
Syphilis Serology (Ottawa)	1
Public Health Inspectors' Refresher Course (University of British Columbia, Vancouver)	53
Hospital Hygiene and Infection Control (University of British Columbia, Vancouver)	3
Audio-Visual Aids to Health Education (Ottawa, Toronto, and Montreal)	1
Laboratory Analysis and Wastewater Treatment (Corvallis, Oreg.)	1
Sanitary Land Fill and Solid Waste Management (Taft Engineering School, Cincinnati)	1
Vocational Rehabilitation (University of Manitoba, Winnipeg)	1
Influenza Virology (World Influenza Centre, Atlanta, Ga.)	1
Nuclear Radiation Hazards (Chalk River, Ont.)	1
Nursing Directors' Workshop (Vancouver)	1
Refresher course for health officers (University of British Columbia, Vancouver)	18
Total	137

The Public Health Institute again provided training for the field staff in general. It was held at the University of British Columbia from May 16th to 19th inclusive.

ACCOMMODATION

In last year's Annual Report it was stated that at the Division of Tuberculosis Control's Willow Chest Centre, the operating-rooms were modified and renovated to provide for heart surgery and to improve the facilities for thoracic surgery. Early in 1967 the final items of equipment were installed and the facilities were brought into active use. This was a joint development by the Provincial Government's Health Branch and the Department of Public Works, the Department of National Health and Welfare, and the Vancouver General Hospital. At Pearson Hospital in Vancouver, additional wards were modified to accommodate extended-care patients during 1967 and, at the year's end, were fully occupied.

In Local Health Services, which are provided by the public health units throughout the Province, two new community health centres were built, one was enlarged, and one was modified and improved. Construction or extension of community health centres in eight other places was in various stages of planning. It is interesting to note that the staff of the public health service outside the Greater Vancouver and Greater Victoria metropolitan health departments are housed in approximately

86 buildings throughout the Province. Of these, some 65 are community health centres which have been built during the past 20 years with Provincial and community funds supplemented by National Health Grants.

ACCIDENT PREVENTION

During the first three months of 1967, the Health Branch's disabling-injury frequency rate remained approximately the same as it had been during most of 1966. In May, June, and July (the last month of 1967 for which statistics were available at the time of writing this report), the rate had risen slightly although it was still well below the average for all departments. The cost rate of injuries had also risen.

The accident-prevention challenge continued to be interesting and sometimes frustrating. In the Health Branch there were, in all, slightly more than 1,200 employees. As in the previous year, each month saw almost invariably one, two, or three time-loss accidents—most of them in one particular section of the Health Branch where the employees number approximately 450. The accidents were generally minor in nature (sprains, strains, cuts, etc.), but a continued programme of employee education and hazard elimination was maintained.

During the year the following awards of merit were received from the British Columbia Safety Council:—

Gold certificate: To General Administration (Health Branch headquarters, Division of Vital Statistics, Division of Venereal Disease Control, and Division of Laboratories), for having operated 1,039,303 consecutive man-hours without a lost-time accident from February 1, 1965, to December 31, 1966.

Silver certificate: To Local Health Services (the health units throughout the Province), for having operated 1,223,260 man-hours without a lost-time accident from May 18, 1965, to September 16, 1966.

LICENSING OF PRACTICAL NURSES

By the end of 1967 the present Council of Practical Nurses had served almost three years. It was appointed in February of 1965 under the *Practical Nurses Act*, and its members represent the following:—

- (a) Minister of Health Services and Hospital Insurance—two members.
- (b) College of Physicians and Surgeons of British Columbia—one member.
- (c) Registered Nurses' Association of British Columbia—two members.
- (d) Minister of Education—one member.
- (e) British Columbia Hospitals' Association—one member.
- (f) Licensed Practical Nurses' Association—three members.

The Chairman of the Council is the Health Branch's Director of Administration.

During 1967 the Council held seven formal meetings, bringing to 19 the total number held since the Council was appointed. There were also numerous meetings of sub-committees, particularly the committee on credentials.

The bulk of the Council's work load continued to be the assessment of applicants for licences. The major groups to whom Council may issue licences are—those who have completed an approved course of training.

—those who have been satisfactorily employed, in the opinion of Council, in the work of practical nursing in British Columbia for at least two years within the five years immediately preceding application. (Per-

sons in this second group must have applied before the end of December, 1966. A significant number were eligible for partial licences if their experience had been limited to fields such as paediatric nursing, obstetrical nursing, medical and surgical nursing, etc.)

By the end of 1967, the status of licensing was as follows:—

Applications received	3,640
Applications approved—	
On the basis of formal training	1,739
On the basis of experience only—	
Full licence	389
Partial licence	801
	— 1,190
 Total	 2,929
Applications still to be reviewed	188

Although there will presumably always be applications submitted from time to time by new graduates, new-comers to the Province, etc., the figures above indicate that Council has now attended to the great wave of applications which flowed into the Registrar after the licensing programme was announced. Council is now planning on turning its attention more directly to other matters for which it is responsible.

VITAL STATISTICS

The responsibilities of the Division of Vital Statistics fall into two broad categories. One is the operation of the civil registration system, which includes the administration of the *Vital Statistics Act*, the *Marriage Act*, and the *Change of Name Act*, and certain sections of the *Wills Act*. The other is the provision of a centralized biostatistical service to the Health Branch, the Mental Health Services Branch, and other health agencies.

REGISTRATION SERVICES

VITAL STATISTICS ACT

This Act governs the registration of births, stillbirths, marriages, deaths, adoptions, and divorces, and the issuance of information and certificates based on the registrations filed. Service is provided to the public through 109 district offices and sub-offices throughout the Province.

The total volume of registrations in 1967 was about 4 per cent higher than in 1966. Large increases occurred in the registrations of marriages and divorce orders. Birth registrations were approximately the same as in 1966, after a continuous decline from 1960.

There was an increase of about 6 per cent over the previous year in the number of certificates issued, largely due to the continued rapid growth in the demand for birth certificates.

MARRIAGE ACT

The *Marriage Act* prescribes the legal requirements which must be observed in connection with the solemnization of marriage, the legal qualifications of individuals to marry, and the authorization of clergymen and Marriage Commissioners to solemnize marriage in this Province. In 1967 there were 2,433 clergymen representing 154 religious bodies authorized to solemnize marriages. There was a continued increase in the number of marriages solemnized, from 14,615 in 1966 to approximately 15,900 in 1967.

CHANGE OF NAME ACT

The number of legal changes of name effected under this Act was about 600, as compared with 609 in 1966.

WILLS ACT

Under this Act the Division maintains a Registry of Wills Notices. The increasing use which is being made of the registry by the general public was reflected in a further increase in the number of registrations, from 13,480 in 1966 to 15,300 in 1967.

STATISTICAL SERVICES

TUBERCULOSIS CONTROL

The Division continues to provide a centralized statistical service to the Division of Tuberculosis Control in connection with admissions to and discharges from institutions, tuberculin testing results, statistics of all known cases of tuberculosis, and statistics of active cases.

During the year a punch-card system was developed for the active-case register. This new system makes it possible to relate contacts to the original source or active case, and to determine the ratio of contacts to active cases.

CANCER CONTROL

Following the transfer of the cancer notification system from the central office in Victoria to the Division's Vancouver office, preliminary steps were taken toward the establishment of a cancer register within the organization of the Registry for Handicapped Children and Adults. Statistical services were again provided to the British Columbia Cancer Institute and to the cytology service of the Vancouver General Hospital.

Assistance was given to a member of the medical faculty of the University of British Columbia in a study of lung cancer, in which cancer incidence rates for males were studied in relation to country of birth and place of residence. Marked differences in incidence rates were revealed and are being further investigated.

DENTAL HEALTH

The seventh and last of the second series of dental health surveys among school-children in British Columbia was carried out during the year, and the results analysed and published. In addition, a report was issued on the findings of the surveys carried out from 1961 to date, in comparison with the results of the earlier series conducted between 1958 and 1960.

Assistance was given to the Division of Preventive Dentistry in formulating a study to determine the caries-inhibiting effect of a dicalcium phosphate chewing-gum on school-children. The study was commenced at the beginning of the 1967/68 school-year in the Trail area.



Wallet-size plasticized birth certificates are one of the many services provided by the Division of Vital Statistics.

REGISTRY FOR HANDICAPPED CHILDREN AND ADULTS

The rate of new registrations of handicapped persons maintained the high level reached in 1966. A paper entitled "Estimating Prevalence of Certain Chronic Childhood Conditions by Use of a Central Registry," prepared by a member of the Vancouver research office staff, was published in "Public Health Reports," the Journal of the United States Public Health Services, and elicited several inquiries. The annual report of the registry gives an account of its operations and statistical analyses of the case load.

B.C. GOVERNMENT EMPLOYEES' MEDICAL SERVICES

The annual tabulation of statistics for the Medical Services administration was greatly facilitated by the co-operation of the Data Processing Division of the Department of Industrial Development, Trade, and Commerce through the use of its computer facilities.

MENTAL HEALTH SERVICES

In addition to the usual services rendered to this Branch, forms and instructions were introduced for reporting on cases treated at the community mental health centres.

DIVISION OF EPIDEMIOLOGY

Assistance was given to the Director of Epidemiology in a study of motor-vehicle drivers involved in accidents who professed to have experienced a black-out just prior to the accident, in comparison with a control group.

Throughout the year various health unit directors were given statistical assistance in epidemiological investigations.

VENEREAL DISEASE CONTROL

The general format and content of the annual report of the Division of Venereal Disease Control was revised during the year. The coding of information was simplified, and a single punch card was designed to replace the two cards previously in use.

PUBLIC HEALTH NURSING

Monthly and annual statistics were as usual prepared for the Director of Public Health Nursing. The results of an occupational study of nursing activity were analysed.

DIVISION OF REHABILITATION SERVICES

Statistics of the 1966 case load of this Division were processed, and tabulations were provided.

DATA PROCESSING

In view of current developments in the field of data processing, a report was prepared for the use of Health Branch personnel in general, in which the existing facilities were briefly described and possible future developments in the use of computer facilities were discussed.

The Division continued to make increasing use of the Data Processing Division's computer facilities, which were most helpful in completing tasks that would have been very time-consuming if carried out on the conventional equipment operated by this Division.

VITAL STATISTICS

Statistics based on the registrations of vital events which occurred in this Province were compiled in the usual manner. Besides being presented in extensive form in the annual report of Vital Statistics, these data are utilized in a number of other reports prepared within the Branch. They are also used in dealing with a large number of requests for information received from other agencies and individuals.

Population data from the 1966 Census became available during the year. The detailed geographical code of place-names maintained by this Division was revised and reissued.

The estimated volume of registration and certification undertaken during the year 1967, together with the comparable data for 1966, is shown below:—

Type	1966	1967
Registrations accepted—		
Birth registrations	33,399	33,600
Death registrations	16,484	16,200
Marriage registrations	14,615	15,900
Stillbirth registrations	408	440
Adoption orders	2,156	2,280
Divorce orders	2,171	2,720
Delayed registrations of birth	621	528
Wills notices	13,480	15,300
Total registrations accepted	83,334	86,968
Changes of name under <i>Change of Name Act</i>	609	600
Legitimations of birth	185	290
Alterations of given name	236	156
Certificates issued—		
Birth certificates	56,681	61,000
Death certificates	9,724	9,650
Marriage certificates	5,756	6,300
Baptismal certificates	13	26
Change of name certificates	784	775
Divorce certificates	266	289
Photographic copies of registrations	6,034	6,400
Wills certificates	8,490	9,437
Total certificates issued	87,748	93,877
Non-revenue searches for Government departments	11,097	13,900
Total revenue	\$181,568	\$203,793

PUBLIC HEALTH EDUCATION

The Public Health Education services of the Health Branch are provided by the same staff as last year—the Director, a consultant in general health education, a consultant in audio-visual services, and a consultant in school health education. The activities of the Division in these three service areas are reported below.

GENERAL CONSULTATIVE SERVICE

During the year, workshops on public speaking were conducted in several health units. In addition, workshops on staff communications were organized in numerous units. The consultant in general health education assisted the Division of Public Health Engineering with the development of a manual for sewage-plant operators. He also assisted the consultant in public health inspection and worked in a liaison capacity with the University of British Columbia in connection with the development of a three-day in-service training course for public health inspectors held in May at the university.

All the staff of the Division were deeply involved, as in the past, in connection with the Annual Public Health Institute, which was also held at the University of British Columbia in May.

At the request of certain health units, the consultant assisted with the development of special posters advertising prenatal classes.

Further assistance was rendered to the one health unit carrying out a special poison-control education programme. Over 200 radio spot announcements were prepared for this health unit, to be utilized as required.

The Division continued to publish the monthly in-service newsletter, "News and Views."

An additional 150 volumes were acquired for the main Health Branch library, which is in Victoria, but which serves all divisions as well as the health units in the field. Ten additional books each were provided for the local libraries of the health units.

The Division again worked with the Safety Division of the British Columbia Civil Service Commission in its efforts toward promotion of safe driving habits.

As in the past, the Division allocated a portion of the health education budget to local health units. They were able to utilize these funds to purchase additional educational materials such as textbooks, journals, etc. All health units made full use of these moneys.

The Division also continued to provide funds for the matching Public Information Grant to the local health units. The availability of this money enabled numerous units to produce pamphlets, pay for radio and television time, and conduct various seminars.

During the year the problem of LSD among students became apparent, and the Division was requested to produce a pamphlet suitable for school-age children. This was done, and the pamphlet became available in April. A filmstrip titled "Drug Misuse and Your Health" was purchased for all local health units, and the script was adapted to include various statistics relative to the situation in British Columbia. Later the film "Drugs and the Nervous System" was acquired for the Health Branch film library. In addition, through the co-operation of the Narcotic Addiction Foundation of British Columbia a set of reference materials on drugs was made available to all health units. This enabled them to have on file sufficient background information to answer queries from concerned citizens.

AUDIO-VISUAL SERVICES

It was possible during the year to provide a number of the health units with overhead projectors. As mentioned previously, the consultant in general health education conducted workshops in the units so equipped, enabling the staff to make effective use of this new educational tool. In addition, various materials were prepared for use with the overhead projector. It is currently planned to have transparencies made of a number of charts used in the pre-natal classes so that they can be projected on this machine and thus considerably assist the public health nurses conducting these classes.

Following the success of the five large portable displays that were issued last year, it was possible to arrange to provide six more this year.

The consultant in audio-visual services assisted the Nutrition Service by preparing a series of slides on comparative food costs. Sets of these slides were provided to each health unit. In addition, the audio-visual consultant was involved in the taking of slides and photographs for the Division of Public Health Engineering and for the consultant in public health inspection.

During the year six new films were added to the Health Branch film library, and 11 additional prints of previously held titles were also acquired. Six new filmstrips were purchased, and 37 additional prints of presently held strips were added. The total library holdings of films and filmstrips now number 1,242. During the year the staff of the Division continued to preview films for possible inclusion in the library; during 1967 over 60 previews were held. In most instances, representative members from the other divisions concerned participated in the evaluation and decisions regarding acquisition of these films.

Again this year there was an increase of over 10 per cent in the number of bookings handled by the Health Branch film library.

The 18 small film libraries established last year in health unit main offices operated successfully. Maintenance of the films held in these small libraries is handled by the main library on a regular basis in Victoria.

Despite rising costs of parts, the biennial system established a number of years ago for the maintenance of 16-mm. projectors continued to be an economically sound method.

Toward the end of the year the Division was charged with the task of arranging for the production of a film concerning the three areas of pollution—water, land, and air. Negotiations for this production were under way at the end of the year.

The Division was also asked to co-operate with the consultant in public health inspection in arranging to advertise the intent of recently passed regulations on sewage disposal, public swimming-pools, summer camps, mobile-home parks, tent and trailer camps, and waste disposal. By the end of the year three of the advertisements had appeared, and it is anticipated that the remaining three will appear early in the new year.

SCHOOL HEALTH EDUCATION

The Division's role in this aspect of health education continued under the guidance of the consultant in school health education in three main areas:

- experimental teaching materials for the elementary schools.
- experimental course in health education (methods and materials for first-year students majoring in physical education at the University of Victoria).
- consultant service to the Curriculum Revision Committee for Elementary School Health Education appointed by the Department of Education.

The school term ending in June, 1967, saw the conclusion of the Powell River study in which 49 teachers on a voluntary basis used the revised Experimental Teaching Materials on four major topics (Food, Body Mechanics, Teeth, and Breathing) and offered their opinions through interviews and questionnaires. Teacher opinion indicated the materials were useful to teachers in the development of lessons which were interesting to children. The teachers and their principals recommended the use of these materials by British Columbia teachers and the study of these units by the Curriculum Revision Committee.

The Experimental Course in Health Education held at the University of Victoria involved potential teachers. Some of them were training for elementary-school work and some for secondary-school work, and, in general, they commenced the course with a disinterested (and, in some cases, inimical) attitude toward health education as a school subject. In view of this factor, the course content was limited to current issues of significance to these young people themselves. Like a similar class of students in the previous year, this group did show an interest in the problems relating to alcohol, smoking, sex education, narcotics, mental health, obesity, and venereal disease.

The Curriculum Revision Committee for Elementary School Health Education began its work with an orientation programme consisting of a day at the University of British Columbia's Department of Preventive Medicine. This was devoted to aspects of modern preventive health. A one-week workshop at the University of Victoria provided an opportunity to review various health programmes in Canada and the United States and to explore some educational theory. The workshop included discussions with experts in the fields of anthropology, sociology, psychology, and preventive health.

The Committee has set September, 1969, as the target date for the new curriculum. The consultant in school health education is expected to spend at least half-time on this important project.

Consultant service was also made available to the staff of the health units through correspondence and some field visits.



Instruction in the use of audio-visual equipment is given to health unit staff by consultants of the Division of Public Health Education.

FINANCIAL REPORT

For the Period April 1, 1966, to March 31, 1967

The total gross expenditure for public health services for 1966/67 was \$11,352,144, which is an increase of \$616,657 over 1965/66. Although costs continue to rise due to increased salaries, price of materials and supplies, and expanded programmes, the percentage of gross expenditure by the various branches and divisions to the total Health Branch budget remains fairly constant.

The largest percentage of the Health Branch budget was for Local Health Services. Excluding grants to metropolitan areas but including expenditures by the Department of Public Works, this was \$4,077,972, at a *per capita* cost of \$3.85 based on the 1966 Census.

Patient-care accounts for the next largest share of the budget. It is encouraging to report that the total number of tuberculosis in-patient days' care has decreased by 7,337. This provides for release of beds for extended-care patients, which is reflected by an increase of 4,458 patient-days in the Pearson Unit. It is thought that this trend will continue.

