PROVINCE OF BRITISH COLUMBIA

Minister of Public Works

REPORT

FOR THE FISCAL YEAR

1958/59

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1960

To His Honour FRANK MACKENZIE ROSS, C.M.G., M.C., LL.D.,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

Herewith I beg respectfully to submit the Annual Report of the Department of Public Works for the fiscal year ended March 31st, 1959, in compliance with the provisions of the *Public Works Act.*

W. N. CHANT,
Minister of Public Works.

Office of the Minister of Public Works,
Parliament Buildings, December 28th, 1959.

The Honourable W. N. Chant,
Minister of Public Works,
Parliament Buildings, Victoria, B.C.

SIR,—*I have the honour to submit my Annual Report for the fiscal year ended March 31st, 1959.*

Elsewhere in this report will be found those of the heads of divisions. These set out in detail work accomplished and planned, tenders let and accepted, and Departmental accounts. My report will be confined to those objectives aimed at and presently pursued.

Exploratory work was undertaken in the matter of the bonding of contractors to ensure responsibility in bidding, the completion of work, and proper payment of sub-contractors. This practice is now being carried on, and is functioning very well indeed.

The possibility of initiating the quantity survey method of preparation of specifications and the consequent letting of contracts is being studied.

Consideration is being given to the centralization of gardening staff in the Victoria and Vancouver areas, and having mowing of lawns and similar rough work let out to contract.

The possibility of using female cleaning assistants in buildings has been explored and has been instituted with success.

Direct (foreign exchange) telephone-lines have been set up between Victoria and Vancouver, and have proved their worth in much greater convenience alone. In addition latest figures indicate that the average cost per call between Victoria and Greater Vancouver has been reduced from $2.16 to 73 cents.

Personnel matters have received considerable attention. A programme of in-service training has been planned, and will be implemented as opportunity allows. Staff meetings and " workshops " have been organized, and a number of the staff encouraged to take courses. Amongst these is the Executive Development and Training Course sponsored by the Government through the Civil Service Commission.

This year, emphasis has been laid on maintenance. During a period of capital expansion there is a temptation to delay this work in favour of new construction, and this has been true to a degree in the past few years. Maintenance work is uninteresting by comparison with the excitement of creating new buildings. It brings few plaudits. It is, however, an extremely important part of our work, and it has seemed wise to give it concentration.

The use of automation and modern time-and cost-saving devices and practices has also been stressed. Progress has been made along these lines and is continuing.

A. E. WEBB,
Deputy Minister.

A BRIEF HISTORY OF VICTORIA COURT-HOUSES

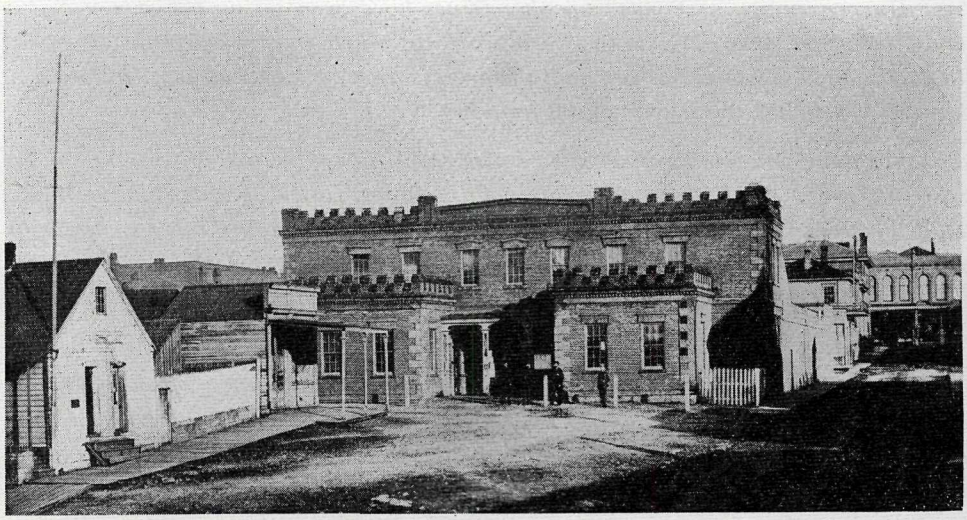
Law Courts were first established in Victoria in 1856, and the Honourable David Cameron was the first " Judge of the Supreme Court of Civil Justice of Vancouver's Island." By Royal warrant issued May 5th, 1856, Governor Sir James Douglas was authorized to pass Letters Patent to Cameron (although not a barrister), there being no members of the legal profession in the colony at that time. The first prison of any sort that Victoria possessed was in the north-east bastion of the old Hudson's Bay fort at the corner of Government and Bastion Streets. On August 6th, 1858, the Daily Victoria Gazette stated:—

"An Editorial calls for the establishment of a public hospital, a jail and a dead-house. The present jail is too small, and coroner's inquests have to be held in the open air in front of the jail; the jury stand around the corpse, some leaning against it, spread on some boards, and the coroner sits on top of an empty barrell [*sic*]."