The operating costs, number of patient-days, and *per diem* rates for in-patient care during the fiscal year April 1, 1966, to March 31, 1967, are as follows:—

<i>Tuberculosis Hospitals</i>	
Operating cost—	
Willow Chest Centre	\$596,929
Pearson Tuberculosis Unit	474,029
Combined operating cost	\$1,070,958
Number of patient-days—	
Willow Chest Centre	21,422
Pearson Tuberculosis Unit	25,640
Total number of days' care	47,062
<i>Per capita cost per diem</i> —	
Willow Chest Centre	\$27.87
Pearson Tuberculosis Unit	\$18.49
Combined <i>per capita cost per diem</i>	\$22.76
<i>Pearson Extended Care Unit</i>	
Operating cost	\$1,008,768
Number of patient-days	46,756
<i>Per capita cost per diem</i>	\$21.58
<i>Poliomyelitis Pavilion</i>	
Operating cost	\$368,194
Number of patient-days	11,880
<i>Per capita cost per diem</i>	\$30.99

*Comparison Table of Public Health Services Gross Expenditure for the
Fiscal Years 1964/65 to 1966/67*

Service	Gross Expenditure			Percentage of Gross Expenditure ¹		
	1964/65	1965/66	1966/67	1964/65	1965/66	1966/67
Patient-care.....	\$2,374,088	\$2,992,005	\$3,091,643	25.8	27.9	27.2
Local Health Services.....	3,627,401	4,086,237	4,333,381	39.4	38.1	38.2
Cancer, arthritis, rehabilitation, research.....	1,676,826	1,967,175	2,015,778	18.2	18.3	17.7
General administration and consultative ser- vices.....	517,071	578,014	677,539	5.6	5.4	6.0
Division of Laboratories.....	494,915	568,837	630,639	5.4	5.3	5.6
Division of Vital Statistics.....	379,076	392,311	445,084	4.1	3.7	3.9
Division of Venereal Disease.....	126,389	150,908	158,080	1.4	1.4	1.4
Totals.....	\$9,195,766	\$10,735,487	\$11,352,144	100.0	100.0	100.0

¹ Percentages may not add to 100 due to rounding.

SPECIAL PREVENTIVE AND TREATMENT SERVICES

The programmes carried on by the Bureau of Special Preventive and Treatment Services were continued or accelerated during 1967. The Bureau activities were organized, as before, under the Divisions of Tuberculosis Control, Laboratories, Venereal Disease Control, Occupational Health, and Rehabilitation, as well as the Bureau headquarters offices. Reports of the divisions appear elsewhere in this volume.

While it had been hoped to expand both the speech therapy and rehabilitation programmes during the year, this was made difficult because of problems in recruiting staff.

Arrangements were under way to permit the Division of Laboratories to expand to the third floor of the Provincial Health Building into space to be vacated by the Red Cross Blood Transfusion Service. The past year's programme for this Division has emphasized assessment of its services and planning for the future so that increasing demands for service can be met.

Under the National Health Grants a total of \$8,148,825 was allocated to the Province of British Columbia for the fiscal year 1967/68. These funds were used for the development, improvement, and extension of health services, including assistance to voluntary health agencies. In addition, funds were provided for public health research. The grants are administered under nine classifications.

VOLUNTARY HEALTH AGENCIES

Each year the Provincial Government, through the Bureau of Special Preventive and Treatment Services, maintains liaison with and makes grants to a number of voluntary health agencies. Each of these agencies submits an annual budget and financial statement to the Health Branch. In addition, a brief report of the activities of each agency is submitted annually, and the highlights of these reports are given below.

BRITISH COLUMBIA CANCER TREATMENT AND RESEARCH FOUNDATION

In May, 1967, the British Columbia Cancer Foundation changed its name to British Columbia Cancer Treatment and Research Foundation.

During the calendar year 1966, 1,870 new patients were admitted to the Institute in Vancouver and 424 to the Victoria Cancer Clinic. A total of 15,956 follow-up and 36,137 X-ray and cobalt treatments were carried out at the Institute. At the Victoria Clinic, 5,759 follow-up examinations and 11,483 X-ray and cobalt treatments were given. At the 13 consultative clinics established throughout the Province, 86 sessions were held, at which 217 new patients were seen and 4,083 follow-up examinations were carried out. A new clinic opened in Creston in October, 1967.

An extension to the Radiotherapy Department, designed to accommodate two additional cobalt units, was completed in November, 1967. Preliminary plans are under consideration for the provision of additional space for a number of Institute departments.

BRITISH COLUMBIA MEDICAL RESEARCH FOUNDATION

The British Columbia Medical Research Foundation continues to operate as a voluntary society with the objective of providing a small fraction of the financial support required by medical scientists in this Province for certain aspects of medical research whose financial requirements cannot be met by the current programme of other existing private and governmental agencies.

The Foundation operates on a calendar year with a total annual budget for the year of approximately \$35,000, of which slightly more than half was provided by the Provincial Government, about one-third by the United Community Services of the Greater Vancouver Area, and the remainder from other sources. All the income is used for medical research grants, except for a small operating budget of \$1,800 annually. The total amount of money made available to research workers by this Foundation is small in comparison with that available from national organizations, but the speed and efficiency with which the Foundation's medical board and board of trustees are able to act makes it possible for the Foundation to assist the medical research activities in the Province in a most effective manner in proportion to the actual amount of money which is expended.

For the year ended December, 1966, a total of 17 separate grants was made to scientists at St. Paul's Hospital and at the University of British Columbia in the Departments of Medicine, Surgery, Obstetrics, and Gynæcology, Pædiatrics, Pharmacology, Anatomy, and Physiology and the G. F. Strong Laboratory for Medical Research.

G. F. STRONG REHABILITATION CENTRE

The Centre's primary purpose is to assist in the rehabilitation of disabled children and adults on an in-patient and out-patient basis, through an integrated programme of medical, psychological, social, educational, and vocational evaluation and services under complete professional supervision.

In the past year there were 293 adults and 149 children admitted to the programme, and 298 and 123 discharged respectively. At the year-end there were 96 adults and 176 children on a training programme. The average length of stay for in-patients was 93 days, compared to 107 days in the previous year. The number on the waiting list for in-patient admission averaged 52, which is almost equal to the total number of beds (54) in the Centre.

Over all there was a slight increase in the number of in-patient days. Out-patient attendance of adults decreased slightly, whereas children's out-patient attendance increased. Transportation difficulties still tend to influence the pattern of out-patients treated and to inhibit the development of group activities.

Admissions of 30 per cent of new patients were a direct result of accidents, and motor-vehicle accidents accounted for almost half of these.

MULTIPLE SCLEROSIS SOCIETY OF BRITISH COLUMBIA

The Multiple Sclerosis Society of British Columbia is primarily concerned with the provision of aid to patients who cannot meet the costs of necessary treatment and equipment, and with administering a grant allotted by the Provincial Health Branch for this purpose. The increase in the number of cases reported to the Society in 1967 meant that more areas of the Province received a share of the grant, which was also extended this year to include Vancouver Island points.

A new branch, the Sechelt Peninsula Branch, was registered, and preliminary work toward branch formation was done in other areas where the concentration of patients warranted it.

In an attempt to get all multiple sclerosis patients in the Province registered, the Society worked closely with the Registry for the Handicapped. It was felt that though it may take some time to compile a complete record, the benefits to the patients and to research in the Province make the time and effort worth while.

The addition of 126 names to the list of patients in the Province in a 12-month period gives greater incentive to those who are devoting themselves to the cause of multiple sclerosis.

CANADIAN ARTHRITIS AND RHEUMATISM SOCIETY

The 43 therapists employed by CARS treated over 6,000 patients; 66 per cent of these were at the out-patient level, only 13 per cent needed treatment at home, and 21 per cent were in-patients, mainly in acute hospitals without staff therapists. Over 2,000 of these patients had disabling conditions other than arthritis.

By using microphotography, specialists directing the programme for juvenile rheumatoid arthritis have demonstrated for the first time the urgency for treatment of eye involvement prevalent in most cases. This iritis, easily detectable in slit-lamp examinations, results in blindness in 5 per cent of cases if neglected. The social service department is studying the social and racial factors influencing the incidence of juvenile rheumatoid arthritis.

An electronic cane, the joint invention of CARS medical director and the engineering department of the University of British Columbia, gives an accurate measurement of the stress, strain, and weight exerted by a disabled person in walking. The best type and length of cane or crutch for each individual can now be determined.

The United States Public Health Service has asked CARS medical staff for advice in programmes for arthritis care of the chronically ill. A CARS research associate chaired the committee of the International Symposium on Arthritis when the diagnostic criteria for epidemiological studies were revised.

A short film has been produced depicting the contrast between the restoration to independence of a person when given proper care and the total dependence of the same person given excellent tender loving care but without trained supervision.

BRITISH COLUMBIA EPILEPSY SOCIETY

The British Columbia Epilepsy Society has witnessed an increasing demand for its services during 1967. Requests for direct aid totalled over 40 up to September 30, 1967, with 27 of these qualifying for financial aid.

Distribution of professional and lay literature along with film showings continued to set records.

The main concentration of the British Columbia Epilepsy Society's energies has been devoted to improvement of diagnostic, treatment, and follow-up services to the epilepsy population of British Columbia. In Vancouver the Epilepsy Centre provided diagnostic and treatment services to 152 individuals and their families (54 new) for the first nine months of 1967. The Okanagan Neurological Association, an affiliate member of the British Columbia Epilepsy Society, has 12 registered cases of epilepsy and is presently offering counselling services in Kelowna, Penticton, and Vernon. The Thompson Valley area has seen the emergence of the Central Interior Neurological Association, which will provide services to persons with epilepsy. The Nanaimo Neurological and Cerebral Palsy Association also has a small developing programme which provides a referral and co-ordinating service.

BRITISH COLUMBIA HEART FOUNDATION

The British Columbia Heart Foundation is dedicated to the study, prevention, and relief of the cardiovascular diseases, through programmes of research, education, and community service.

During the year 22 heart research projects were supported, in addition to a national fellowship programme, three of whose recipients were stationed at the University of British Columbia. Also, a grant was made to help equip the new children's heart laboratory at the Vancouver General Hospital, which will serve the whole Province. For the first time a clinical fellowship in cardiovascular disease was

awarded to a doctor who spent his year in the Department of Surgery at the University of British Columbia.

As in the past, a comprehensive programme of public and professional education was carried on, and the strength of these programmes has been greatly enhanced by the activities of volunteer chapters throughout the Province. The Cardiac Work Evaluation Unit continues to perform a necessary service in returning problem patients to productive employment and amassing new knowledge in this field. Transportation assistance is also provided to needy heart patients in all parts of the Province and the Yukon, whose marginal income might otherwise prevent journeying to Vancouver for the necessary surgery.

CANADIAN CYSTIC FIBROSIS FOUNDATION

The main objective of the British Columbia Division of the Canadian Cystic Fibrosis Foundation continues in essence to be patient-care.

The arrangement whereby the Government of British Columbia purchases the drugs and equipment, ensuring the lowest cost, continues to provide a tremendous benefit to involved families.

Government funds have been allocated to purchase an ultrasonic nebulizer. This nebulizer has characteristics that make it ideal for home therapy use, but it probably requires certain refinements before acceptance.

The diagnostic and assessment clinic operating at the Health Centre for Children, Vancouver General Hospital, under the auspices of the University of British Columbia and approved by the British Columbia Hospital Insurance Service in 1966, receives support from the national organization. During the past year more than 20 new patients were evaluated, resulting in a number of newly confirmed cases of cystic fibrosis. The clinic also scheduled return appointments for known cystic fibrosis cases for further evaluation and direction to the patient's own physician.

National funds allocated to the British Columbia clinic have recently been approved for the employment of a part-time cystic fibrosis nurse to enlarge the scope of the clinic, by home visits and advising and assisting parents in the needed home therapy.

Three medical students were employed at the Health Centre for Children during the 1967 summer holiday season to assist in several investigations involving cystic fibrosis.

CEREBRAL PALSY ASSOCIATION OF BRITISH COLUMBIA

This Association is experiencing increasing demands to extend follow-up treatment services to areas beyond the Lower Mainland; the need is undoubtedly there, for case loads are steadily increasing. It should be stressed that programmes developed under the auspices of this Association are planned to meet the needs of all the physically handicapped, though the ratio of incidence remains constant at 72 to 75 per cent of cerebral palsied per total case load.

During 1967 the Association has been actively engaged with the development of the programme of its new chapter in Nanaimo, where it is expected that a children's treatment centre will be opened early in 1968. The Association has been encouraging its chapters in Nelson and Prince George to take similar action. The chapters on Vancouver Island and in the Lower Fraser Valley made marked progress in their planning for new clinic facilities.

Much study has been given to the problem of schooling for the physically handicapped, and the Association expects to present a report urging that provision be made for the physically handicapped in all regular school settings.

LABORATORY ADVISORY SERVICES

The Laboratory Advisory Council met three times, and sub-committees were extremely active. The technical sub-committee advised the British Columbia Hospital Insurance Service regarding applications for grants toward the purchase of equipment, and the planning sub-committee met with hospital personnel to recommend space requirements and general planning for new and enlarged facilities for laboratories.

Increased use of diagnostic laboratory services was apparent throughout the Province. As a result, the appointment of an additional pathologist was approved for each of three regions—namely, the West Kootenay Regional Pathology Service, the Okanagan Regional Pathology Service, and the South Cariboo Regional Pathology Service.

A shortage of trained laboratory technologists existed, and the smaller hospitals in the suburban areas had difficulty in obtaining adequate staff. Facilities at the British Columbia Institute of Technology were increased to accommodate more trainees, and a new programme was initiated in order to enrol students after the completion of Grade XII. The first year of this two-year programme is equivalent to Grade XIII, which had been the minimum entrance requirement. In September, 80 students who had completed Grade XIII enrolled in the one-year programme and 82 in the two-year programme.

Postgraduate courses were in demand to allow technologists to keep up to date with the rapid advances in all phases of medical technology. Courses were given in microbiology, hæmatology, histology, and administration; they were sponsored by the Shaughnessy Hospital in conjunction with the British Columbia Institute of Technology, the Vancouver General Hospital, the Department of Pathology at the University of British Columbia, and the Canadian Society of Laboratory Technologists, respectively. The 10th annual postgraduate course in Kamloops had an enrolment of 120 and covered a wide range of subjects. This meeting gave the technologists the opportunity to view new equipment and products, which were displayed by 19 companies.

TUBERCULOSIS CONTROL

Since the discovery and widespread acceptance of the anti-tuberculous drugs over 20 years ago, the public, impressed with their effectiveness in treating the disease, has come to expect continuing progress in the reduction of the death rates and in the incidence of tuberculosis, and to feel that tuberculosis today is a minor problem. While these reductions were spectacular in the early days of their use, the decline in the death rates and morbidity rates has now levelled off, and it becomes apparent that further progress will be much slower than it has in the past. This is not to say that the drugs do not continue to be very effective; in fact, even more so with the discovery of additional drugs, their effectiveness is increasing. The chief concern is to keep the public informed that tuberculosis is a continuing and serious problem. The public at large would be surprised to know that during the first 10 months of 1967 the discovery of active cases of tuberculosis increased by over 20 per cent. Fifty active cases of tuberculosis are being discovered each month. This does not reflect the occurrence of epidemics of tuberculosis as has been reported elsewhere, but it does indicate an intensification of case-finding procedures and a more critical evaluation of cases under clinical review.

The most accurate index of the tuberculosis problem in any community is the amount of infection in a population as indicated by the tuberculin test. The reduction in infection rates in this Province, particularly in the younger segment of the population, has been impressive and reflects the effectiveness of the tuberculosis-control programme as the younger generation has been growing up. A generation ago, almost all persons reaching adult life would have a positive tuberculin reaction. Today, in children 10 to 19 years of age, the positive reactor rate is 4.2 per cent, while in the first decade of life it is only 1.1 per cent. The protection of the newer generations from exposure to tuberculosis is the chief objective of the programme of tuberculosis control.

The Division of Tuberculosis Control is responsible for providing a comprehensive programme, including specialized services, throughout the Province for the control and possible eradication of tuberculosis. Through Pearson Hospital it also provides chronic care for poliomyelitis cases and treatment facilities for extended-care patients. The major responsibilities of the Division are as follows:—

- (1) Operation of sanatoria for the treatment of all forms of tuberculosis.
- (2) Operation of diagnostic clinics for the supervision of known cases of tuberculosis and for the treatment of tuberculous patients on therapy at home.
- (3) Operation of facilities for the finding of new cases of tuberculosis, such as mobile X-ray and tuberculin testing clinics, and diagnostic clinics.
- (4) The keeping of records and statistics for the evaluation, planning, and direction of the programme.
- (5) Provision of education, both for the public at large and for professional persons.
- (6) Operation of treatment facilities for poliomyelitis and extended-care cases.

SANATORIUM FACILITIES

The Division operates beds at Pearson Hospital and Willow Chest Centre for the treatment of tuberculosis. Two-thirds of the beds at Pearson Hospital, formerly used for tuberculosis, were found surplus and have now been turned over to the treatment of extended-care cases. There still remain 86 beds for the treatment of tuberculosis at Pearson Hospital, with a total of 173 tuberculosis beds in the Divi-

sion. This number has been reduced by only six during the past two years. The following table shows that there has been very little reduction in the sanatorium population for the years 1961, 1964, and 1967:—

Date	Total Sanatorium Population	Patients 50 Years and Over	Percentage 50 Years of Age and Over
November, 1961.....	244	128	52.5
November, 1964.....	163	100	61.3
November, 1967.....	145	84	57.9

During the past three years the sanatorium population has dropped by only 18. Patients in hospital are predominantly 50 years of age and over. This age-group continues to run at almost 60 per cent of the total sanatorium population. The males in sanatoria predominate 2½ to 1, and about two-thirds of the males are over 50 years of age. On the other hand, less than 40 per cent of the females are 50 years of age and over. There has been no slackening in the need for beds for treatment of tuberculosis and most of the time facilities are occupied to 90 per cent of their capacity. That a tuberculosis-control programme can be operated in this Province with 173 sanatorium beds is due to the fact that many patients with active tuberculosis today are not admitted to sanatorium for treatment and can be successfully treated at home even while working. More than that, those who are admitted to sanatorium respond to treatment much more quickly and are discharged in a much shorter period of time than they used to be. The average sanatorium stay for new cases admitted for treatment is about three months, although the total period of drug therapy is two years.

Persons with active tuberculosis are not admissible to general hospitals. Therefore, the Division of Tuberculosis Control, through its institutions, must also provide a very wide range of medical and surgical treatment for non-tuberculosis conditions that occur in tuberculous patients. With such a preponderance of older persons, the treatment of geriatric conditions in tuberculosis institutions becomes of major importance.

CLINIC SERVICES

There is no doubt that the tuberculosis clinics have assumed a new and more important role in the tuberculosis-control programme. They now represent the most important segment of the programme. The majority of people under active treatment for tuberculosis are not in hospital but are living at home, and these patients are the responsibility of the out-patient clinics. The clinics are also responsible for the supervision and follow-up of all the known cases of tuberculosis throughout the Province, and, working with and through the local public health authority, they are able to provide an effective service even in the far-flung centres of British Columbia. It is through these clinics that an effective working relationship is maintained with the medical profession, and this is no better demonstrated than by the fact that about half of all new cases of tuberculosis are discovered as a result of having been referred to the tuberculosis clinics by the medical profession. This obviously is an outstanding record of co-operation between the official agency and the profession.

The permanent clinics in the major centres of British Columbia and the travelling clinics that provide this service elsewhere in the Province are continuing to play a more and more important part in the tuberculosis-control programme, and the future control of tuberculosis will rest more and more in their hands. Without

such clinical facilities, it would not be possible to treat 80 per cent of our tuberculous patients at home, which is the case at the present time. The existence of these facilities for the medical supervision of out-patients has made it possible to close sanatorium beds. The need to strengthen and expand the out-patient clinical services will continue, as will the need to further develop and stimulate the tuberculosis programmes at local level.

The clinics of the Division are responsible for the follow-up of about 20,000 known cases of tuberculosis. Period examination of tuberculous cases continues throughout their lifetime, even when their disease is inactive, because they represent high-risk groups and about one-quarter of 1 per cent of these people break down with active tuberculosis each year. It should be noted that this is a low reactivation rate and a considerable improvement over what it was even 10 years ago, when at least 1 per cent of the known inactive cases of tuberculosis reactivated each year. The clinics also follow up an even larger number of chronic non-tuberculous chest conditions, acting in a consultant capacity to the private physician. This is an important part of the work because it is from this group that almost one-quarter of our new active cases of tuberculosis arise each year. Very close supervision is necessary for the patients on drug therapy at home, and there are over 1,000 such cases in the Province. These cases represent about 80 per cent of the patients under treatment. An additional 275 patients are being given anti-tuberculosis drugs as a prophylactic measure because for various reasons, such as recent contact with the disease, they may be at risk of developing tuberculosis. This is a new concept in tuberculosis control, but it is now well accepted that if prophylaxis is given soon after infection occurs, much future disease will be eliminated. This part of the programme will undoubtedly expand to a considerable extent.



Highlight of the year at Pearson Hospital was a specially organized sports day for extended-care patients. The medical superintendent and the director of nursing took an active part.

The travelling diagnostic clinics visit 54 centres on the Mainland and 10 on Vancouver Island where clinics are held. This service is gradually expanding, and facilities have recently been set up at Rutland and 100 Mile House for the holding of clinics. Services have also been extended to the north end of Vancouver Island, and clinics are held at Port Hardy and the surrounding area.

CHRONIC CARE

Two types of chronic non-tuberculous patients are cared for at Pearson Hospital: those in the poliomyelitis unit and the others designated as extended-care patients who are treated in these beds previously used for tuberculosis. The work in the Poliomyelitis Pavilion continues much as usual, except that, as a result of the reduction in acute poliomyelitis, there have been very few additional patients requiring care for post-poliomyelitis respiratory problems. This has created a number of empty beds, which are now being filled by patients with neurological conditions who require respiratory assistance in addition to regular nursing care.

Patients receiving treatment in the extended-care wards are extremely handicapped, with little hope of improvement, and as such require a great deal of nursing care. At times it becomes very difficult to keep sufficient staff to provide for their care. During the year the extended-care section was expanded, an additional wing of 40 beds in Pearson Hospital, previously used for tuberculous cases, being renovated and turned over for this purpose. Ninety-six cases were admitted for extended care during 1967, which is 36 more than in the previous year. There are now 168 beds for extended care at Pearson Hospital. During the year there were 35 discharges and 22 deaths.

The criteria for admission of extended-care cases were set up by the British Columbia Hospital Insurance Service authorities, and admissions are normally only on their approval. From time to time these patients are reviewed by medical consultants from the British Columbia Hospital Insurance Service, and some are declared ineligible for further treatment when their condition has improved sufficiently to enable them to help themselves somewhat.

The support of the Women's Auxiliary during the past year has been outstanding. Their personal interest in the bed-ridden patients and their visits on the wards help greatly in boosting morale. Their financial support of any worthy objective for the patients continues, and this is exemplified by the fact that during the past year they purchased six motorized wheelchairs for those competent to use them. Actually a driver's training course was set up, and these patients had to demonstrate their proficiency before being allowed to have one of these chairs for their own use.

INDIAN TUBERCULOSIS

With the diminishing volume of tuberculous Indians needing sanatorium treatment, a large number of beds became vacant in the Indian tuberculosis hospitals in the Province. The Federal authorities requested and the Provincial Department agreed that the Division of Tuberculosis Control would assume the responsibility for in-patient care of tuberculous Indians, at the regular *per diem* cost for such care. Late in 1966 all the tuberculous patients (20) had been taken from the Nanaimo Indian Hospital and transferred to Willow Chest Centre and Pearson Hospital. By the end of 1967 all of the tuberculous patients from the Indian hospital at Miller Bay (25) had been transferred to the Provincial sanatoria. There still remained about 30 patients in Coqualeetza Indian Hospital at Sardis under treatment for tuberculosis, and it is expected that they will be transferred in the near future. Hence-

forth, tuberculous Indians needing treatment will be admitted directly to the Provincial sanatoria.

Consideration was being given to a request from the Federal authorities that the clinical services for out-patients and the field services for case-finding now operated by the Division of Tuberculosis Control be extended to include the Indians of the Province.

COMBINED TUBERCULIN AND X-RAY COMMUNITIES SURVEYS

In 1959 the Division of Tuberculosis Control undertook a mass tuberculin testing and X-ray survey of the whole Province. Prior to this, surveys had been of X-rays only on adults. In the first half of 1967, this task was completed when South Burnaby and the northern part of Vancouver Island were surveyed. During this survey of the Province, 1,042,180 people were screened for tuberculosis by the mobile survey unit. This does not include several repeat surveys in high-incidence areas which were carried out during the eight-year period.

Important data including the percentage of positive reactors in the different age-groups and the different school districts in British Columbia, as well as other epidemiological information, were obtained in this survey.

A repeat of this complete survey of all areas in the Province does not seem to be indicated. Surveys will now concentrate on the high-incidence areas and areas in which there has been the highest increase in population. Surveys in small isolated areas are not economical with the staff and equipment which is used in the combined surveys, and it seems more logical to use other types of survey, possibly tuberculin testing of the population with X-ray of positive reactors with equipment which is available in the area, leaving the mobile units to survey the larger areas of population where the buses can be used more efficiently.

In line with this policy, it was decided to repeat a combined survey in Skeena Health Unit, including Prince Rupert, Kitimat, and Terrace, which was completed during the early summer. The next target was the City of Prince George, but the main towns along Highway No. 16 were surveyed on the way to Prince George. Following Prince George, the South Okanagan, including Osoyoos and Oliver, Penticton and the immediate vicinity, was surveyed. This was the area in which the survey began in 1959.

A total of 121,860 people was screened by the combined survey during the first 10 months of 1967. A total of 14 cases of active tuberculosis has been discovered, which gives approximately one active case for every 4,000 persons X-rayed. This is a fairly high rate for mass survey, indicating that such surveys have an important part to play in tuberculosis control. One of the reasons that the number is so high is the high percentage of the population which are screened in such a survey. This is largely due to the promotion which is carried out so effectively by the British Columbia Tuberculosis-Christmas Seal Society.

Besides the new active cases, approximately 500 people in high-risk groups were identified and were placed on regular surveillance by the diagnostic or stationary survey clinics. Quite a number of these were placed on prophylactic anti-tuberculosis drug therapy in an attempt to prevent tuberculous disease developing.

REPEAT X-RAY OF POSITIVE REACTORS FOUND DURING THE PREVIOUS YEAR

A total of 13,946 persons who were tuberculin positive in the survey in metropolitan Victoria in 1966 had repeat X-rays on the mobile survey vans. Seven new active cases of tuberculosis were found, or approximately one new active case for

every 2,000 X-rayed. This is a particularly high rate and indicates the importance of following positive reactors. Up until now, the mobile survey vans have returned to the area to X-ray the positive reactors, but with so many stationary mobile units available in most areas, in the future these people will be notified to have a repeat X-ray in one year at one of the stationary mobile surveys in their area, thus freeing the buses for other surveys.

SPECIAL SURVEYS

A number of special surveys, using X-ray only, were carried out during 1967. Most of these were at nursing homes and prisons. Included also were those X-rayed at the Pacific National Exhibition. About 9,000 X-rays are taken each year in these surveys. The positive findings in these surveys are usually quite small because many of the people present themselves each year. X-rays in old folks' homes and nursing homes have not been very productive, mainly because most of these people are screened before entering the home and are under medical supervision while in the home.

VENEREAL DISEASE CONTROL

The number of cases of venereal disease reported in the Province continued to decline during 1967. Among special segments of the population, however, the figures are so high that gonorrhoea and syphilis continue to present a problem.

Reported Venereal Disease, British Columbia, 1946, 1951, 1956, 1961-67

Year	Infectious Syphilis (Primary and Secondary)		Gonorrhoea	
	Number	Rate ¹	Number	Rate ¹
1946	834	83.0	4,618	460.4
1951	36	3.1	3,336	286.4
1956	11	0.4	3,425	244.9
1961	64	3.9	3,670	225.3
1962	183	11.0	3,962	238.8
1963	280	16.6	5,012	295.7
1964	304	17.5	5,821	344.9
1965	165	9.2	6,005	335.7
1966	71	3.8	5,415	290.8
1967	64 ²	3.4 ²	4,700 ²	240.0 ²

¹ Rate per 100,000 population.

² Estimated.

INFECTIOUS SYPHILIS

Infectious syphilis is now an uncommon disease among the heterosexual population. The control concept is to diagnose the index case and then provide immediate epidemiological treatment to the contacts and sexual associates of the contacts. This procedure has systematically stopped every known outbreak of the disease. The excellent reporting by physicians and the centralized diagnostic laboratory facilities facilitate immediate control of infectious syphilis.

This situation does not pertain with infectious syphilis in the male homosexual population. Homosexual males who are sexually active, and who are not paired off, tend to sexual promiscuity. Established places of promiscuous homosexual exposure are steam baths, and in Vancouver the balcony of one theatre. As this is based on a financial transaction between two males who are usually strangers, it is seldom possible to obtain contact information. True names are seldom used, and operators of premises used are oblivious to this activity. Several times each year there is an outbreak of syphilis in this group, and it is almost impossible to control this problem. As long as these businesses are allowed to operate, syphilis remains a real threat, capable of exploding into epidemic proportions at any time.

Syphilis is still a common disease in other countries. Homosexual males are relatively mobile, and with frequent outbreaks in this group the disease is contracted in cities to the south. Holidayers in other countries, such as Mexico and in South America, become infected from promiscuous females. Seamen travelling in the Pacific Rim visit large centres where venereal disease is not controlled and are particularly susceptible to infection.

LATENT AND LATE SYPHILIS

Half of the patients infected with syphilis show painless non-itching skin lesions, but half do not have any outward signs of this disease. As 10 per cent of untreated patients develop serious late lesions, it is desirable to prevent these late

changes by early diagnosis and treatment. This is why it is necessary to continue blood tests, and about 700 are done each day in the Provincial laboratory. In addition, these V.D.R.L. screening tests are done at Provincial branch laboratories at Nelson and Victoria, Riverview Hospital, Shaughnessy Hospital, and by the Red Cross blood transfusion service. As 58 per cent of those with positive V.D.R.L. screening tests are lost to follow-up because of the difficulty in obtaining specimens for the confirmatory treponema pallidum immobilization (T.P.I.) test, the Provincial laboratory is introducing for these cases the fluorescent treponemal antibody-absorption (F.T.A.-Abs.) test which can be done on the remaining serum submitted for the V.D.R.L. screening test.

GONORRHOEA

With the change in the treatment of gonorrhœa from injections to oral medication, a whole new approach toward the control of this disease became possible. There has been difficulty in obtaining pelvic examinations on some females, and there has been difficulty in arranging physician appointments at appropriate times for some females. The oral medication has allowed the omission of pelvic examinations, and has allowed the treatment of female contacts by the public health nurse wherever the female contact is found.

Only about one-third of males will identify the female contact. Where this is done, the female contact is immediately brought to treatment. Where the female is not identified, it is possible to provide for the treatment of known promiscuous females on a quarterly basis wherever the disease is prevalent. A consultant public health nurse is demonstrating to the public health nurses throughout the Province how to identify the promiscuous females in each town and how to arrange for their interval treatment if required.

A public health nurse has been employed in Vancouver to identify promiscuous females and place those who require it on interval treatment.

GENERAL

The Division's control centre has continued to streamline its procedures of maintaining files and interchanging contact information, and has reduced statistical recording. Excellent co-ordination of activities with health units has been achieved.

Clinics are maintained by the Division at 828 West Tenth Avenue and 306 Abbott Street in Vancouver. Health departments maintain clinics in Victoria, New Westminster, Kamloops, Prince George, Dawson Creek, and Prince Rupert. Gaol clinics are maintained at the Vancouver City Gaol, Willingdon School for Girls, and at Oakalla Prison Farm. Drugs for the treatment of venereal disease are supplied to physicians. Outside of Greater Victoria and Vancouver where clinics are maintained, payment is made to physicians for the care of indigent patients having a venereal infection.

There is now concern that, with the improved ease of handling these venereal diseases, there is a developing complacency at a time when the venereal diseases are still a problem.

LABORATORIES

In Canada's Centennial Year, the Division concentrated on planning for expansion to meet increasing demands for public health laboratory service in connection with the diagnosis and control of bacterial and viral diseases and the control of environmental pollution. The planning included a review of the present and projected future needs in terms of tests and work load and of the related need for additional accommodation, equipment, and staff.

In Table I the number of tests and the work load in Dominion Bureau of Statistics (D.B.S.) units performed at the main laboratories are compared with the figures for 1966. The routine work load increased by more than 2 per cent, from 1,040,000 units in 1966 to 1,065,000 units in 1967. Excluded from these figures are the work load and tests performed in connection with the programmes for shellfish surveillance, air-quality control, and virology. The main increases in work load were in enteric bacteriology, virology, air-pollution chemistry, serological diagnosis of acute rheumatism, and water bacteriology; decreases occurred in tests for the diagnosis of diphtheria and tuberculosis. The number of tests and the work load in units performed at the branch laboratories at Nelson and Victoria in 1967 are recorded in Table II. Each Dominion Bureau of Statistics (D.B.S.) unit is equivalent to 10 minutes of work. The routine work load of the Division in 1967 thus comprised:—

	D.B.S. Units
Main laboratories	1,064,679
Nelson branch laboratory	38,106
Victoria branch laboratory	164,241
Total	1,267,026

BACTERIOLOGY SERVICE

TESTS FOR THE DIAGNOSIS AND CONTROL OF VENEREAL DISEASES

The demand for standard tests for syphilis (S.T.S.) increased by nearly 2 per cent, from 152,000 in 1966 to more than 155,000 in 1967. The *Treponema pallidum* immobilization (T.P.I.) test was performed by the National Laboratory of Hygiene and the Province of Ontario Public Health Laboratories on 276 sera in 1967, compared with 301 sera in 1966; positive results were reported on 78 (35 per cent) tests. As a possible future replacement for the T.P.I. test, the fluorescent treponemal antibody-absorbed (F.T.A.-Abs.) test was introduced on a trial basis. During 1967, 322 exudates from 243 individuals were examined by dark-field microscopy for the presence of *Treponema pallidum*; 28 (11 per cent) yielded positive results.

The work load related to the diagnosis and control of gonorrhœa decreased by 4 per cent due to the decreased demand for cultures. Of 43,400 smears examined for the gonococcus, 5,600 (13 per cent) were positive; of 6,400 cultures examined, 1,800 (27 per cent) yielded gonococci.

OTHER SEROLOGICAL PROCEDURES

The number of specimens examined for antistreptolysin O titre increased by 44 per cent to 7,000 in 1967 from 5,800 in 1966. The demand for serological tests for the diagnosis of typhoid, paratyphoid, glandular, and undulant fevers remained unchanged.

One hundred and fifty serological tests for bacterial, fungal, or parasitic diseases were performed at reference laboratories on sera from 120 patients. Twenty-four positive results were obtained—toxoplasmosis (12), lymphogranuloma venereum (5), echinococcosis (2), leptospirosis (2), cat scratch disease (1), histoplasmosis (1), and trichinosis (1).

TESTS RELATING TO THE DIAGNOSIS AND CONTROL OF TUBERCULOSIS

There was little change in the number of specimens submitted for examination for *Mycobacterium tuberculosis*. In 1966, 25,700 specimens were examined by culture and 11,600 by microscopy, while in 1967 there were 25,700 cultures and 12,000 smears. Only 196 animal inoculations were performed in 1967, compared with 487 in 1966 and with 383 in 1965. In 1966, 1,400 cultures were tested for anti-microbial sensitivity; in 1967, 1,250 cultures were examined.

ISOLATION AND IDENTIFICATION OF PATHOGENIC ENTERIC BACTERIA

The number of specimens submitted for culture for Salmonella and Shigella and for enteropathogenic *Escherichia coli* (E.E.C.) increased by 12 per cent to 18,700 in 1967 from 16,700 in 1966. The enteric pathogens isolated from 832 individuals comprised 372 Salmonellæ, 278 Shigellæ, and 182 E.E.C. The 372 Salmonellæ belonged to 30 different types. Two Salmonellæ, *Salmonella haija* and *S. abony*, were isolated for the first time in Canada; one type, *S. flint*, was isolated for the first time in British Columbia. The most common types isolated from human sources were *S. typhimurium* (110), *S. saint paul* (62), *S. newport* (48), and *S. paratyphi B* (27). Eleven cases of typhoid fever were confirmed bacteriologically. When a group of boys who had stayed in the East Kootenay area returned to Portland, Oregon, three developed typhoid fever. Thorough epidemiological investigation revealed that at least six other persons who had stayed at the same motel subsequently developed typhoid fever. During 1967 Salmonellæ were also isolated from 14 of 119 (12 per cent) specimens collected from non-human sources; three of these specimens yielded Salmonellæ of two different types. *S. typhi* and *S. typhimurium* were isolated from sewer swabs; *S. typhimurium* from a cat and from specimens from three animal-feed plants; and Salmonellæ of seven types from turtle tanks.

The 278 Shigella strains isolated in 1967 comprised *Sh. sonnei* (182), *Sh. flexneri* (81), *Sh. boydii* (14), and *Sh. dysenteriae* (1). The most common E.E.C. isolated in 1967 were 0119:B14 (37), 026:B6 (36), 0125:B15 (30), and 055:B5 (19).

OTHER BACTERIOLOGICAL TESTS

Diphtheria

Toxigenic *Corynebacterium diphtheriae intermedius* was isolated from a swab collected at necropsy from the throat of a 56-year-old Vancouver man. In only four of the past nine years was *C. diphtheriae* isolated in British Columbia.