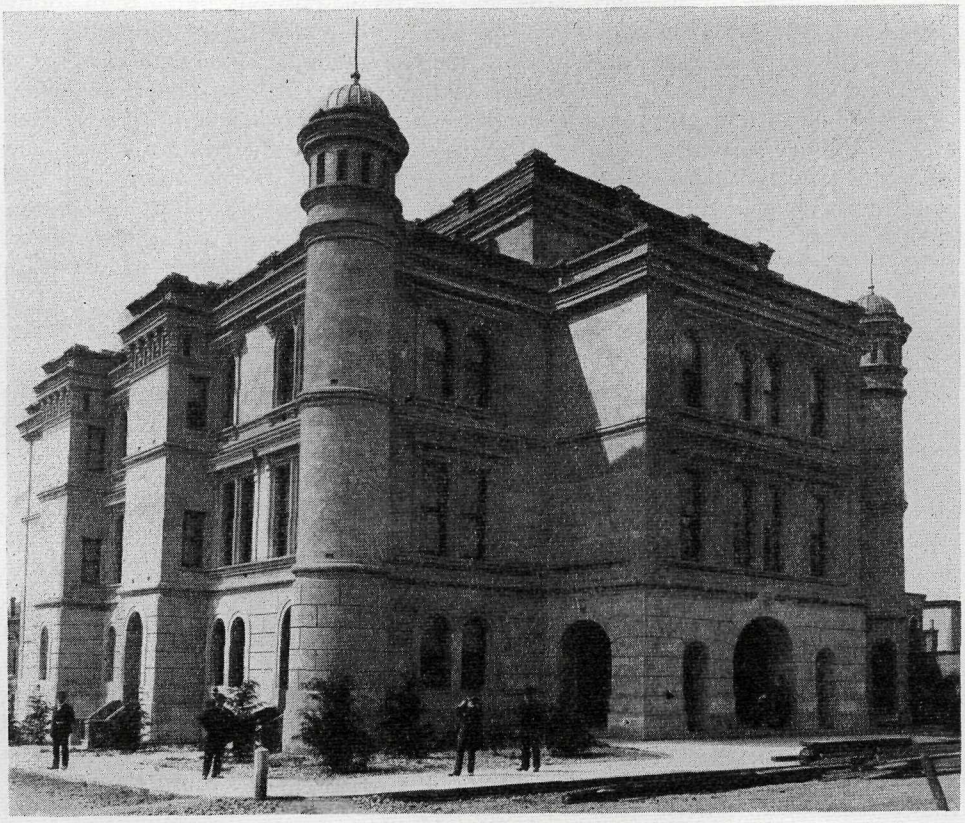
Early in 1859 Governor Douglas acted. He informed the House of Assembly in part as follows:* " I have to inform the house . . . that it has been determined to erect certain buildings . . . on the south side of Victoria Harbour and to connect them by means of a bridge over James Bay with Government Street so as to render them convenient of access to the public."

These buildings became known as the " Birdcages," and one, called the " Supreme Court," was the first Court building that the capital possessed. This was " the rookery in Hottentot Square, yclept a Court House " referred to in Amor De Cosmos's editorial column of March 21st, 1863. Before this time, justice was administered " on the nearest log," as Sir Matthew B. Begbie reminisced in his

* For full text *see* page 47, Public Works Report of 1957/58.



In the early years of the history of the City of Victoria there stood a prison built of Saanich brick on the site now occupied by the present Court-house. This was Victoria's first gaol. It was bounded on the east by a fenced yard in which the gallows was erected. Executed criminals were buried on the spot, and undoubtedly you walk over their resting-place when outside the Sheriff's office! Loud complaints were received from some of the occupants of bedrooms of the Angel Hotel on Langley Street that they could see too much when these hangings took place. On the other hand, it is recorded that there was also a sharp business in hiring out places of vantage from the Angel's roof-top, where the best view-points pertained!



The Victoria Colonist of February 4th, 1887, editorialized:

" The building, which will be two stories in height with basement, will stand on the squarre [sic] *some fifteen or twenty feet from Bastion and Langley Streets. It will be 125 feet in length by 90 feet in width. The main entrances will be from Langley Street and Bastion Square, while there will be a private door on Bastion Street for the use of the judges.*

" The General Appointments of the building will be excellent. All the rooms and offices are to have their own closets and wash basins which are to be connected with a drain running parallel with the building and emptying into the Bastion Street drain. Everything will be trapped and complete in every particular. The roof is to be covered with zinc plates which is considered by the architect the cheapest and most durable kind of roofing. All the exterior ornaments of the building will be of brick and the whole will be cemented. No great effort toward ornamentation is shown in the design though the building will no doubt present a good appearance."

address at the opening of the present Court-house on Bastion Street in the year 1889.