Blood Cultures

Of the 190 blood cultures submitted for examination, 18 yielded organisms. The bacteria isolated were *Staphylococcus albus* (6), *Staphylococcus aureus* (3), *Escherichia coli* (2), *Neisseria gonorrhæe* (2), *Alkaligenes faecalis* (1), *Bacteroides* spp. (1), *Neisseria meningitidis* (1), and paracolon (1). In addition, two organisms isolated from blood cultures undertaken in hospital laboratories were identified as *Actinobacillus actinomycetemcomitans* (commonly associated with dental abscess) and *Brucella melitensis* (isolated from a recent immigrant from Europe).

Whooping-cough

Bordetella pertussis was isolated once by the cough plate technique; five cultures submitted for identification proved to be *Bord. pertussis*.

Food Poisoning

Eighty-six samples of human food collected during the investigation of suspected food-poisoning incidents were examined bacteriologically. The following organisms were isolated: *Bacillus cereus* (7) and *Staphylococcus aureus* (2).

Fungal Infections

The demand for mycological investigations increased by 10 per cent, from 4,800 in 1966 to 5,300 in 1967.

Twenty-six per cent of the specimens yielded positive results. The following dermatophytes were identified: *Trichophyton rubrum* (159), *Microsporum canis* (86), *Trichophyton mentagrophytes* (60), *Epidermophyton floccosum* (30), *Trichophyton verrucosum* (4), *T. violaceum* (3), and *T. tonsurans* (2). In addition, *Candida albicans* (783) and *Candida* spp. (228) were isolated. *Malassezia furfur* was identified microscopically on 42 occasions.

Parasitic Infections

The demand for examination for intestinal parasites increased by 5 per cent, from 6,200 in 1966 to 6,600 in 1967. The following protozoan parasites were identified in stool specimens: *Entamæba coli* (200), *Giardia lamblia* (158), *Endolimax nana* (79), *Entamæba histolytica* (37), *Iodamæba bütschlii* (36), and *Chilomastix mesnili* (12). The following helminthic eggs were identified in stool specimens: *Trichuris trichiura* (65), *Clonorchis sinensis* (22), *Enterobius vermicularis* (24), *Ascaris lumbricoides* (20), hookworm (17), *Tænia* (10), *Hymenolepis diminuta* (4), and *H. nana* (3). Mature worms, *Tænia saginata* (13), *Ascaris lumbricoides* (8), and *Diphyllobothrium latum* (2), were also identified. Eggs of *Enterobius vermicularis* were found in 385 (20 per cent) of 1,957 anal swabs.

PUBLIC HEALTH CHEMISTRY SERVICE

The programmes undertaken by the Public Health Chemistry Service in 1967 included water bacteriology, shellfish bacteriology, chemical analysis of water and waste water, air pollution, and maintenance and distribution of field kits.

WATER BACTERIOLOGY

The number of water samples examined by the coliform test increased by 7 per cent, from 16,600 in 1966 to 17,700 in 1967. The number of completed coliform tests decreased by 5 per cent, from 2,500 in 1966 to 2,300 in 1967.

SHELLFISH BACTERIOLOGY

The programme for the surveillance of some 34 oyster leases continued in 1967. Contamination, low in the summer, showed a significant increase during the winter. The number of shellfish and water samples examined decreased by 11 per cent, from 999 in 1966 to 893 in 1967. Tests were carried out on 138 shellstock samples, 182 shucked oysters, and 573 water samples.

CHEMISTRY OF WATER AND WASTE WATER

The work load for chemical analyses of water and waste water increased by 10 per cent, from 52,400 units in 1966 to 57,500 in 1967. This increase was due

to increased testing of municipal water supplies, increased requests from the Pollution Control Board, increased demand for special tests such as arsenic, cyanide, sulphide, mercaptans, and metals, and an increase in the number of samples for determination of the biochemical oxygen demand (B.O.D.). Monthly testing of composite samples of fluoridated water and the water-pollution survey of the Okanagan Valley, initiated in 1965, continued in 1967. Quality-control samples containing cyanides were received for analysis from the Analytical Reference Service of the U.S. Public Health Service; results corresponded closely to the mean result of determinations performed by the 60 participating laboratories.

AIR POLLUTION

The Public Health Chemistry Service participated in field visits to air-sampling stations and carried out the necessary analyses.

During 1967 six air-sampling stations were established in Prince George, three in Nelson, and five in the Sparwood-Natal-Michel townships. Air contaminants measured were dust-fall, suspended particulate matter, sulphation rate, soiling index, and sulphur dioxide. The Prince George air-quality study was supported by a National Health Grant.

The comparison of meteorology and air quality between two communities in British Columbia continued for the third year, also with funds provided by a National Health Grant.

MAINTENANCE AND DISTRIBUTION OF FIELD KITS

Field kits are required for preliminary screening of water samples, for measurement of chemicals in pollution surveys, and for detection of toxic gases in the factory inspection programme. To maintain field kits, more than 200 different reagents or items of laboratory supply were prepared and shipped to health units.

VIROLOGY SERVICE

The Virology Service undertook isolation and identification of enteroviruses and respiratory viruses. During 1967 viruses were isolated on 63 occasions: Coxsackie B1 (1), Coxsackie B2 (4), Coxsackie B3 (2), Coxsackie B4 (8), Coxsackie B5 (9), Echo 6 (1), Echo 12 (1), Echo 14 (2), Echo 31 (1), Polio 1 (2 vaccine strains), Polio 3 (6 vaccine strains), adenovirus (9), mumps (2), rubella (7), herpes (1), vaccinia (1), and unidentified viruses (6). The diverse syndromes associated with infection by these viruses included encephalitis and meningitis, pericarditis and myocarditis, pneumonia, febrile rashes, and gastro-enteritis. Using animal embryonated egg or tissue culture, 1,942 specimens from 729 patients were examined in 1967. The resulting work load required preparation and use of 260 litres of media, 420 families of suckling mice, 412 embryonated eggs, and nearly 34,000 tubes of tissue culture.

A new serological test was introduced for the diagnosis of rubella.

Supported by a National Health Grant, a pilot study of human arbovirus infection was arranged in the Kootenay area. This serological survey, involving 1,268 volunteers, revealed that human infections caused by four arboviruses do occur in British Columbia.

BRANCH LABORATORIES

The Division continued to support two branch laboratories at Nelson and Victoria. The Nelson branch laboratory, accommodated in the Kootenay Lake General Hospital, provided routine public health bacteriology service for the East Kootenay, West Kootenay, and Selkirk Health Units. During the vacation of the technician-in-

charge, specimens were shipped daily by air to the main laboratories. The work load increased by about 10 per cent, from 33,600 units in 1966 to 38,100 units in 1967. The technician-in-charge attended the main laboratories for a one-week in-service refresher course.

The Victoria branch laboratory, operated by the Royal Jubilee Hospital for the Health Branch, which makes a grant to the hospital, provided routine public health laboratory service for the Greater Victoria Metropolitan Board of Health. The work load increased by about 10 per cent, from 149,500 units in 1966 to 164,200 units in 1967.

Table I.—Statistical Report of Examinations and Work Load in 1966 and 1967, Main Laboratory

	Unit ¹ Value	1967		1966	
		Tests Performed	Work-load Units	Tests Performed	Work-load Units
<i>Bacteriology Service</i>					
Enteric Laboratory—					
Cultures—					
Salmonella-Shigella.....	7	15,165	106,155	13,925	97,475
Pathogenic <i>E. coli</i>	10	3,489	34,890	2,772	27,720
Food-poisoning examination.....	15	86	1,290	94	1,410
Miscellaneous Laboratory—					
Animal virulence (diphtheria).....					
Cultures—	6	4	24	6	36
<i>C. diphtheriae</i>	5	9,326	46,630	11,316	56,580
Hæmolytic staph.-strep.....	5	12,250	61,250	11,159	55,795
Miscellaneous.....	5	4,311	21,555	4,084	20,420
Fungi.....	5	5,269	26,345	4,756	23,780
<i>N. gonorrhæe</i>	5	6,420	32,100	7,761	38,805
Smears for—					
<i>N. gonorrhæe</i>	2	43,338	86,676	42,596	85,192
Vincent's.....	2	50	100	70	140
Miscellaneous.....	2	3,716	7,432	3,457	6,914
Serology Laboratory—					
Agglut.—Widal, Paul-Bunnell, Brucella.....	2	16,521	33,042	16,578	33,156
Anti-streptolysin test.....	5	6,998	34,990	5,784	28,920
Blood—					
V.D.R.L. (qual.).....	1	155,471	155,471	151,935	151,935
V.D.R.L. (quant.).....	2	2,476	4,952	2,453	4,906
Complement-fixation.....	2	9,687	19,374	8,751	17,502
C.S.F.—					
Complement-fixation.....	2	2,002	4,004	2,020	4,040
Complement-fixation (quant.).....	2	12	24	57	114
Dark field— <i>T. pallidum</i>	3	322	966	366	1,098
Tuberculosis Laboratory—					
Animal inoculation.....	10	204	2,040	487	4,870
Anti-microbial sensitivity.....	25	1,255	31,375	1,415	35,375
Atypical mycobacteria.....	25	273	6,825	365	9,125
Cultures— <i>M. tuberculosis</i>	6	25,660	153,960	25,707	154,242
Smears for <i>M. tuberculosis</i>	2	12,042	24,084	11,656	23,312
Intestinal parasites.....	3	6,578	19,734	6,237	18,711
<i>Chemistry Service</i>					
Water bacteriology—					
Plate count.....	2	1,628	3,256	1,560	3,120
Coliform test.....	5	17,730	88,650	16,643	83,215
Water chemistry—					
Routine analysis.....	50	284	14,200	262	13,100
Partial analysis.....	---	3,772	24,085	3,283	22,644
B.O.D.....	80	240	19,200	208	16,640
Totals.....	---	366,579	1,064,679	357,763	1,040,292

¹ One D.B.S. unit=10 minutes of work.

Table II.—Statistical Report of Examinations and Work Load during the Year 1967, Branch Laboratories

	Unit ¹ Value	Nelson		Victoria	
		Tests Performed	Work-load Units	Tests Performed	Work-load Units
Enteric Laboratory—					
Cultures—					
Salmonella-Shigella	7	133	931	2,145	15,015
Pathogenic <i>E. coli</i>	10	-----	-----	674	6,740
Food-poisoning examination	15	-----	-----	12	180
Miscellaneous Laboratory—					
Animal virulence (diphtheria)	6	-----	-----	6	36
Cultures—					
<i>C. diphtheriae</i>	5	778	3,890	6,721	33,605
Hæmolytic staph.-strep.	5	3,312	16,560	8,406	42,030
Miscellaneous	5	370	1,850	98	490
Fungi	5	-----	-----	844	4,220
<i>N. gonorrhæe</i>	5	-----	-----	768	3,840
Smears for—					
<i>N. gonorrhæe</i>	2	459	918	798	1,596
Vincent's	2	4	8	12	24
Miscellaneous	2	-----	-----	296	592
Serology Laboratory—					
Agglut.—Widal, Paul-Bunnell, Brucella	2	342	684	916	1,832
Blood—					
V.D.R.L. (qual.)	1	3,338	3,338	11,560	11,560
V.D.R.L. (quant.)	2	11	22	71	142
Complement-fixation	2	-----	-----	462	924
C.S.F.—Complement-fixation	2	-----	-----	447	894
Dark field— <i>T. pallidum</i>	3	-----	-----	6	18
Tuberculosis Laboratory—					
Animal inoculation	10	-----	-----	5	50
Cultures— <i>M. tuberculosis</i>	6	-----	-----	1,875	11,250
Smears for <i>M. tuberculosis</i>	2	9	18	1,608	3,216
Intestinal parasites	3	39	117	1,260	3,780
Water Laboratory—					
Plate count	2	-----	-----	1,991	3,982
Coliform test	5	1,954	9,770	3,645	18,225
Totals	---	10,749	38,106	44,626	164,241

¹ One D.B.S. unit=10 minutes of work.

GENERAL COMMENTS

Miss V. G. Hudson, Assistant Director from 1960 to 1967, retired after 36 years of service in the Division. Her place was taken by Miss J. M. Hudson, of the Division of Tuberculosis Control. After one year of in-service training, Mr. A. J. Lynch, Senior Analyst, obtained the Master in Public Health qualification at the University of Minnesota.

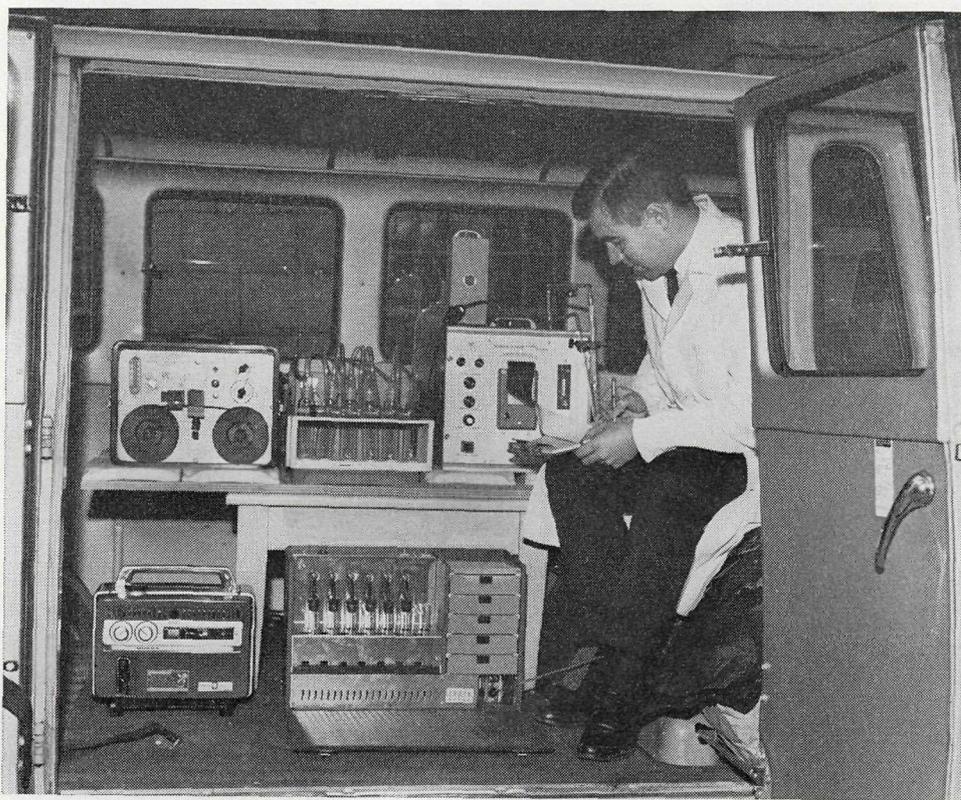
Table III records the number and percentage of staff who resigned or transferred from the Division in 1967. The high turnover of junior technical and non-technical employees placed a heavy burden on the shoulders of those who continue to serve.

Table III.—Staff Resignations as Percentage of Establishment, 1967

	Establishment ¹	Resignations	Per Cent
Physicians	2	---	---
Scientists	27	3	11
Technicians	33 ²	10	33
Non-technical—			
Clerks	10	6	60
Outfit-makers and glassware-cleaners	10	4	40
Building service workers	3	---	---
Totals	85	23	27

¹ Includes Provincial establishment and all National Health Grant appointments.

² Includes one technician employed half time.



A laboratory technician operates continuous monitoring instruments in the Health Branch mobile air-pollution laboratory.

OCCUPATIONAL HEALTH

The Division of Occupational Health continued its activities in the following fields: Provincial Employees' Health Service; radiation protection; industrial hygiene, pesticides; and air pollution.

PROVINCIAL EMPLOYEES' HEALTH SERVICE

A great effort has been made to develop a better understanding and utilization of health services in certain departments of Government. We have been particularly concerned about the use of the C.S.C. 5 form (Physician's Confidential Report) by some departments for short sickness absenteeism (one or two days in many cases) in an attempt to control abuse of sick leave. Several meetings have been held with the Civil Service Commission and departments concerned in order to deal with this problem. It is hoped, in the near future, to make a study of factors, other than sickness, which affect work attitudes and absenteeism.

Three occupational health nurses are working in the Provincial Employees' Health Service. One is located in Vancouver, covering the main Government departments in the area. A second has her office in the Riverview Hospital and gives service to staff not only in Riverview, but also in The Woodlands School and Valleyview Hospital. The third nurse has her office in the Douglas Building in Victoria and provides a variety of services for employees working in the Parliament Buildings and surrounding area.

The Director of the Occupational Health Service spends about 50 per cent of his time at one or other of the above centres seeing and examining employees who have been referred for the following reasons: Inability to perform a certain job due to recent illness, excessive sickness, request for transfer or leave of absence for health reasons, or physical examination before undertaking hazardous work.

Much is being done, too, in the field of preventive medicine; this includes such activities as health counselling, immunization, hygiene surveys, and departmental visiting.

The table below indicates the number of services rendered and immunizations administered during the past year:—

	Total Number of Services Rendered by Nurses/Physicians	Number of Immuniz- ations Included in Total
Vancouver	3,303	1,721
Victoria	5,814	3,567
Riverview Hospital, Valleyview Hospital, and The Woodlands School	2,056	1,015

(NOTE.—Immunizations usually administered include poliomyelitis, influenza, smallpox vaccines, and tetanus toxoid.)

RADIATION PROTECTION SECTION

This Section has been very active this year as, in addition to providing inspection services and consultation for the design of X-ray facilities and isotope laboratories, the staff has been called upon to provide monitoring of air and water when nuclear submarines visit the West Coast ports.

It has been evident over the past few years that there could develop a waste-disposal problem with the increasing use of radioactive isotopes throughout the Province. The cost of shipping waste to the Commercial Products Division, Atomic

Energy of Canada Limited, for burial is objected to by the licensees. The Radiation Protection Section of the Division, with the assistance of the Radiation Protection Division of the Department of National Health and Welfare, has been investigating several ways of dealing with this problem by using various methods and burial-sites. With the co-operation of the Provincial Department of Public Works, a holding facility has been developed for the temporary retention of radioactive materials. It was necessary to use this facility to store a leaking 200-milligram source of radium for a week until it could be shipped to Atomic Energy of Canada Limited for disposal.

During the month of October there occurred the first visit of an American nuclear submarine to Pacific Coast waters. The Division, with the co-operation and assistance of the Radiation Protection Division, Ottawa, participated in this naval exercise by carrying out the environmental surveillance in the interests of public health. It is understood that these exercises will take place approximately four times a year. Through the co-operation of the Division of Tuberculosis Control, a portable laboratory has been made available and was used to house the monitoring equipment.

The Radiation Protection Section gives consultant service in all matters pertaining to X-ray installations, equipment, and supplies. During the year, members have worked closely with the British Columbia Hospital Insurance Service, architects, hospital administrations, the Division of Tuberculosis Control, and the Workmen's Compensation Board in the development of a microfilming programme designed to do away with file and X-ray film storage areas. This procedure would eliminate the minimum 4,800 cubic feet which is now required for storage in the smallest hospital at a saving of some \$38 per square foot. Due to the continuing high level of hospital construction in the Province, mainly in diagnostic facilities, many consultations have been held with hospital boards and architects to discuss the design of X-ray departments.

Due to the building programme at the British Columbia Institute of Technology this past year, the X-ray technicians' refresher course had to be held as a combined course during the Easter holidays. But despite the early date of these courses, they were very well received, with a good response from the rural hospitals.

As planned, the education programme on site in hospitals was expanded during the year and included several health units which had installed miniature chest X-ray machines to be operated by the clerical staff.

Radiation safety inspections, consultations, and inquiries kept the inspection staff busy in 1967, with 224 surveys completed. There were 127 consultations, and approximately 1,033 inquiries were dealt with, all concerning the acquisition and proper use of both radioisotopes and X-ray units.

The Equipment and Planning Committee of the Radiological Advisory Council has had its busiest year since its inception, meeting on an average of twice a month, at the request of the British Columbia Hospital Insurance Service, to review some 89 grant applications for X-ray equipment. These applications, with a total value of \$1,094,188, were approved. The equipment is to be installed in hospitals throughout the Province.

AIR-POLLUTION SURVEYS

The Alberni study, begun in 1966, is expected to end early in 1968, at which time attention will be directed to other areas which require investigation. The Division participates with the Divisions of Laboratories, Epidemiology, and Public Health Engineering in operating these surveys.

FACTORY INSPECTION SERVICE

Factory inspections are carried out by all health units, and during 1967 between 700 and 800 visits to factories were made by public health personnel. The Division works closely with the Chief Inspector of Factories and his staff in carrying out this service.

PESTICIDES

The Director of the Division continues to serve as a member of the Advisory Committee on Agricultural Pesticides and Veterinary Drugs (formerly the Advisory Committee to the Minister of Agriculture on the Sale and Distribution of Poisons, Drugs, and Medicines in Agriculture).

REHABILITATION

The principle which guides the Division in the re-establishment of the handicapped to independence is that of assisting in the development of appropriate services in the local community whenever possible.

Where these services are not adequate or cannot be developed in smaller communities because of their cost and complexity, advantage is taken of more sophisticated facilities in the larger communities in the Province.

Local rehabilitation committees operate as an integral part of local health services and are active working committees, each comprising key professional personnel. Each person represents an official agency which is responsible in one or more aspects for a part of the service related to the rehabilitation of the disabled. When the total of these services is controlled and co-ordinated through the activities of the local rehabilitation committees, the necessary help can be brought to bear on the specific needs of the handicapped so that an appropriate solution to the individual's problem can be found.

To assist in the work of the local rehabilitation committees and to ensure the co-ordination and direction of the work which is done on behalf of the disabled, regional rehabilitation consultants have been appointed. At the present time three consultants are active, one in the northern reaches of the Province covering the Northern Interior, Peace River, and Cariboo Health Units; another is located in the Okanagan and supervises committee work in the South Central, North Okanagan, and South Okanagan Health Units. The Fraser Valley area also is covered by a regional rehabilitation consultant located in Chilliwack, whose responsibility embraces the Upper Fraser Valley and the Central Fraser Valley Health Units.

The whole of Vancouver Island has been organized, and, including the metropolitan area of Victoria, six local rehabilitation committees are active. These are under the supervision of the Assistant Director of Rehabilitation, whose main office is located in Nanaimo, and who, in addition, assists a local rehabilitation committee in the Coast Garibaldi Health Unit at Powell River. The Assistant Director also assumes a supervisory consultative function with the regional rehabilitation consultant and committees in the northern area of the Province. It is gratifying to be able to report that local rehabilitation committees have increased from 19 at the last annual report, and at present committees are active in 26 communities in the Province.

SERVICES OF THE DIVISION

In general, the Division arranges for services which include vocational, social, and medical assessment of those disabled who are eligible, followed by physical restoration, social and vocational counselling, vocational training and job placement when the assessment process indicates that such services probably will lead to vocational rehabilitation.

These services generally are not provided directly by the Division, but are purchased on an individual fee-for-service basis from various appropriate resources in the Province. In some respects, therefore, the work and programme of the Division are related to the scope of presently available facilities through which necessary services can be purchased.

FINANCIAL ASSISTANCE TO AGENCIES

There are certain limitations to the amount of assessment that can be carried out by any local committee. In order to overcome this difficulty, use is frequently

made of services provided by vocational rehabilitation agencies, such as the Vancouver Training Workshop for the Handicapped in Vancouver and the Goodwill Enterprises in Victoria, to which fees for service are paid by the Division. Close co-operation has been maintained by this Division with these two organizations, and certain aspects of their programmes have been specially developed to provide the type of assistance to patients needed to complement the Divisional rehabilitation programme. In addition, considerable financial assistance has been made available to each of these organizations in the form of payment of salaries of professional personnel.

VOCATIONAL TRAINING OF DISABLED

At April 1, 1967, the Division of Rehabilitation became responsible for the vocational training of the disabled through an amendment to Schedule 3 of the Rehabilitation of Disabled Persons Agreement. Formerly such training had been the responsibility of the Department of Education through the provisions of Programme 6 of the now defunct Technical and Vocational Training Agreement.

Worthy of note is the fact that of those presently being assisted in vocational training, nine are deaf students attending Gallaudet College in Washington, D.C.; Gallaudet is the only college in North America for the deaf. The Division is proud of the fact that during the past five years each deaf student who has graduated from the Jericho Hill School in Vancouver, and who has been able to pass the college admission examinations, has been assisted to attend Gallaudet College to the extent required by his financial circumstances. In addition to this, it is also worthy of note that 12 other disabled persons at present are being assisted to attend university, among whom are six blind students. From January 1, 1967, to October 31, 1967, 170 had been admitted to vocational training through the provisions of the agreements mentioned in the preceding paragraph.

OTHER SERVICES

The Division has continued to provide assistance to those who suffer from chronic renal failure and to children with thalidomide deformities.

Financial assistance has been provided over the past two years to patients carrying out peritoneal dialysis in their own homes. This assistance has been necessary in view of the high cost of keeping these patients alive, and their very limited earning capacity. The total cost to the Division over a two-year period for this service alone has approached \$24,000. Arrangements have now been made to assist financially those persons who are being maintained on hæmodialysis. At the present time this covers drugs and dressings, and in a few instances travelling expenses to and from hospital where distances and the financial resources of the patients warrant it.

There still remain six children with thalidomide deformities in this Province. Their treatment and rehabilitation, including prosthetic services, are supervised through the Division of Rehabilitation. These expenses have so far been claimed in respect of only four of the affected children, and have already reached the total sum of nearly \$9,000.

In the work of local rehabilitation committees, active and interested participation by many people and agencies is gratefully acknowledged. Outstanding among these have been personnel of the Departments of Social Welfare and Education, and the Federal Department of Manpower and Immigration.

CASE LOAD OF THE DIVISION OF REHABILITATION,
JANUARY 1 TO DECEMBER 31, 1967

Accepted cases active at January 1, 1967	854	
New cases referred to local rehabilitation committees	412	
Cases referred from other sources	248	
Cases reopened	24	
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Total referrals considered for rehabilitation service, January 1 to December 13, 1967	686	
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Total	1,540	<hr style="width: 100%;"/>

DISPOSAL

Cases closed, January 1 to December 31, 1967—		
Employment placements made—		
Canada Manpower	68	
Division of Rehabilitation	29	
Other sources	170	
<hr style="width: 100%;"/>		
Resumed former activities	20	
Job placement not feasible (restoration services completed) ..	196	
Deceased	12	
Cases assessed and rejected as not capable of rehabilitation ..	355	
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Cases currently under assessment or receiving rehabilitation services	690	850
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Total	1,540	<hr style="width: 100%;"/>

LOCAL HEALTH SERVICES

Within the Bureau of Local Health Services, personnel serve either at the community level, as members of the local health unit staff, at Bureau headquarters, or in Victoria as consultants within a number of specialized divisions offering supervisory and consultative services to the staffs of the 18 health units which provide services throughout the Province. In the pages which follow, summaries are presented of the work of these specialized divisions and services. To obtain information on the activities in each health unit, reference must be made to the individual health unit annual reports, which are published separately.

Under the authority of the *Health Act*, each municipality within the Province is required to establish a local board of health "to superintend and see to the execution of any regulations made under the Act." Experience has shown that, ideally, full-time local health services can be most effectively administered utilizing the health unit system. Since two or more municipalities may elect to unite their respective boards of health into a union board of health, and since district school boards may transfer their school health services to this union board of health, a uniform basic public health administration is made available with each health unit being in effect a "regionalized health service." Because health unit staff are employed centrally and receive consultative advice and supervision from the Health Branch central office in Victoria, over-all co-ordination of services is achieved throughout the Province to provide a similar high quality and uniformity of health service to all citizens, whether they reside in a large city or in a small hamlet in some remote area. This administrative pattern has also permitted sparsely settled areas to maintain a full-time health service where this would not otherwise be economically practical. In addition, careful selection of staff, coupled with effective communication and co-ordination among the health units, has seen an almost unique level of public health service maintained.

Various PERSONNEL changes that have occurred during the year are considered in the divisional reports, and only medical health officers need be considered here. Three resignations were received, and two appointments were made. This has resulted in current vacancies in three director positions. Despite wide advertising, no applications from suitably qualified physicians have been received. This is probably a reflection of a shortage of this type of physician.

With respect to the TRAINING of physicians, one health unit director returned from the Diploma in Public Health course at the School of Hygiene, University of Toronto; the Provincial Epidemiologist attended the Conference of State and Territorial Epidemiologists at Atlanta, Ga.; two health unit directors and the Epidemiologist attended a hospital hygiene and infection control course held in Vancouver; and one health unit director proceeded on a year of study and research work with the Department of Health Care and Epidemiology at the University of British Columbia. In February a one-week medical education course was held for physicians employed by the Provincial Health Branch, together with others from the two metropolitan areas and from the Federal Medical Services Directorate. This course dealt with modern developments in a wide range of health topics and served to bring these physicians up to date in fields which are changing very rapidly.

It may be of some interest that, in British Columbia, the medical health officers have a unique record in Canada for proceeding to the Certification in Public Health. This specialist degree, offered by the Royal College of Physicians and Surgeons of Canada, is of higher standing than the Diploma in Public Health. No fewer than 15 physicians practising public health in the field have earned this specialist degree by



Public health nurses are assisted in much of their work by the consultant services of a physiotherapist.



Speech therapists are now employed at several health centres throughout the Province.

examination, an outstanding performance far ahead of any other Province in Canada. At this time a further two health officers are in the process of writing this examination.

The HEALTH CENTRES at Penticton and Quesnel were enlarged during the year to provide facilities primarily for mental health clinics but also for other consultative personnel. New health centres are either completed or in advanced stages of construction at Kamloops, Lake Cowichan, and Osoyoos. The facility at Kamloops will house both public health and mental health personnel to act as a regional centre for services in the area. Planning is presently under way for extensions in Williams Lake and Campbell River and for new construction of health centres in Ladner, Squamish, Hazelton, and Agassiz. In the very early planning stages are health centres proposed for Nakusp and Chetwynd, and it is hoped that both Cranbrook and Fort St. John can see their way to provide a combined facility for public health and mental health staff serving these areas. Wherever possible, these health centres are being located and will continue to be located on hospital ground—not in, but adjacent to, the local hospital. Wherever the locale of the hospital is suited for a community health centre, planners should envision a complex of buildings located on one site within any given community from which most health services may be made available.

The continued development of REGIONAL DISTRICTS has involved the medical health officers in many discussions on programmes and services with their respective board representatives. This "regionalization" is viewed with considerable interest by health unit staffs, since it does appear to offer an opportunity to exercise a degree of control over such matters as land utilization, garbage disposal, and planning in unorganized territory. In addition, it could provide an instrument for interdepartmental communication and also a method whereby financing could be accomplished on an equitable basis. It is gratifying that the local health officers have been appointed as members of the technical planning committees.

Activities in MENTAL HEALTH, in HOME CARE programmes, in POLLUTION CONTROL, in FACTORY INSPECTIONS, and in other fields have served to extend the area of concern of Health Branch personnel, and this, coupled with a rapidly increasing population and the need to plan with other departments and agencies on a co-operative basis, has imposed very heavy demands on staff both at the local level and in Health Branch headquarters.

EPIDEMIOLOGY

COMMUNICABLE DISEASE

Although there were no serious outbreaks of communicable disease reported during this past year, there was a sharp increase in the number of reported cases of INFECTIOUS HEPATITIS, which is a cause for some concern. This increase is a reflection of the cyclical nature of infectious hepatitis, which appears to be on the rise again over the whole North American Continent. Many health officers in British Columbia have observed that this disease is more prevalent in those areas where there are no proper sewage-disposal systems, even though it is accepted that person-to-person contact is the most common method of transmission. The Health Branch provides gamma globulin free of charge to household contacts of hepatitis. This product is useful in preventing the clinical manifestations of the disease but does not appear to help in preventing the spread of the disease throughout the community.

One death from DIPHTHERIA occurred in an elderly resident of a small Vancouver hotel. This is the first case of diphtheria reported in British Columbia for the past four years. Despite the most diligent search for the source of this man's infection, no other cases have been found. There is no doubt that the high level of immunization against diphtheria in British Columbia children is responsible for the low incidence of this disease.

Under FOOD POISONING, only 288 people reported illnesses suspected of being caused by food which they had eaten in restaurants or at various banquets. This is a considerable decrease from the last two years. A major portion of the public health inspector's time is spent in examining premises preparing and selling food and in educating food-handlers in proper sanitary practices. This is a most effective way of keeping the number of food poisonings to a minimum. Only one case of BOTULISM was reported this year. As is so often the case with this condition, it occurred in a member of our native Indian population who, unfortunately, sampled fish eggs contaminated with toxin from this organism. The Health Branch maintains a supply of Botulinus antitoxin in Vancouver, which is available to be flown to various parts of the Province to treat patients with this disease. In addition, sub-depots are maintained in areas where botulism is known from experience to occur with some frequency.

For the third year in succession, no cases of PARALYTIC POLIOMYELITIS were reported, which speaks well for the efficacy of the vaccine now being offered to all of the children in the Province during infancy.

There was a sharp increase in the number of cases of streptococcal sore throat reported. In 1966, 796 cases were notified; this year no fewer than 1,940 cases were reported. Many of these occurred in the Selkirk Health Unit and were identified principally due to the diligence of a pædiatrician in private practice there and the Medical Health Officer who examined most of the children in the elementary schools in and about Nelson during the course of this outbreak. So far there has been no noticeable increase in the number of cases of RHEUMATIC FEVER occurring in this area, which is the most dreaded complication of this infection.

There were 10 cases of TYPHOID FEVER reported this year, which is more than have occurred for the past five or six years. Four of these cases occurred following a localized outbreak at a summer resort in the Interior. At least four other cases out of the Province are known to have originated from the same resort as well. Investigation so far has failed to reveal the source of this outbreak, although it is strongly suspected that a typhoid carrier was responsible.

No true cases of INFLUENZA were reported or identified in British Columbia during the past year, and there was no evidence of an increased number of deaths among elderly susceptible people from this condition.

The number of children on the RHEUMATIC FEVER prophylaxis programme is slowly increasing. At the end of the year the total for the whole Province stood at 1,354, despite the fact that all health units are frequently reminded to drop children from the programme who are not taking their penicillin faithfully.

During the year a study was carried out in the Boundary Health Unit in conjunction with the Division of Laboratories to see if a way could be found to determine which children on the programme were actually taking their penicillin faithfully. From this a method of assessment was devised which it is felt can be usefully applied throughout the Province. New application and renewal forms for the programme which have been adopted this year have proven much more satisfactory than the original form, which has been used since the beginning of the programme many years ago. Many children presenting for admission to the programme have no present signs or symptoms of rheumatic fever, and reliance must be placed on a history which is sometimes quite sketchy and many years old. The new form for the first time makes provision for inclusion of this past history and its assessment. In addition, a recent attack of streptococcal infection is now considered more important in deciding whether new cases should be accepted.

POISON-CONTROL PROGRAMME

It was hoped that the new set of poison-control information cards being produced jointly by the Health Branch and the Faculty of Pharmacy at the University of British Columbia could have been distributed this year. However, due to difficulty in obtaining qualified staff, it was impossible to complete the production of the complete set this year. They should, however, be ready for distribution early in 1968.

Studies are under way to determine if the basic data on these cards can be put into computerized form so that access can be gained to them almost instantaneously, and so that the data can be up-dated as the ingredients change in the products listed. Within the next few months several hospitals will be using data obtained from a computer at the University of British Columbia to determine whether providing information in this manner is more useful than supplying it in the form of indexed cards.

MOTOR-VEHICLE ACCIDENTS PREVENTION

The Health Branch and the Motor-vehicle Branch have continued their combined study of traffic accidents which result from medical defects of motor-vehicle drivers. An analysis of the medical aspects of the accidents that took place during 1966 in which the driver suddenly and unexpectedly lost consciousness just before his collision has been completed. It is evident from this study that more stringent controls should be placed on drivers having certain medical conditions.

Recent changes in Provincial legislation have now made it possible to carry out studies to determine the number of accidents caused by drivers who were under the influence of alcohol. Plans are now under way to undertake such an investigation in two areas which, if successful, will be extended until they are Province-wide.

CHLORINATED HYDROCARBON PESTICIDE RESIDUE STUDY

The Chlorinated Hydrocarbon Pesticide Residue Study mentioned in last year's Annual Report was continued for a second year and concluded at the end of Sep-

tember, 1967. During the summer, with the assistance of funds secured from a National Health Grant, a medical student was employed to visit many of the people on whom residue studies were done to determine from them their history of exposure to various pesticides. This project is now being analysed and will allow a comparison with the residue levels found in other parts of Canada and the United States. Follow-up studies will be done to determine whether the level found in the Okanagan is changing, and it is hoped that other studies can also be undertaken to determine if there is any evidence of ill health resulting from chronic exposure to pesticide residues.

COMMITTEES

The Director of the Division of Epidemiology has continued his membership in several interdepartmental and extra-governmental committees. These include:—

1. *Welfare Institutions Licensing Board*.—This Board met regularly throughout the year to assess reports from its inspectional staff regarding the operation of licensed institutions caring for elderly people and young children. Although summer camps are still licensed by the Board, the Health Branch now inspects and approves all summer camps, and this year new regulations governing their operations were drawn up and passed. This should assure the up-grading of many summer camps throughout the Province and the rapid elimination of conditions felt to be a hazard to health that have been found in a few of these camps in the past.

A number of meetings of the Board have been held to discuss proposed revisions of the Board's regulations regarding standards. These should be ready for adoption in the very near future and will enable the Board to deal more effectively with the many problems that are arising in the operation of day care centres and in those supervised boarding homes where patients requiring more than the usual level of attention are being cared for.

2. *Traffic and Safety Committee, British Columbia Medical Association*.—The Health Branch is represented on the Traffic and Safety Committee of the British Columbia Medical Association by the Director of the Division. This Committee acts as a liaison between the physicians in the Province and the various Government departments concerned with motor-vehicle accidents and traffic safety. During the year the Committee considered the various means available to increase the number of high-school driver-training courses; made representations for legislation which would permit more detailed studies of motor-vehicle accidents; made further representations to the Motor-vehicle Branch about the value of probationary licences for minors; and sponsored a well-attended symposium for police, ambulance workers, and others who are often called upon to attend people who are injured in motor-vehicle accidents.