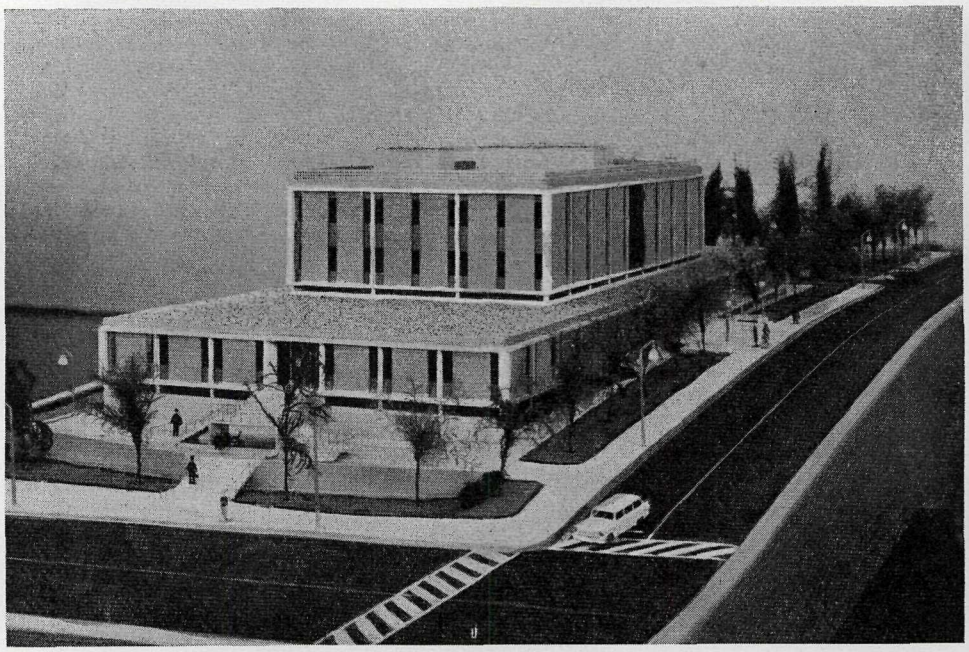
From the outset the new building came under fire, and demands for a Court building in the centre of town were heard. On Saturday, March 21st, 1863, the Daily Colonist sarcastically and indignantly editorialised:—

" Whilst the House of Assembly was passing estimates that their successors of right should pass, it was found convenient to smuggle through an item of $3,638 to complete the rookery on Hottentot Square, yclept a Court House. Notwithstanding jurors, witnesses, suitors and lawyers, have weighed against the nuisance of a Court House erected out of town, yet our ex-city members in their superlative wisdom voted the item . . . it was a matter of notoriety that every body was sick and tired of running to and fro across James Bay Bridge, day after day, and week in and week out. Neither was it unknown to either of these gentlemen . . . that the

most suitable place for the courts to be held was on the post-office lot. If an appropriation was to be made for anything, why was it not to erect a structure on that lot that would meet the wishes and wants of the Community, rather than expend the public money where in a few years it must be thrown away. That James' Bay Court House will have to be given up for one in town, there is no manner of doubt whatever. Then the rookery will in all probability be devoted to the grooms of some new Governor, and the halls of justice become a horse-stable. What more likely use could it be devoted to, except it be made an asylum for those who were insane enough to run counter to public sentiment, and vote money to erect it into a Court House. We hope the electors will remember this nice job when our ex-members ask their suffrages."

To satisfy the clamour, adjustments were made to the old " goal " or " city barracks " building originally erected in 1859 as a prison on Bastion Square, and of which Mr. Trounce was the architect. The inclusion of the Courts within the walls of this very much altered building added one item more to the list of its various uses. These included a police barracks, goal, drill hall, Mayor's office, Magistrate's office, court, armoury, debtors' prison, and superintendent's residence. As if these uses were not enough, the Daily Colonist, in announcing its demise in 1886, observed in part: " What is now the city police barracks room was used in 1859, and later on for Methodist Church purposes and, as the courts were also held within its walls, justice, religion, and defence were thus made companions."