Work was also begun on the revision of the B.C. Guide to Physicians for Fitness to Drive a Motor Vehicle. This guide is now being used extensively in other parts of North America. A request was received from the Province of Quebec for permission to translate it into French for use in that Province, and large quantities were purchased by one American State.

3. *Advisory Committee on the Control of Veterinary Drugs*.—The Health Branch was represented by the Director of the Division on an advisory committee struck by the Minister of Agriculture for the control of veterinary drugs. The Director made a number of representations to the committee concerning the hazards to humans that can result from the careless and uncontrolled use of veterinary drugs. It is expected that legislation will be introduced early in the new year which will allow some measure of control over this situation without increasing the cost of these drugs in farming communities.

PUBLIC HEALTH NURSING*

The Division of Public Health Nursing functions as a part of the Bureau of Local Health Services and has administrative and consultative functions to assure a high quality of public health nursing field service. As quality of service is directly related to professional competence, careful attention is directed to the recruitment, selection, training, and professional development of public health nurses. Improved efficiency is encouraged through consultation and guidance, and by the provision of technical information in the various health programmes involving public health nursing staff. The staff consists of a director and three consultants who are concerned with the professional efficiency of 336 field nurses employed in local health services (19 supervisors, 15 senior nurses, 273 full-time and 29 part-time nurses), as well as six part-time physiotherapists in the nursing-care programme.

The Division works closely with public health nurses in other health agencies, such as the Greater Vancouver Metropolitan Health Service, the Medical Directorate of the Department of National Health and Welfare, the Victorian Order of Nurses, the Red Cross nursing service, to avoid overlapping and to co-ordinate the use of facilities and resources. Unless otherwise stated, this report concerns the services of public health nurses under the jurisdiction of the Provincial Health Branch and does not include services provided in the Greater Vancouver, Victoria, Esquimalt, Oak Bay, and New Westminster areas.

ADMINISTRATION AND CONSULTATION

The Public Health Nursing Division assists local health services to assess the need for public health nursing service and to evaluate programmes being conducted so that the best use is made of available nursing time. This is accomplished by a statistical analysis of health needs, in relation to such items as population changes and socio-economic conditions, considered in conjunction with routine field visits to all districts in order to learn at first hand the special needs of each area. During the year there was shown to be a need for additional public health nursing service in the larger urban health units where the general population has been increasing more rapidly than elsewhere in the Province, and it was possible to add three full-time positions and one half-time position. Some indication of the turnover is given by the fact that 75 appointments were required to fill staff public health nursing vacancies.

Public health nursing consultants have been active in planning with physiotherapists and speech therapists so that their special contribution can be integrated into the local programme. Local health staff have the benefit of utilizing manuals which are prepared in part by the public health nursing consultants, outlining standardized procedures in the conduct of the technical aspects of the public health nursing service.

Studies of public health nursing activities in local health services are conducted regularly. This year a two-week time study was conducted by each member of the nursing staff, and senior nurses were included for the first time. Studies are under way in the increased use of health unit aides and in methodology of vision testing.

STAFF DEVELOPMENT

As there are not enough public health nurses willing to serve in the more remote parts of British Columbia, the Health Branch carries on a training programme

* This report concerns the services provided by public health nurses under the jurisdiction of the Provincial Health Branch, and does not include services provided by Greater Vancouver, Victoria, Esquimalt, and Oak Bay.

so that there will be enough qualified nurses. During the year 26 carefully selected registered nurses were employed as public health nursing trainees to fill vacancies and get experience before enrolling in the required university programme. In addition to this training, to provide the basic public health qualifications, there was training provided to many experienced nurses and supervisors. (The details are listed in the table in the report on ADMINISTRATION in the early part of this volume.)

To assist the training-schools, arrangements were again made to place both undergraduate and graduate nurses in suitable health units for field experience. During the year 186 undergraduates had one week's experience, while 47 graduates from the University of British Columbia and four from the University of Alberta had four weeks' experience. The public health nursing consultants work with the faculties of the universities in making arrangements and in giving some lectures.

LOCAL PUBLIC HEALTH NURSING SERVICE

Although public health nurses are employed as Provincial Civil Servants, they are assigned to local health units to function as members of the health services. Their work involves the promotion of community health services and the provision of professional nursing service on a family-centred basis to individuals and groups, at home, at work, at schools, and in public health centres. As generalized public health nurses, their work is not limited to any particular age-group or segment of society and their services are available to all.

Public health nurses have been gradually assuming more responsibility for health services on Indian reserves, so that service is now provided to 87 reserves, which represents about 26 per cent of the Indians on reserves, in addition to another 26 per cent of the total Indian population which is now part of the general community, 52 per cent in all.

Each public health nurse is responsible for public health nursing service in her district within the framework of the policy of the local health unit and the Health Branch. The nurse's activities fall into the following general programmes and services.

Education courses for EXPECTANT PARENTS were conducted routinely in 67 health centres to enable parents to obtain information on health practices which would make them better able to cope with the physical and emotional development of the new child and the extended family. During the year 2,622 mothers and 872 fathers attended 13,171 classes. This represents about half of the mothers of first babies and is a 9-per-cent increase in attendance over last year in spite of the lowered birth rate and a reduction in the number of classes in each series. In addition, 4,090 prenatal and 21,276 postnatal home visits were made by public health nurses.

Services for INFANTS AND PRE-SCHOOL CHILDREN continued to be emphasized, as this is the period when good health habits can be encouraged and corrections made to physical defects and emotional problems to prevent permanent damage. Special attention was directed toward routine screening for defects such as hearing, speech, mental retardation, etc. This is done at CHILD HEALTH CONFERENCES held at health centres throughout each public health nurse's district on a regular basis and by home visits by the public health nurse. In addition, an intensive immunization programme was conducted as indicated by the fact that 18,743 infant and pre-school children completed the basic immunization series for protection against diphtheria, pertussis, tetanus, and poliomyelitis, and 24,445 had smallpox vaccination, while 73,476 received protection from poliomyelitis by itself.

All new babies have the advantage of at least one home visit by the public health nurse, and 18,528 first visits to new infants were made, which represented

almost all new infants born during the year. Attendance at child health conferences was 60,101, which is 7 per cent higher than last year, and about 75 per cent of all infants attended during the year. In addition to the new infant visits, an additional 16,229 home visits to infants were made by public health nurses.

In an effort to reach more PRE-SCHOOL CHILDREN, some health units have continued to select the 3-year-old child for assessment, often in connection with the dental health programme directed to the child of this age. Attendance at child health conferences by pre-school children was 101,837, which is 6 per cent higher than last year. In addition, public health nurses made 32,574 visits for general health supervision and 1,175 visits in connection with pre-school children with mental health problems. Routine public health nursing service was provided in 299* kindergartens with an attendance of 12,838 pre-school children. Consultative assistance was also offered to operators of day-care centres.

Public health nurses provide routine health services in SCHOOLS and devote special attention to pupils with special problems. Selection is accomplished in a variety of ways, including teacher or self referral, review of the individual and family health history, teacher-nurse conferences, school liaison committees, routine hearing-vision screening, etc. The public health nurse is particularly interested in assisting the family and teacher in understanding the child with special problems so that he can remain in the general school system as long as possible. Guidance is given to teachers of classes for retarded or emotionally disturbed children. During the year the public health nurse provided health service to 52 schools for retarded children with 784 pupils. In addition, the public health nurse provides teachers with current health information to assist them in their classroom teaching of such subjects as family living, child care, menstrual hygiene, venereal disease, communicable diseases, etc. During the year 7,662 teacher-nurse conferences were held; 254,489 direct services were given students; 43,748 home visits were made for general health, in addition to 8,948 visits concerning emotional problems of students. Communicable-disease control is accomplished through routine testing for tuberculosis and immunization for diphtheria, tetanus, poliomyelitis, and smallpox. Special meetings numbering 1,744 were held with school staff concerning the school health programme.

In FAMILY HEALTH Services, public health nurses made a total of 169,096 visits to homes, which represents a 9-per-cent increase over last year, in addition to 159,179 services provided by telephone. In addition to the specialized services noted above, public health nurses made 36,444 visits to adults for general health supervision. Frequently these visits brought improvement, as they encouraged the patients to seek medical advice or other specialized care. The visits were also used for family counselling on nutrition and hygiene.

Public health nurses continued to be more active in community MENTAL HEALTH programmes as more resources became available locally. As family health counsellors they work in both the primary preventive field and in secondary prevention by providing support, guidance, and health supervision to patients with emotional illness being treated locally. The report on the 12-month study conducted the previous year was issued, and provided valuable data on a Province-wide basis concerning the involvement of public health nurses in mental health.

One of the most interesting points to come out of the study was the importance of the public health nurse as a case-finder, as indicated by the fact that a total of 71.4 per cent of all mental health patients being served by the health unit were either found by the public health nurse (38.3 per cent) or were brought to her attention for referral by individuals such as teachers, counsellors, etc. During the year a

* These totals include the Saanich and South Vancouver Island Health Unit.

total of 17,325 mental health visits was made, indicating a 4-per-cent increase over last year. There has been a gradual increase in the percentage of adult patients, so that 24 per cent of the patients on service are now in this category.

For a number of years public health units have been increasing the amount of HOME CARE services available to patients being cared for in the community outside of the general hospitals. During the year it was possible to extend service in the following health units and districts: East Kootenay Health Unit at Golden, Invermere, Fernie, Sparwood, and rural Cranbrook; the Coast-Garibaldi Health Unit at Gibsons and Sechelt; and the Upper Fraser Valley Health Unit at Cultus Lake. This means that the service is now available from 65 health centres to 113 districts and to 80 per cent of the population in Provincial health units. When the home nursing service provided by the Victorian Order of Nurses is also considered, the service is available to 85.6 per cent of the population of the Province.

Home care service includes not only home nursing, but liaison and co-ordination with hospitals and other health agencies. Besides providing home nursing services, public health nurses encourage the establishment of needed auxiliary services such as home-makers, medical supply loan cupboards, meals on wheels, etc. The service enables institutions to utilize their facilities for more patients by making possible the discharge of patients to be cared for at home. This is particularly evident in small specialized units, such as are available for treatment of patients on peritoneal dialysis, and a number are now on the home care service. During the year 68,191 home nursing visits were made, which represents a 20-per-cent increase in visits over last year. Sixty-eight per cent of the visits were to patients over 65 years of age. Sixteen per cent of the patients came directly to the service from hospital, and the remainder were admitted from the community and not institutionalized.

Emphasis is placed on reaching the maximum amount of self care and rehabilitation by each patient. Valuable consultative assistance is available to nine units by six part-time physiotherapists who provide in-service training in rehabilitation nursing to the staff and who also assess and supervise the progress of selected patients.

As the majority of patients in the home care programme are over 65 years of age, the home care programme is closely associated with GERIATRIC CARE. This involves the health supervision of elderly persons at home and in personal-care institutions. In a number of health units where consultant physiotherapists are on staff, the physiotherapist, along with the senior public health nurse, has initiated activation programmes in private nursing homes and personal-care institutions, with the expectation that the institution's staff will eventually assume responsibility for the programme. Counselling and health supervision services to residents of senior citizens' housing and social groups have been increased and have proved to be another productive area in maintaining the health of older people. Public health nurses made 1,907 visits to 126 personal-care institutions. These institutions included a number where patients were under supervision by the Health Services Branch.

DISEASE CONTROL

Disease control is a traditional area for concern by the public health nurse, and routine services continued to be given in this field. Included in these measures are the supervision of tuberculosis patients being treated at home, and 13,568 home visits were made to patients and contacts. Tuberculin tests numbered 24,898, or an 18-per-cent increase over last year. With a change in the programme for control of gonorrhoea being introduced by the Division of Venereal Disease Control, it

has been possible for public health nurses to reduce the number of venereal disease visits to 4,460, which is 20 per cent less than last year. Public health nurses routinely visited the 1,051 children on the rheumatic fever prophylaxis programme outside the two major metropolitan areas.

A comprehensive immunization programme is available to all age-groups to provide a measure of protection against certain controllable diseases. Increased travel has resulted in more adults being immunized in health units. This included 181,350 protected against poliomyelitis, 95,938 who received smallpox vaccinations, 27,866 who completed a basic series of injections for protection against diphtheria, tetanus, typhoid, while 158,508 received various boosters. In all, 463,542 doses were given, which is 22 per cent higher than last year. In addition, public health nursing staff have participated in many community-planned clinics to provide protection against measles for infant and pre-school children.

Public health nurses made 6,077 visits for the investigation and control of communicable diseases, which represents a 35-per-cent increase over last year. In addition, 8,388 prophylactic injections were given for protection against infectious hepatitis, rubella, and rubeola.

SCHOOL HEALTH PROGRAMME

In keeping with the philosophy of prevention, the health service in schools places emphasis on recognizing potential problems early, preferably before the child enters Grade I. About 40 per cent of 5-year-olds now attend kindergarten and can be observed and assessed at this crucial stage in their development. The "pre-school round-up" conducted each spring by the public health nurses reaches most of the children who are to enrol in Grade I the following September. Parents are encouraged to have the child examined by the family physician prior to entering school with a view to having him begin his school life in good health. An increasing number are being examined, and the physician's report to the health unit often gives information on the child's physical, emotional, or mental development, which can be used to assist him in adjusting to school. Certain changes in emphasis may be seen in the school health service in all grades. With an improved standard of living and prepaid medical-care plans, physical conditions requiring follow-up are becoming less common, and the nurse finds that problems of behaviour and signs of undue emotional tension demand her attention. Health, welfare, and education personnel share the concern for pupils who have emotional problems, and some school boards have employed social workers, psychologists, or special counsellors to work with these pupils. Because of the magnitude of the problem, there is a need for all available persons to work together to identify problems before they assume severe proportions and to provide supportive counselling. Where regional mental health clinics are available, the mental health team gives valued help, meeting with public health nurses and school personnel either for general discussion to promote greater understanding of mental health principles or to discuss individual students.

STATISTICAL SUMMARY OF SELECTED ACTIVITIES OF PUBLIC HEALTH NURSES, 1967

Immunizations—	
Smallpox	95,838
Poliomyelitis	181,350
Basic series	27,846
Other	158,508
	<hr/>
Total doses	463,542

STATISTICAL SUMMARY OF SELECTED ACTIVITIES OF
PUBLIC HEALTH NURSES, 1967—*Continued*

Tests—	
Tuberculin	24,898
Other	2,747
School service—	
Direct by nurse	254,489
Teacher-nurse conferences	7,662
Home visits	43,748
Conference with staff	56,887
Meetings	1,744
Expectant parents—	
Class attendance by mothers	10,697
Class attendance by fathers	872
Prenatal home visits	4,090
Child health—	
Infants—	
Conference attendance	60,101
Home visits	34,757
Pre-school—	
Conference attendance	101,837
Home visits	32,574
Prenatal—	
Prenatal visits	4,090
Postnatal visits	21,276
Nursing-care visits	68,191
Visits to personal-care institutions	1,907
Adult health supervision visits	36,444
Mental health visits—	
Pre-school	1,175
School	8,948
Adult	7,102
Total	17,225
Disease control—	
Tuberculosis visits	13,568
Venereal-disease visits	4,460
Communicable-disease visits	6,077
Prophylactic injections	8,388
Rheumatic fever patients	1,051
Total visits to homes	169,096
Total telephone services	159,179

SCHOOL HEALTH SERVICES

TABLE I.—ENROLMENT BY GRADES IN PUBLIC SCHOOLS IN
BRITISH COLUMBIA, JUNE, 1967

Grade I	43,943	Grade X	29,085
Grade II	41,515	Grade XI	25,835
Grade III	39,961	Grade XII	20,383
Grade IV	38,161	Grade XIII	2,299
Grade V	37,237	Special and Occupa-	
Grade VI	36,290	tional	13,093
Grade VII	35,735		
Grade VIII	34,633	Total	430,583
Grade IX	32,413		

These figures are for public schools for the Province as a whole. No breakdown by grades is available for the 24,775 pupils in private schools. The total grade-school enrolment (public and private) is 455,358, an increase of 11,568 from last year.

TABLE II.—TOTAL NUMBER OF KINDERGARTENS AND SCHOOLS FOR RETARDED CHILDREN BY TYPE OF SCHOOL, JUNE, 1967

Type of School	Greater Vancouver		Greater Victoria		Remainder of Province	
	Number of Schools	Enrolment	Number of Schools	Enrolment	Number of Schools	Enrolment
<i>Kindergarten</i>						
Public.....	89	6,466	25	1,930	112	5,638
Private.....	115	4,255	18	645	148	5,290
<i>Schools for Retarded Children</i>						
Public.....	3	286	4	92	17	373
Private.....	2	85	1	13	35	411

Again this year there has been a marked increase in the kindergarten enrolment. The main increase (not including Saanich) has been in areas served by the Health Branch, where the number of kindergartens has risen from 179 to 260 and the enrolment from 7,801 to 10,928, 39 per cent of the Grade I enrolment. The increasing number of children attending school at the age of 5 has made possible an extended health programme for children in this age-group, including vision and hearing screening and observation for signs of emotional problems. The enrolment in schools for retarded children has risen by 163, with the greatest increase being in public schools in areas served by the Health Branch. Health unit personnel work closely with the school and the home in arranging for the care of these children.

TABLE III.—NUMBER OF PUPILS WITH IMMUNIZATIONS UP TO DATE ON ENTRY TO GRADE I, SEPTEMBER, 1966

Item	Greater Vancouver	Greater Victoria	Remainder of Province
Total pupils enrolled.....	14,070	3,724	28,000
Smallpox.....	7,624 (54.2%)	2,084 (56.0%)	17,176 (61.3%)
Diphtheria, pertussis, and tetanus.....	7,349 (52.2%)	2,253 (60.5%)	17,384 (62.1%)
Poliomyelitis.....	9,963 (70.8%)	3,160 (84.9%)	22,633 (80.8%)

In general, the percentages show only minor changes from last year. In Greater Vancouver the poliomyelitis figure has dropped by 7 per cent, and in Greater Victoria it has risen by 6.2 per cent. In the remainder of the Province all percentages show a slight rise. These figures show only those children who were completely up to date with reinforcing doses at the time of entering school. In addition, many had received basic immunization in infancy but were due for reinforcing doses. In view of this fact, the percentages indicate a generally satisfactory level of protection in this age-group, particularly for poliomyelitis.

TABLE IV.—REFERRAL OF PUPILS TO SCHOOL HEALTH SERVICE

Item	Greater Vancouver	Greater Victoria	Remainder of Province
Number referred by school personnel.....	(1)	4,380	22,984
Number referred from other sources.....	(1)	3,463	12,730
Totals.....	-----	7,843	35,714

¹ Figures not available.

In areas served by the Health Branch the number of referrals to the school health service remains essentially unchanged from last year, when 13 per cent of school-children were referred. In Greater Victoria the number of referrals increased by 2,249. It is gratifying to note the increased number referred by school personnel as evidence of the teamwork between education and health personnel.

TABLE V.—PUPILS REFERRED BY PUBLIC HEALTH NURSES FOR FURTHER CARE

Item	Greater Vancouver	Greater Victoria	Remainder of Province
Investigation of vision defects.....	(1)	1,687	14,503
Private physician for other than vision defects.....	(1)	2,298	10,621
Speech therapist.....	(1)	88	913
Mental health clinic.....	(1)	95	1,267
Other clinics.....	(1)	168	1,305
Totals.....	-----	4,336	28,609

¹ Figures not available.

Again this year, approximately 10 per cent of pupils are referred by public health nurses for further care. In the Greater Victoria area there is a decrease in the number referred to the speech therapist and the mental health clinic and an increase in all other categories. In areas served by the Health Branch there is a slight decrease in the number referred for investigation of vision defects and an increase in all other categories. Referral of 10 per cent of pupils for care indicates that the health service in schools does indeed provide an active programme of follow-up and that further investigation and care are arranged if necessary for children found to have physical or emotional problems.

PREVENTIVE DENTISTRY

PATTERNS OF DENTAL DISEASE

Early in 1967 a dental health survey was carried out in the Okanagan region. Results of this survey, when compared with those derived from a similar survey carried out in this region in 1960, indicate an over-all improvement in the level of dental health of the children of this area. In 1967 the percentage of children having no caries defects was 23.1 per cent, which was significantly higher than the 1960 recording of 14.8 per cent. The average dental caries experience (d.m.f. rate) for all ages (7 to 15 years) in 1967 was 5.4 permanent teeth and was significantly lower than the mean of 5.7 recorded in 1960. This improvement was confirmed by the percentage of children (of all ages) with caries-free permanent teeth, rising from 12.3 per cent in 1960 to 13.2 per cent in 1967. For deciduous teeth the decay experience (d.e.f. rate) was reduced from 3.8 to 2.9 in this period, and the percentage of children with caries-free deciduous teeth rose from 44.2 to 49.4 per cent. However, the 1967 survey showed 30.3 per cent of children of all ages to have inflamed gums (gingivitis), and whilst 30.2 per cent were in urgent need of orthodontic treatment (straightening of the teeth), only 1.2 per cent of all children examined were receiving such treatment. In addition, it is regrettable to report that 25.2 per cent of the random sample of 1,349 children examined required to be placed in the category "treatment of dental caries neglected."

Twenty-five years of continuing scientific research throughout the world has clearly demonstrated and confirmed time and again that dental decay is a disease controllable by supplementing the fluoride content of the local water supply. In areas without water fluoridation, community apathy or misinformation results in more than twice as many decayed teeth of children and adults. In areas with water fluoridation, dental bills are cut by a half or more.

Currently in British Columbia only 14 communities enjoy the benefits of water fluoridation. Residents of these communities comprise 6 per cent of the population of this Province.

During 1967 the Legislative Assembly of this Province passed an amendment to the *Municipalities Enabling and Validating Act* which provides, for the first time, authority and procedures whereby water districts may proceed to supplement the fluoride content of their water supplies. This is particularly important to the very large populations served by the Greater Victoria Water District and particularly by the Greater Vancouver Water District, which serves a population of more than 875,000 persons.

PERSONNEL

During the past year we have been fortunate in retaining the full establishment of five regional dental consultants, all having completed appropriate graduate training. With the very generous co-operation of the Director and staff of the Dental Health Centre, United States Public Health Service, San Francisco, and with support through the National Health Grant programme, the Director, Dental Health Services, Metropolitan Health Services of Greater Vancouver, attended the Centre this fall for a five-week training period. Particular emphasis was given to the background and scientific design of field research projects of value in the over-all area of dental public health. Arrangements have also been made for a member of this Division to undertake a similar course in the spring of next year. If this training proves as valuable as anticipated, it is hoped that it will be possible each year in future for two senior dental health officers to similarly visit this field research centre.

Dental hygienists have proven ability to strengthen and expand community dental health programmes, especially in the area of dental health education. In the spring of 1967, authority was received to open five such positions within this Division, but it was not possible to obtain recruits.

SERVICES AND PROGRAMMES

In the school dental services provided in Greater Vancouver and Greater Victoria, emphasis is on pre-school and kindergarten children. During the school-year 1966/67, more than 11,000 such children were examined and where necessary (56 per cent) referred for treatment to their family dentists or, in Greater Vancouver, to the dental clinics in the schools and health units. Close to 5,000 of the parents of these children were interviewed by the examining dental officer and counselled in respect to sound oral hygiene and dietary practices, and in respect to the use of fluorides in the prevention of dental decay.

Of all Grade I pupils in the public schools of Greater Vancouver and Greater Victoria, 46 per cent did not appear to be in need of dental treatment when examined in the classrooms, and 44 per cent were subsequently treated either by their family dentists or in the school and health unit dental clinics of Greater Vancouver. Of these children, close to 4,000 parents received dental health counselling from the examining dental officers.

In the rural health units of the Province during the school-year 1966/67, community preventive dental programmes operated in 32 of the 75 school districts. In addition, at the close of the school-year 3-year-old birthday card programmes (described in a later paragraph) were in operation in 24 school districts.



Using the new light-weight portable equipment, dental "externs" provide preventive care to young patients in areas lacking a resident dentist.

Fifty communities, each without a resident dentist, were visited by one of six dental public health externs who, in each community, carried out a preventive dental programme for the younger children. In addition, another five dentists visited five further communities either on a monthly basis or for a period of a few weeks once or twice during the year. These services were made possible by the free loan to the participating dentists of specially designed transportable dental office equipment. During 1966 and early 1967 this equipment was completely redesigned to incorporate facilities and procedures newly developed. Seven sets of the new equipment are now available. By these programmes during the school-year 1966/67, approximately 3,250 younger children received complete restorative and preventive treatment. During the previous school-year, approximately 2,500 children were so completed. In addition, by these visits many older children and adults received much-needed and very much appreciated dental treatment on a fee-for-service basis.

During the school-year 1966/67, close to 3,500 3-year-old children visited their family dentist as a result of 24 birthday-card programmes. The previous year there were 15 such programmes by which some 2,000 3-year-olds benefited. At the beginning of the school-year 1967/68, it was hoped to bring into operation at least 35 of these programmes. In the programmes which have been in operation longer than two years, more than two-thirds have participation rates of 50 per cent and better, and more than one-third 60 per cent or better. One programme has reached a participation rate of 73 per cent of all known 3-year-olds in the school district. These children, at no direct charge to the parents, have received a complete dental examination, with X-rays if desirable. Most children, in addition, benefit by a topical application of a decay-preventing fluoride solution. Parents are counselled in respect to oral hygiene and dietary practices appropriate to the prevention of dental decay. If treatment is required, this is also discussed with the parent, but when carried out the cost is borne by the family.

The pilot dental hygienist programmes in the Okanagan region continue to demonstrate how the dental health status of a community can thereby be significantly improved. Novel and imaginative dental health educational programmes have been developed. For the younger students, Dental Health Sheriff Toby Bright does battle with Sugar Bowl Pete and Dick Decay. Older students carry out in the classrooms colorimetric caries susceptibility tests and discuss their own results. At the end of the school-year there was a Dental Award Day for all children who had visited their family dentist during the year. For the school-year 1967/68, as a field investigational project, a trained dental assistant began some of the educational activities previously carried out by the hygienists, thereby making it possible to increase the over-all coverage of these programmes.

In the fall of 1967 the diagnostic oral cytological service provided by the British Columbia Cancer Institute was made available to all dentists throughout the Province, whereas previously, as a pilot programme, it was restricted to the dentists of Greater Vancouver. The British Columbia Dental Association has appointed an oral cancer committee to maintain liaison between the dental profession and the Cancer Institute and to promote interest and utilization of this very important service.

British Columbia has again been fortunate in having a more favourable ratio of dentists to population than any other Province of Canada—namely, 1:2,387. During this past year, 1967, the building for the School of Dentistry at the University of British Columbia was completed, although it was not yet fully equipped. In honour of the Past President of the University, himself a dentist, it has been named

the John Barfoot Macdonald Building and is, of course, part of the health sciences complex of the university. The first class of students (six) is scheduled to graduate in the spring of 1968, and this year 20 students were enrolled in the first-year class. The first class of dental hygiene students will be enrolled in the fall of 1968. During 1967, only 38 dental hygienists were licensed to practise in this Province as compared with 22 the previous year.

RESEARCH

Records of two large hospitals of the Lower Mainland were reviewed to ascertain children aged between 1 and 2 years who were admitted during the years 1957 and 1958 and who, whilst in hospital, received one of the tetracycline drugs. Of a total of 216 such children, 108 were located and examined in the schools. These children were examined along with one other control child from the same classroom and of similar age and general appearance. Permanent teeth, especially anterior teeth for cosmetic reasons, were examined for evidence of staining, which, if due to a tetracycline, fluoresces when exposed to ultraviolet light. Only 13 such cases were observed. With this limited number of observation, no correlations could be demonstrated between staining and type of drug, daily dosage, total dosage, or dosage in relation to body weight; therefore, the possibility of a larger study is currently being explored.

In the Kootenay region 560 prescriptions for fluoride drops were distributed to parents of young children either through school kindergartens or by the dental public health extern. The potential of a fluoride supplement as a decay preventive in areas where the water supply is fluoride deficient was explained to the parent by letter or personal consultation. Four, eight, and twelve months later a strong endeavour was made to recontact the parents. Of the 476 parents interviewed at the fourth-month interval, only 23 per cent made use of the prescription, but a further 12 per cent stated they were already giving their children fluoride supplement. After eight months 26 per cent of those parents who had used the prescription had discontinued the regular administration of the supplement, and after 12 months a further 32 per cent had discontinued its use. Inconveniences was reported as the main reason for discontinuance, and only 4 per cent of parents replied that it was too expensive. It was therefore concluded that whilst fluoride supplements may be an effective preventive measure on an individual basis when regularly administered during the developmental years, they are of little value on a community basis. Very obviously, family-administered fluoride supplements are no substitute for the fluoridation of public water supplies.

Studies conducted *in vitro* have demonstrated that the ability of calcium and phosphate ions to remineralize tooth enamel can be enhanced by the addition of small quantities of fluoride ions. A study reported in 1967 showed that children who chewed a dicalcium phosphate gum had a lower caries increment than children who chewed a sugar-free gum. It is therefore planned to test the anti-cariogenic properties of a dicalcium phosphate fluoride gum. With the approval of the Board of School Trustees and parents, some 850 Trail school-children aged 9 to 11 years have volunteered to participate in this study. They have been dentally examined, including X-rays, and randomly divided into three groups on the basis of age, sex, and previous caries experience. The control group will not chew gum. One experimental group will chew dicalcium phosphate gum and another group dicalcium phosphate fluoride gum. Three sticks of gum will be chewed each school-day, each for a period of 10 minutes under classroom supervision. This will be a two-year study, with re-examination in the early summers of 1968 and 1969.

GENERAL

In the period 1958-60 dental surveys were carried out throughout all regions of British Columbia. Close to 10,000 children were examined, and these were a statistically selected random sample of more than 98 per cent of the children attending the public schools of the Province. During the years 1961 to 1967 a second series of similar surveys was completed. It is gratifying to compare the dental health status of the school-children of all ages throughout the entire Province (these are derived from the first and second series of surveys). First, the average decay rate of the permanent teeth has been reduced from 6.0 d.m.f. teeth per child to 5.5, and which difference is statistically highly significant. Second, the percentage of children who have no untreated decayed teeth has risen from 16.8 to 22.8 per cent, and which difference is also statistically highly significant. Third, there has been a significant increase in the percentage of children who, at the time of examination, required no dental treatment, having no untreated carious teeth, no inflamed gums (gingivitis), and no teeth in need of straightening.

Nevertheless much remains yet to be accomplished. For example, the second series of surveys showed 26 per cent of the children to have gingivitis, and which will probably lead to pyorrhœa in early adult life. Second, 29 per cent of the children showed severe and disfiguring malocclusion—that is, their teeth were so badly out of the normal alignment that it is most likely that these children were handicapped in speaking or masticating their food or were psychologically handicapped—and yet less than 1 per cent of all children examined were receiving orthodontic treatment. Furthermore, by the time a child reaches 15 years of age in British Columbia, he has, on an average, 11 permanent teeth attacked by decay. Of these 11 teeth, on an average one tooth has been extracted or is beyond repair, four have open untreated cavities, and six have been restored; that is, filled. In a community where the water is not fluoride deficient, a child reaches 15 years of age with less than five teeth having been attacked by dental caries.

The advantages of water with an adequate fluoride content continue into adult life. In communities with fluoride-sufficient water, adults (up to at least 45 years of age) demonstrate decay rates 60 per cent less than their neighbours who live where the water is fluoride deficient. Furthermore, in the past few years evidence has been forthcoming that indicates that the ingestion of fluoride in water may counteract osteoporosis (brittleness of bones) in the elderly and perhaps may reduce arteriosclerosis (hardening of the arteries).

It is to be hoped that in the not too distant future and throughout British Columbia, the children, the adults, and the elderly will begin to enjoy these benefits.

PUBLIC HEALTH ENGINEERING

This has been a year of marked increases in activity. The Division has contributed more frequently to the monthly staff bulletin of the Health Branch, and this has included a regular series of technical papers for the special benefit of public health inspectors in the field. Members were involved in the consultations leading to the installation of air-pollution control equipment at Nelson, and worked toward the establishment of closer and more satisfactory relationships with water- and sewerage-works operators and municipal officials through the Province. Considerable attention, too, was devoted to the improvement of safety and sanitation standards in the key areas of water supply, sewage disposal, public swimming-pools, and subdivisions.

Approval of plans and specifications of all public water and sewerage works constructed in British Columbia is the primary Divisional function. A secondary function is that of consultant to the field staff on subjects such as water supplies and treatment, sewage and solid-waste disposal, public swimming-pool approvals, subdivision approvals, industrial ventilation, and air-pollution problems. The Division has given a new service by providing consultation and advice to sewage-treatment plant operators. This promotes more efficient plant performance.

The engineers, during their field visits, made an extra effort to meet with municipal officials and discussed ideas and problems relating to water supplies, sewage, and solid-waste disposal, and swimming-pools. They explained the consultative service the Division provides and offered assistance. A total of 119 such visits was made to municipalities this year. Records and statistics for water and sewerage works in the Province were up-dated and requests for information were more easily handled.

The Division co-operated with other branches of Government in matters of environmental control measures and, in particular, were represented on an inter-departmental committee dealing with subdivision regulations.

A publication entitled "Laboratory Procedures for Sewage Treatment Plant Operators" was prepared and distributed to interested persons. The publication familiarizes sewage-treatment plant operators with the various test procedures, sampling techniques, and equipment used to maintain control of a sewage-treatment process and how to measure the efficiency of the plant. The Division commenced a new in-service training bulletin entitled "Engineering Echoes" for the particular benefit of the public health inspectors.

With the passing of new legislation respecting pollution control, a good deal of time and effort was spent formulating Departmental policy and procedures to implement legislation. Protection of the public health continues to be the primary purpose of pollution-control activities of the Division.

Staff members acted as lecturers at the annual Public Health Institute and at the British Columbia Water and Wastes School, both held at the University of British Columbia. The Assistant Director acted once again as co-ordinator of the Water and Wastes School. Participation in these training courses is considered an important part of the Division's service.

SPECIAL PROJECTS

Okanagan Lake System Study.—A two-year sampling programme terminated in October, except for a few samples on which fewer determinations were made and carried through into 1968. This project was to complete part of a larger study which would determine the eutrophic stage of the lake system.

Air-sampling Programme.—The Division was the primary investigator for the Prince George, Nelson, and the Sparwood-Natal-Michel area air-sampling programmes. The latter two were instigated by complaints to the local Medical Health Officer or, as in the case of Prince George, this was a research programme supported by National Health Grants. The Prince George study was designed to monitor the change in atmospheric pollution of a rapidly growing industrial centre supported by pulp, chemical, and oil-refining industries. Air was sampled for dust-fall, smoke, sulphur dioxide, suspended particulate, mercaptans, and hydrogen sulphide. In the case of the Sparwood-Natal-Michel area and Nelson, the problems stemmed from a particular industry—coal in the former and the forest industry in the latter. In Sparwood-Natal-Michel, air was sampled for dust-fall, smoke, suspended particulate, and sulphur dioxide, and in Nelson for dust-fall, suspended particulate, and smoke.

Household Anaerobic Sewage-treatment System.—A report was presented to the Advisory Committee on Public Health Engineering in Ottawa on a new household aerobic sewage-treatment system. This is an alternative to the conventional septic-tank system. More than 100 of these systems have been installed over the past two years, mainly in the Kelowna and Kamloops areas. The Division's report showed that the performance and effectiveness of the system were doubtful, and a recommendation was made that approval be withheld until further improvements in design and operation were developed.

Research.—An application was made for a National Health Grant to conduct research into the biological aspects of the water-quality studies on the Okanagan Lake system. This would complement the two-year chemical and physical test pro-

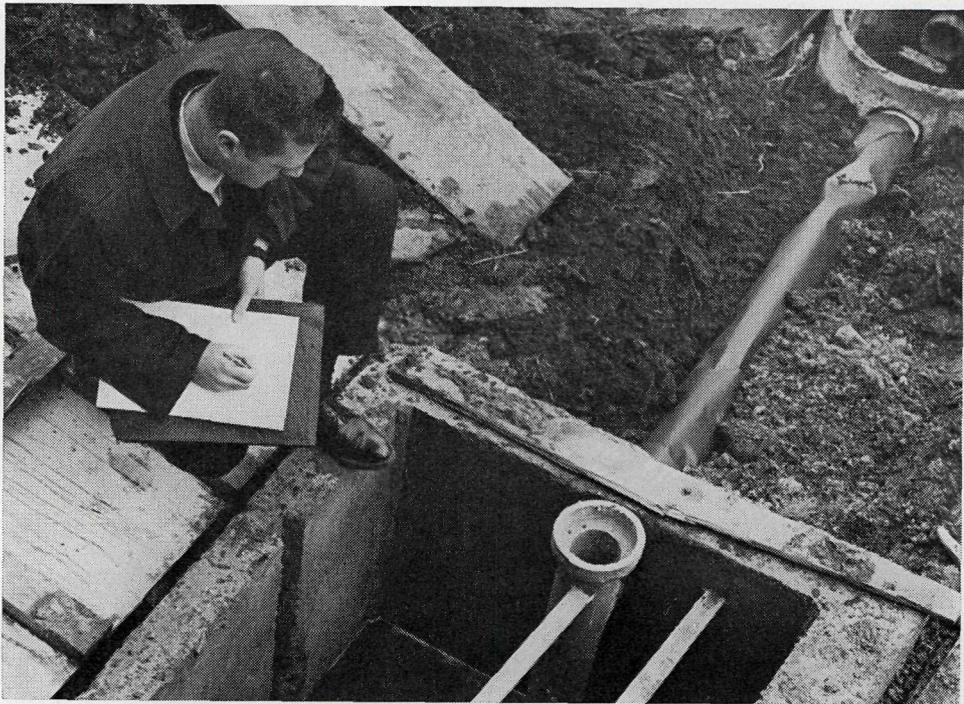


Staff of the Divisions of Public Health Engineering and Public Health Inspection supervise operation of air-sampling instruments.

gramme conducted by the Division in co-operation with the South Okanagan Health Unit and the Division of Laboratories.