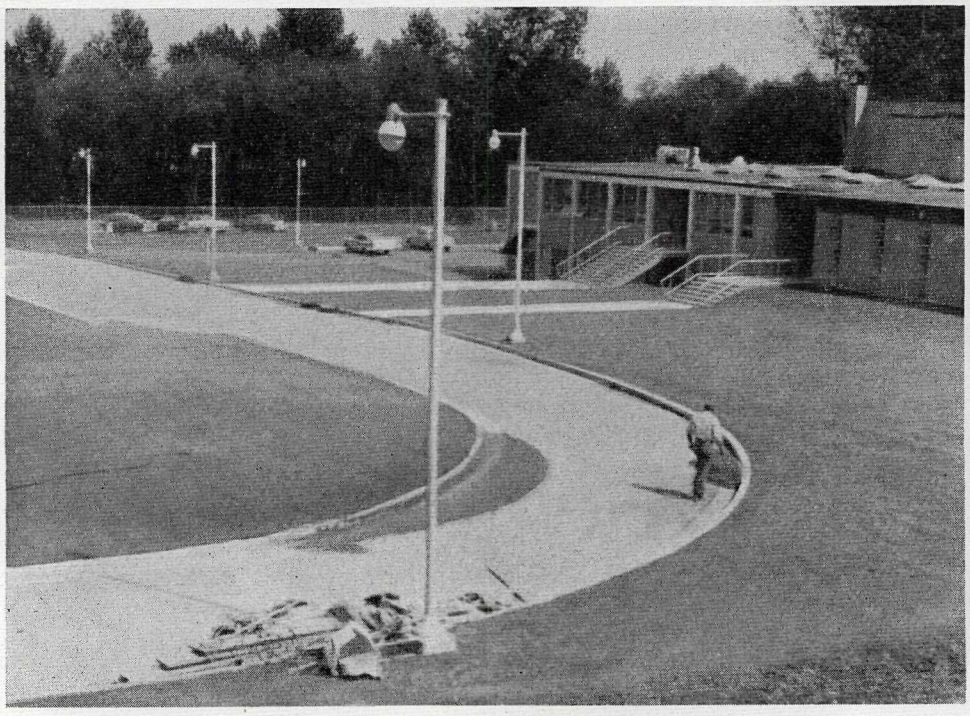
The existing building, soon to be superseded by the Law Courts on Cathedral Hill, has served as Court-house since 1889. It was designed by H. O. Tiedemann, a German, who patterned it after a Court building in Munich. The same person designed " the rookery in Hottentot Square," already mentioned. Since the opening of the building by His Honour Lieutenant-Governor Nelson, many of the entrances and exits have been changed and several of the stairways, passages, and message routes rearranged. Stories are told of an appropriation of $200 in 1896 for an



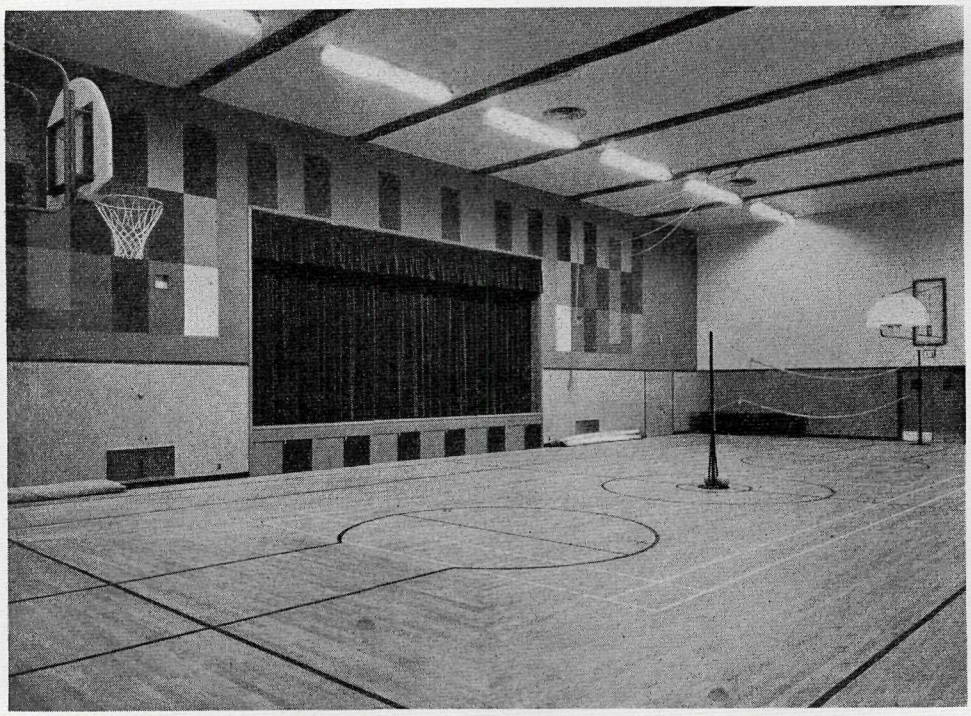
Model of Victoria's new Law Courts, construction of which is to commence before the end of 1959.

elevator on the appointment of the Honourable Theodore Davie as Chief Justice, warned by his doctors not to climb the Court-house stairs. The present elevator was installed a few years later, and has always had a reputation for its " off days."

Seventy years have since passed. Seventy years of British Columbia history have been deeply and profoundly affected by the administration of law and the legal decisions made under its roof. It would probably be safe to say that the lives of all citizens of the Province have been touched or altered to a greater or lesser degree by the influences initially set in motion within its Courts. When the time comes to move and a decision must be made as to its disposition, let us not forget that this building, still basically sound in spite of the passage of time, stands in the oldest part of the city proper, and has adjacent to and in company with it some of the finest brick buildings in the Province. The historic and visitor interest of the city would be greatly enriched if this " Lower Town " section were rejuvenated and restored to something of its former importance. Properly and imaginatively planned, and with the old Court-house forming a centre or fulcrum for the whole, this area can recapture, in retrospect, for citizen and visitor alike, something of the fascination of the past.



Administration Building and grounds, Willingdon School for Girls, Burnaby.



Gymnasium, Willingdon School for Girls, Burnaby.

WILLINGDON SCHOOL FOR GIRLS

The Willingdon School for Girls was designed to replace the old Girls' Industrial School on Cassiar Street in Vancouver, which had become, since its establishment in 1914, outgrown and out of sympathy with the more recent developments in the philosophy of rehabilitation. The old school lacked the physical means of segregation for control, the areas required for education and recreation, and the æsthetic background desirable for rehabilitation.

The new school divides the girls into groups of ten, a size which one instructor can easily control. Two of these groups occupy each of the three duplex cottages and the domitory unit in the main building. Admissions, security, and semi-security groups are reduced to five in number.

Ease of supervision was required at all times, and this principle was the deciding factor in planning. Since the activity of the girls was restricted, a supervised outdoor area to which the girls could go without the formality of permission and escort was highly desirable. This outdoor area for each living unit developed into the court or enclosed patio theme, which is the dominant note of the design. The glass areas in the walls of these patios were kept as large as possible so that from any corner of the unit a supervisor could look through the patio into the corridors and rooms beyond. The cottage supervisor's own suite was placed on the second floor, looking down into the patio, and through the large windows into the living and dining rooms, the kitchens, and the bedroom corridors, so that at all times and in all places constant unobtrusive supervision was possible.

The cottages themselves were placed in front of the main building, where they would be overlooked by the administrative offices and all circulation to and from the cottages could be observed. Supervision in the main building is helped by placing the centre section, comprising administrative offices, gymnasium, and swimming-pool, between the residential units and the school section. In this way, girls from the cottages are prevented from circulating freely through the residential units, which house security and semi-security, while at the same time programmes using these areas can be carried on by the more hostile girls. Each classroom is a well-fitted-out teaching unit, completely self-contained. The self-containment offered the advantage that girls would not have to be excused from the classroom, for should they be excused and not return, the instructor would have to go in search of them.

The basement of the main building houses the boiler-house, storage areas, locker-rooms, kitchen, and staff rooms. A staff dining-room is provided, but no central dining-room for the girls. Institutional dining-rooms have proven to be a focal point for riots and trouble, and as a result it was decided to transport the cooked food for the noon and evening meals to the cottage dining-rooms.

It was expected the girls would have abounding teen-age energy, and that facilities to use up this energy would have to be built. A playing-field, a combination gymnasium-auditorium, a swimming-pool, a chapel, two standard classrooms, an art room, a commercial room, a home economics room, a library, and a beauty-parlour are provided for recreation and education. The swimming-pool is of regulation size and fitted with underwater lighting and a tile deck for safety. The gymnasium is equipped for a variety of games and exercises, including roller skating. The stage of the auditorium is suitable for small stage productions. A projection-room is provided for 16-mm. film, and can be adapted for 35-mm. In addition to these standard features, every attempt was made to build in features around which programmes could be initiated. The fireplaces, the cottage kitchens, the individual laundries, the courts, the planting-boxes, the snack-bar, and all are not so much decoration or frills as items around which a clever supervisor may base a programme of group or individual therapy.

Materials and colours were selected for maintenance and compatibility with teen-age activity. The structural frame is of reinforced concrete. Brick was used extensively to give some warmth to walls built for security. Special plastic enamels were used for corridor walls. The wainscot of the gymnasium was sheathed in rubber to take the battering expected from hard play and roller skating. Armour plate glass was used in the major windows to take the shock of occasional awkwardness or horse play. Steel-lined doors were painted in bright colours, and the whole colour scheme was keyed high to please the teen-ager.

The buildings are now finished and stand with dignity and warmth in pleasantly landscaped grounds as a tribute to a Government with the courage to go all the way in an attempt to rehabilitate a social group which is extremely unpopular to the general public.