Municipal Water and Sewerage Systems.—A comprehensive questionnaire was sent to all Provincial municipalities requesting information related to their water and sewerage systems. A good response enabled the Division to compile a table which gave pertinent information on these systems and provided a ready answer to the many requests which were received for this information.

Legislation.—The Division participated in the drafting of regulations under the *Health Act* respecting public swimming-pools, summer camps, sewage disposal, camp-sites, and mobile-home parks, which were later approved. These are discussed elsewhere in this volume.



Under the new sewage-disposal regulations, septic tanks and tile fields must be inspected before being covered.

PUBLIC HEALTH INSPECTION

The year's outstanding development affecting the public health inspector has been the introduction of a new series of regulations under the *Health Act*. The general effect of this legislation has been a new look at many of the sanitary and safety aspects of certain areas of our modern environment. The regulations introduced minimum standards for water supply, sewage and waste disposal, and other facilities which will help ensure the health and well-being not only of our own people, but of the thousands of visitors who stay in British Columbia in increasing numbers every year. The supervision and enforcement of these regulations enlarges the scope of the public health inspector's activities and gives him an increasingly important role to play in public health.

A brief description of the regulations recently approved is as follows:—

- (1) *Regulations Governing Sewage Disposal* are intended to provide a good standard for septic-tank installations throughout the Province in areas not serviced by community sewer systems. The regulations also apply to existing septic-tank systems where, in the opinion of the Medical Health Officer, such a system is or may become a danger to public health. A permit is required for new installations.
- (2) *Regulations Governing Public Swimming-pools* control the bacteriological quality and clarity of the water, safety, supervision, and pool facilities. The number of pools serving hotels and motels has increased over the past few years. Persons operating a public swimming-pool must obtain an annual permit from the Medical Health Officer.
- (3) *Regulations Governing Summer Camps* are concerned with the licensed summer camp operated (a) by an individual or group of individuals or (b) by a duly constituted organization for the purpose of providing recreation and (or) training for children or adults. Both types of camp must be approved yearly by the Medical Health Officer prior to licensing by the Welfare Institutions Licensing Board. The regulations govern the safety and supervision of children while swimming and boating. All camps must be supervised by a competent director. The staff must include a graduate nurse or a person who is the holder of a current first-aid certificate equivalent to St. John medallion or better.
- (4) *Regulations Governing Mobile-home Parks* help to ensure healthful and attractive surroundings with adequate spacing and facilities for the many citizens who now find it expedient to live in mobile homes.
- (5) *Regulations Governing Camp-sites* provide minimum facilities for water, sanitation, and hygiene in camp-sites for the many tourists and citizens who enjoy camping.

SURVEYS

A survey of sewage-disposal installations of residences in Surrey was done by Boundary Health Unit staff. Problem areas were plotted on a map, which will assist the municipality in future sewer planning.

A survey of Christina Lake in the West Kootenay Health Unit was carried out in two parts. Water samples were taken every two weeks beginning June 12, 1967, and ending September 19, 1967. One hundred and forty-four samples were taken during this period. The survey consisted of 350 lake-shore properties with the following breakdown in water sources for the residents of Christina Lake: 51.3 per cent use the lake for domestic water, 23.8 per cent use springs and wells, 20.4 per

cent were on public supplies, and 4.5 per cent obtained their domestic water from other creeks. The results of the survey indicated a need for an adequately treated public water-supply system for the whole lake area. Individual household sewage systems examined are shown in the following table:—

Disposal System	Number Surveyed	Percentage of Total Systems Surveyed
Septic tanks	182	51.6
Privies	78	21.6
Rock pits (for disposal of other than toilet wastes)	97	26.8

This study has (a) set a baseline for future comparison, (b) established present quality status, (c) pinpointed areas of beginning pollution, and (d) revealed the faulty septic-tank installations causing pollution. The lake, generally, is still a clean source of water and excellent for recreational purposes.

Air-sampling programmes have continued in a number of industrial centres throughout the Province; these are mentioned elsewhere in this volume.

INDUSTRIAL HEALTH

An intensive one-week course in industrial health was given to public health inspectors last May at the University of British Columbia. It involved over 70 public health inspectors from all parts of the Province, including the Greater Vancouver and Greater Victoria areas. Public health inspectors have carried out the inspection of a large number of industrial establishments under the authority of their appointment as factory inspectors by the Deputy Minister of Labour.



Testing of water is required under the newly introduced public swimming-pool regulations.

INVESTIGATION OF CHICKEN BARBECUES IN RETAIL ESTABLISHMENTS

Following an outbreak of Salmonella caused by the eating of barbecued chicken in Spokane, Wash., the Provincial Health Branch was concerned that it might have a similar potential problem in British Columbia. The outbreak in Spokane involved 24 different family groups, and a total of 65 individuals became ill, 24 of whom were hospitalized. Two deaths were associated with this outbreak.

The Health Branch enlisted the assistance of the West Kootenay, Upper Fraser Valley, Boundary, Simon Fraser, Coast-Garibaldi, and Skeena Health Units, as well as the Greater Vancouver Metropolitan Board of Health and the neighbouring municipality of Burnaby. A total of 90 premises was visited, 50 of which were in the metropolitan area. Seventy of the premises in the over-all survey were supermarkets; ten, butcher-shops; six, delicatessens; and four were classified as others, including cafés, beer-parlours, etc. Although no specific instances of Salmonella poisoning were attributed to the consumption of barbecued chicken in British Columbia, the pilot study conducted by the Health Branch during the months of December, 1966, and January, 1967, revealed a number of poor food-handling practices which have since been rectified. A more extensive survey conducted in the summer months is now being studied.

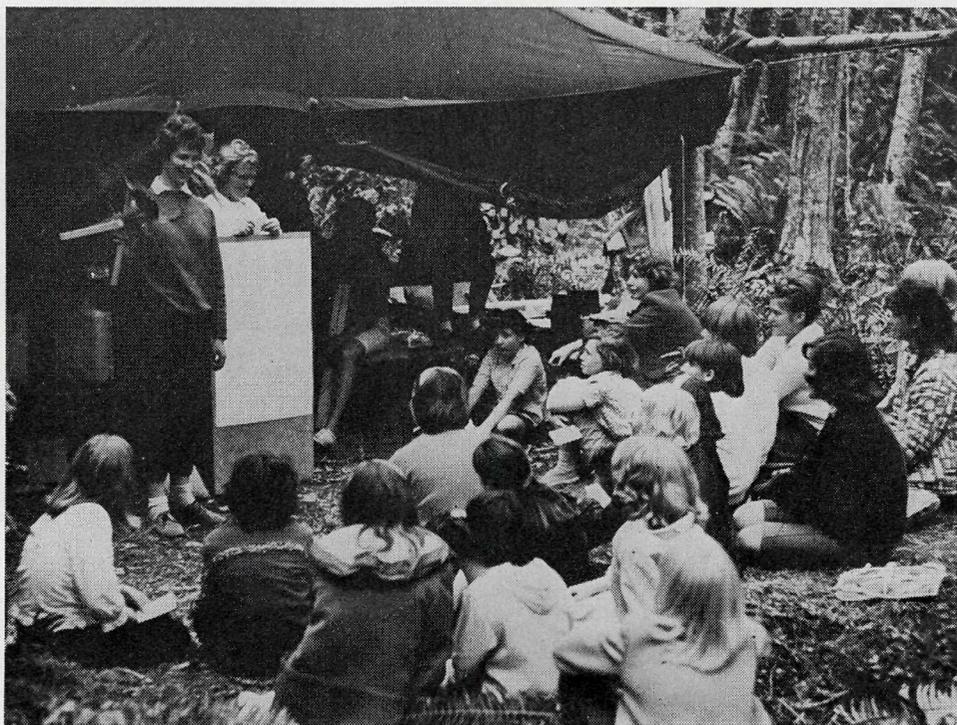
The Health Branch prepared instructional material to assist with the education of food-handlers. The Co-ordinator of Accommodation and Food Services, Department of Education, has made good use of this material at the British Columbia Vocational School in Burnaby.



The public health inspector checks a mobile-home park under the new regulations.



Camp-site regulations protect the health of vacationers.



A woodcraft session at an organized summer camp. Under the new summer-camps regulations, such camps are checked by the public health inspector for proper standards of safety and hygiene.

PERSONNEL

The total number of public health inspectors employed by the Health Branch is 56, including four trainees. This also includes four members of the staff who were successful in passing their examinations to qualify as public health inspectors. In addition, public health inspector trainees are presently being trained in Vernon, Kamloops, Surrey, and Chilliwack. This is the last group to be trained in the in-service training programme for public health inspectors. This terminates in 1967 as a two-year course is now available at the British Columbia Institute of Technology.

TRAINING PUBLIC HEALTH INSPECTORS

Beginning in 1935, persons from British Columbia have qualified as public health inspectors through a correspondence course conducted by the Canadian Public Health Association. To meet the growing demands for highly skilled para-medical technologists, the British Columbia Institute of Technology, in 1967, commenced a two-year course in Public Health Technology. The graduate with a Diploma in Public Health Technology will be prepared to write the qualifying examination leading to a Certificate in Public Health Inspection (Canada). The two-year course was developed by an advisory committee composed of representatives from the University of British Columbia, Canadian Public Health Association, Greater Vancouver Metropolitan Board of Health, the Canadian Institute of Public Health Inspectors, and the Provincial Health Branch.

NATIONAL BUILDING CODE, NATIONAL RESEARCH COUNCIL

The National Building Code, an advisory document issued by the National Research Council, has been adopted by many municipalities throughout Canada as a by-law and serves, or is used by, 75 per cent of the population. To promote further the uniformity of building requirements and adoption by municipalities, seven standing committees have been appointed by the associate committee of the National Research Council to prepare the sixth or 1970 edition of the Code. The Health Branch is represented on the Building Services Committee, which includes sections related to heating, ventilation, air-conditioning, and plumbing.

SHELLFISH PROGRAMME

In the toxicity surveillance programme in coastal waters, 24 per cent of the 854 routine samples, as compared with 12 per cent in 1966, exceeded the international standard of acceptability. Concurrent with the high toxicity levels, Jervis Inlet and environs were added to the areas already under ban for commercial harvesting of butter clams. With a seasonal upsurge in the Strait of Georgia, a warning to tourists and local users was issued in June and rescinded in August. Chemical, physical, and bacteriological studies by shellfish agencies and researchers have failed to determine ways of preventing the relationship between the harmless plankton and the shellfish (particularly butter clams), which leads to the chemical toxin which can cause paralytic poisoning to the consumer.

The comprehensive bacteriological sampling programme of oyster-growing waters and oyster meats initiated in 1965 continued through 1967. As a large proportion of the oyster production is normally exported to the United States, the results were again offered for review at the Northwest Marine Health Sciences Research Conference, Tacoma, Wash., in an effort to compare the findings with those of the United States Food and Drug Administration, which have been unfavourable to British Columbia shippers.

The sanitary surveys of 1964 and subsequent unfavourable bacteriological findings have led to the surrender of oyster leases by the pioneer growers in Boundary Bay and Esquimalt Harbour.

In a further effort toward recovery of restricted areas for possible direct marketing purposes, a survey was carried out at Pender Harbour. A report was expected at the end of the year. A joint oceanographic, current-metering, and bacteriological operation with the oceanographic group of the Canadian Fisheries Research Board was conducted in Ladysmith Harbour. This was followed by a similar joint survey in Comox Harbour. Both the latter surveys were continuing at year's end.

A practice of some years by the forest industry of treating logs stored in both fresh and salt water with benzene hexachloride for control of the ambrosia beetle was extended, and included some areas in the vicinity of drinking-water sources and shellfish-culture areas. With the co-operation of the Laboratory Service of the Department of Agriculture, the fresh water, salt water, and shellfish were tested before and after application. The post-application results were observed to be of minimal significance as indicating a contaminant to the waters.

A meeting was held with the Public Health Engineering representatives of the Department of National Health and Welfare to review the work load of the Provincial public health inspectors, which is heavy, and the consequent increased demands on the Provincial laboratory facilities in the shellfish programme.

EMERGENCY HEALTH SERVICE

Again this year the Provincial Emergency Health Service concentrated attention on the pre-positioning of medical units.

Through the generosity of the Provincial Civil Defence Organization, funds were made available for the conversion of a building on the new Provincial Government site at Kamloops into an excellent storage depot for medical supplies; two emergency hospitals together with an advanced treatment centre were pre-positioned there earlier during the year.

The Provincial Emergency Health Service was fortunate in obtaining a grant from the Department of National Health and Welfare for use in pre-positioning emergency medical supplies, and most of the available time of the Health Branch staff working in this area was again spent on developing this aspect of the service. Agreements were reached with the boards of directors of the hospitals in Campbell River, Duncan, White Rock, Hope, and Mission City for the pre-positioning of emergency hospitals in the community hospitals at these centres. It is expected that these emergency hospitals will all be in place in a few months. Negotiations are now under way with the hospital boards at Princeton and Penticton which, it is hoped, will result in space for emergency medical supplies being made available in the new hospitals which are now being planned for these two centres.

At the close of the year there were four emergency hospitals on site and space for three more was almost ready. Twenty advanced treatment centres, together with their 33 casualty-collecting units, have now been pre-positioned. In addition, other casualty-collecting units are now located in areas where it is felt they might be useful in the event of a major natural disaster.

The training of senior Health Branch staff has continued, with 13 members and 8 additional Emergency Health Service volunteers attending training courses at the Canadian Emergency Measures College at Arnprior, Ont.

A total of 43 hospitals now have approved disaster plans and have been issued hospital disaster kits. Hospitals in Victoria and Prince Rupert carried out successful practice sessions this year to test their disaster plan.

In order to develop a closer liaison between practising physicians and the Provincial Emergency Health Services, the Director of the Emergency Health Services has been nominated as chairman of the Disaster Planning Committee of the British Columbia Medical Association. A major project of this Committee is to be the revitalization of the Lower Mainland natural-disaster plan, which is centred around the larger hospitals in the Vancouver area.

Talks on the Emergency Health Services plan were given to the College of General Practice, the Committee on Trauma of the Department of Surgery, students in the Faculties of Medicine, Nursing, and Pharmacy at the University of British Columbia, and at a number of courses put on by the Provincial Civil Defence Organization.

NUTRITION SERVICE

Nutrition services are designed for the individual. Personal contact is needed to influence people in a matter as personal as food.

The effectiveness of nutrition services in British Columbia is due to the teaching and support of the public health nurses and other public health staff. This requires co-operation and co-ordination, in each community, of services by hospitals, the medical profession, schools, welfare, and other social service agencies.

To assure well-informed community nutrition services, a public health nutritionist provides CONSULTANT SERVICES. Personal contact with the public health staff in each health unit was emphasized by the nutrition consultant through 29 visits to health units. During these visits, the nutritionist participated in the following activities:—

Staff conferences	6
Group discussions with public health nurses	20
Prenatal classes	5
Premarital classes	1
Child health conferences	8
Home visits with public health nurses	5
Visits to welfare-licensed boarding homes	6
Liaison hospital visits	11
Geriatric nursing courses	5
School visits	13
Classes for overweights	3
Discussion with public health inspectors	12
Discussion with regional dental consultants	6

The SCOPE OF CONSULTATION included the broad subject areas of normal nutrition education, therapeutic diet counselling, and institutional food service.

EMPHASIS IN NUTRITION EDUCATION was placed on food value for your food dollar. This was the theme of a talk entitled "Grazing Fees," which was given by the nutrition consultant at the Annual Public Health Institute in May.

TEACHING-TOOLS were developed for the specific topics of prenatal food habits, family food buying, infant feeding, adolescent eating habits, geriatric nutrition, weight control, and special diets (for example, diabetic, ulcer, and low phenylalanine).

STANDARDS FOR MEAL SERVICE in welfare-licensed boarding homes were developed in co-operation with Vancouver City nutritionists.

CO-ORDINATION OF COMMUNITY NUTRITION RESOURCES was the purpose of a publication entitled "Directory of Nutrition Services in British Columbia," by the British Columbia Nutrition Committee. The nutrition consultant also organized a one-day institute to review "Past, Present, and Future Evaluation of Community Nutrition Programmes in British Columbia." Co-ordination of nutrition services with other public health programmes was emphasized, as was inter-departmental co-operation at both Provincial and Federal levels.

APPLIED RESEARCH was in the form of a Provincial food cost survey. Public health nurses priced foods in 47 centres in British Columbia. From these prices, estimates of monthly food costs for low-income families were made for each health unit. This information proved its value both educationally and administratively.

FUTURE DEVELOPMENT OF NUTRITION SERVICES will emphasize

- (1) survey of diet and nutritional status of teen-agers;
- (2) expansion of consultant services to encompass the area of home management as needed by the public health services in home care and mental health;
- (3) publication of nutrition reference material for both professional and lay people;
- (4) promotion of adequate diet counselling services within each community.

PUBLICATIONS, 1967

(Prepared by personnel of the Health Branch.)

- "Estimating Prevalence of Certain Chronic Childhood Conditions by Use of a Central Registry," U.S. Public Health Reports, March, 1967, by D. H. G. Renwick.
- "Drugs and Road Accidents," B.C. Medical Journal, July, 1967, by A. A. Larsen.
- "Blackouts as a Cause of Motor Vehicle Accidents in British Columbia, 1966," report of the proceedings of the 1967 annual meeting of the American Association for Automotive Medicine, by A. A. Larsen.
- "Congenital Abnormalities in a Group of British Columbia Children," J. C. D. A., 33:554, October, 1967, by J. A. Curzon and M. E. J. Curzon.
- "Significance of Caries Experience in Preschool Children Aged 3-5 Years," J.C.D.A., 33:87, February, 1967, by A. S. Gray and D. R. Hawk.
- "Prices and Productivity in Dental Care," J.P.H. Dentistry, 27:129, summer, 1967, by H. J. Hann.*
- "Dental Public Health in Canada," Dent. Mag. and Oral Topics, 84:12, February, 1967, by F. McCombie.
- "Dental Development through the First Two Years of Life," J.C.D.A., 33:418, August, 1967, by A. S. Richardson† and C. R. Castaldi.
- "Parental Participation in the Administration of Fluoride Supplements," C.J.P.H., November, 1967, by A. S. Richardson.

* Prepared while a graduate student at the University of Michigan.

† Prepared while a graduate student at the University of Alberta.

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