—Walter W. Ekins, B.Arch., M.R.A.I.C., A.I.B.C., Project Architect.

ALFRED C. D. BUDD
Superintendent of Works

Born April 1st, 1913, at Nelson, B.C., Mr. Budd served in the R.C.A.F. from June 1st, 1942, to September 15th, 1945. He was previously employed with C.P.R. hotels in the carpenter-shop. He commenced employment with the Department of Public Works on February 3rd, 1938, as Assistant Carpenter; reclassified to Foreman Carpenter Overseer, Vancouver, in 1951; reclassified to Foreman of Works, Vancouver, April, 1957; appointed Superintendent of Works, Victoria, effective September 1st, 1959.

REPORT OF THE MAINTENANCE ARCHITECT

The year 1958/59 has been an exceptionally difficult one for maintenance work. " Tight money " and the " hold the line " policy resulted in maintenance funds being held at last year's level.

The major maintenance projects undertaken during the year were as follows:—

Remodelling of the third floor of the Court-house, New Westminster, to County Court and Judge's chamber. All the work involved was executed by Public Works staff from Vancouver, and favourable comments have been passed on the excellent workmanship.

Major renovations were made to the Vernon Court-house to allow the welfare department to occupy offices on the ground floor, and the agriculture department was moved to the third floor. This work was carried out by Public Works staff from Tranquille.

Owing to the age of many of the Provincial buildings, only minimum maintenance is being carried out, as it is felt major renovations would be most expensive, and the buildings do not warrant this expenditure.

The Provincial Fire Marshal has, during the past year, submitted reports on many of the Provincial buildings requesting changes. These requests are being given attention in all cases, and capital funds, where required, are being requested.

Staff residences in the Province (with the exception of approximately 20 per cent) are in most cases very old and require continuous maintenance. If it is the Government's intention to continue to purchase houses for staff residences, may I suggest that consideration be given to a stock plan being prepared (this plan can be adjusted to various climatic conditions), so that contracts could be let for erection. If this suggestion is adopted, it is felt that maintenance costs would be greatly reduced owing to the fact that the buildings would be erected to our specifications and would require no remodelling, redecorating, etc., as is the case with most houses that are purchased. Also the initial capital outlay would be less for erecting a residence than purchasing on the open market.

R.C.M.P. detachments in all cases are similar in condition to residences, but I am glad to report that the Federal Government is in the process of calling for tenders to erect new detachments in various locations in the Province. New buildings have already been erected in Keremeos, Smithers, Williams Lake, and Quesnel. It is hoped, therefore that in the near future more detachments will be vacated, thus relieving this Department of maintenance. In most cases, the buildings vacated will not be of any use to the Provincial Government, and it is suggested such buildings be put up for sale.

General maintenance in the Vancouver area, Essondale, and Tranquille is being kept up to a good standard through the excellent co-operation of the Superintendents of Work and their staffs.

Oakalla Prison Farm.—This institution is extremely hard to maintain owing to the age of most of the buildings. Great credit must be given to the maintenance staff of the Attorney-General's Department for the excellent manner in which they are keeping all services running smoothly, and for their co-operation with this Department.

Haney.—This being the newest gaol in the Province, maintenance problems are not heavy.

Prince George Men's Gaol.—This Department has carried out extensive interior alterations during the year in the basement of the Provincial Men's Gaol, enabling the Warden to employ inmates for occupational therapy, which is proving successful. This gaol is now overcrowded.

Kamloops Provincial Gaol.—This institution, being of wooden construction and quite old, requires continuous attention, which is being carried out by Department of Public Works staff at Tranquille.

Homes for the Aged, Vernon and Terrace.—These institutions are being kept up to a fair standard. The buildings were originally erected for army personnel during war-time as temporary quarters, and naturally, with this type of construction, maintenance is most expensive and continually increasing.

Grounds.—During the past year, surveys have been made in co-operation with the Landscape Division for beautification of grounds to buildings in Vancouver and Victoria, and it is hoped in the near future to complete landscaping to Interior locations.

May I close this report by thanking all Government Agents and District Engineers who have acted on our behalf in the Interior; their help during the past year has been greatly appreciated.

E. C. Clarkson, M.R.A.I.C., M.A.I.B.C., A.I.A.A.,
Maintenance Architect.

STANLEY LLOYD, A.R.I.B.A., M.R.A.I.C., M.A.I.B.C.

Stanley Lloyd was born in England in 1918. After having served as a pupil with a London architect, and subsequently receiving his professional education, he became a member of the Royal Institute of British Architects. He is also a member of the Royal Architectural Institute of Canada and the Architectural Institute of British Columbia. During World War II he served with the Royal Engineers in East Africa and India. Prior to joining the Department in 1949, Mr. Lloyd was engaged on various architectural projects with the Ministry of Works and private architects. Currently he is taking the Government-sponsored Executive Development Course at the University of British Columbia.

WALTER W. EKINS, B.ARCH., M.R.A.I.C., A.I.B.C.

Mr. Ekins was born in 1917 at Deodon, Sask. He received his early education at Nanaimo and Victoria, and his Bachelor's degree in Architecture from the University of Manitoba.

While studying for his degree he received two scholarships and was elected president of the Architectural Undergraduate Society.

He worked for several Montreal and Vancouver architects doing commercial and theatre work before joining the Department of Public Works in 1949.

He is a member of the Royal Architectural Institute of Canada and is presently studying for a diploma in public administration from the University of British Columbia.

REPORT OF THE SUPERVISING ARCHITECT

In another section of this Report are listed projects completed, work under construction, and contracts awarded during the fiscal year 1958/59.

This report is primarily concerned with the internal operation of the Architectural Division of the Department.

Staff was maintained throughout the year at an 18 per cent lower numerical level than in the preceding year. At the end of March, 1959, the division employed seven architects, three draughtsmen, one specification writer, one landscape designer, and one planner-architect.

Consideration was given at this time to arranging for a member of the staff to engage in hospital planning research in liaison with the British Columbia Hospital Insurance Service. This has now been in effect for some months, and it is believed that the work will prove of great value, not only to the Hospital Insurance Service, but to this Department.

The foregoing work was undertaken in keeping with the Departmental policy as laid out whereby the services of this and other companion divisions are made available to other departments on a technical and professional basis.

While Civil Service has been defined as service to and for the public, the primary duty of the Department of Public Works lies in providing services to other Government departments. It gives them properly planned space wherein to function efficiently.

The degree to which success is achieved depends on the skill of the architects and the intelligent co-operation of the Department for which the building is planned. There is ample evidence that both sides have fulfilled their obligations, in the numerous fine buildings the Public Works Department has erected in recent years.

The most important project under construction during the year was the new Government House. At the end of the fiscal year 1957/58, contracts for the reinforced-concrete structure and for elevators had been let.

In the fiscal year 1958/59, eighteen other sub-contracts were let for the balance of the work, aggregating approximately $746,000. Due to the exigencies of the work, the Architectural Division arranged for and let all these sub-contracts, assuming to a major degree the work and responsibilities normally devolving on the prime contractor. In this regard it is felt that considerable credit is due to the staff, who, undertaking this time-consuming work under conditions of great pressure, brought the contract to a satisfactory conclusion well before the Royal visit.

The principal other contract of note that was let during the year was an additional wing to the Ewing Building at Victoria College. This extension provided much-needed classroom accommodation and other facilities, and has enabled the College to offer third- and fourth-year arts courses, leading to a Bachelor of Arts degree.

A large new students' union room was incorporated into the planning, enabling the former students' activity room to be remodelled as the main library.

In the draughting office of the Architectural Division the chief work undertaken was the preparation of drawings and specifications for the completion of the first eight buildings of the new Vocational Training School at Burnaby. The prefabricated steel structures were erected under a prior contract.

The current development comprises an automotive workshop, a metal-trades workship for welding and fabrication training, a house-building workshop, and a building-trades workshop which includes a large area for boat-building.

Adjacent to each of these workshops is a classroom where theoretical studies relevant to the work carried out in the adjoining workshops will be held.

One of the classrooms will be used as an administration building, and is being planned accordingly. It is hoped that the expansion of the Vocational School over the years will include an administration building with cafeteria facilities; chemistry, aeronautical, and electronic laboratories; and mechanical-trade buildings of various kinds.

Though the fiscal year under consideration did not see the volume of work go out to tender that has been the case in previous years, much valuable planning on future projects has been initiated.

Preliminary sketch-plans were developed for seven prospective new Government buildings, probably the most important of which is the new Victoria Law Courts.

It is appropriate here not only to record the efficiency and loyalty of staff, but to note with appreciation the close co-operation existing interdepartmentally in preliminary planning matters.

W. R. H. CURTIS, M.R.A.I.C., A.R.I.B.A.,
Supervising Architect.

H. J. GREIG, B.A.Sc., P.Eng.

Mr. Greig was born in Regina, Sask., in 1916, and received his primary and secondary education there. He served with the R.C.A.F. from 1942 to 1945, and enrolled at the University of British Columbia after discharge, receiving a Bachelor of Applied Science degree in civil engineering in 1949.

After graduation, Mr. Greig was employed as a hydraulic engineer with what is now the Department of Northern Affairs and National Resources, and as a design engineer with John H. Read, consulting structural engineer, Vancouver. He joined the Department of Public Works staff in 1952, and is presently a *Designing Structural Engineer—Grade 3.*

Mr. Greig is the secretary-treasurer of the B.C. Government group of professional engineers. He is an ardent curler and golfer, and enjoys " do it yourself " projects around his home.

REPORT OF THE STRUCTURAL ENGINEER

The Structural and Civil Engineering Division spent a busy year on the design and supervision of various buildings and structures. Some of these were the new Government House, Victoria; addition to the Ewing Building, Victoria College; and the Burnaby Vocational Training School.

Soil-testing plays a most significant part in the design of buildings and outside services. It is particularly important to conduct proper soil tests before acquiring land for buildings. Expensive foundations can often influence the choice of sites. Most of the soil testing for this Department has been done by private consulting engineers. However, when their schedule permits, the Department of Highways will do this work for us. This has been of great assistance to us.

A representative of the Department attended the Inland Empire Sewage Works School at Pullman, Wash., and studied the latest sewage-works methods. An operating manual was prepared for our sewage-plant operators based on information obtained from the course. The maintenance of sewage plants is quite important, and a manual of this type increases the operator's interest in the maintenance of what can be called a rather uninteresting service. At present this Department maintains and operates some of the most advanced types of service plants in Canada, and has pioneered this field.

During the year the final stage of a major improvement of the water-distribution facilities at the Provincial Mental Hospital, Essondale, was carried out. This stage consisted of laying a new 12-inch-diameter water-main and smaller service-lines in the north portion of the institution. The 25-inch-diameter Coquitlam main of the Greater Vancouver Water Board, which runs through Government property, was tapped at numerous points to serve various buildings. The main is old, and a break in it could have left some of the major hospital buildings without water service as there was no alternative supply.

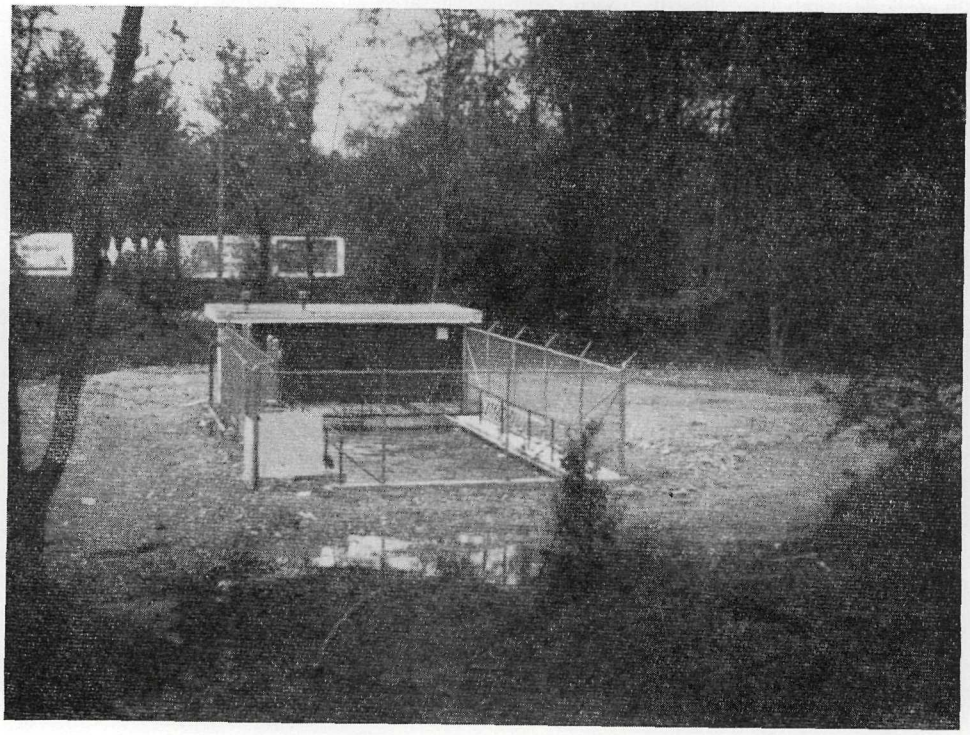
The new distribution main connects to the Greater Vancouver Water Board main at only three points, and is so valved that a break in the latter would cause no disruption of water service to any of the major buildings. In addition, the hydraulics of the system have been improved so that pressure in the top floors of higher buildings is adequate at all times for both domestic and fire-fighting services. A 2,000,000-gallon reservoir is connected to the system for emergency service in the event of a major fire occurring at a time when service from the Greater Vancouver Water Board mains is interrupted.

Plumbing plans and specifications were prepared for Burnaby Vocational Training School during the year.

" Government is a trust, and the officers of the Government are trustees; and both the trust and trustees are created for the benefit of the people."

—*Henry Clay.*

J. R. SIMPSON, P.ENG.,
Senior Structural Engineer.



Burnaby sewage-disposal plant.

PROTECTION OF GOVERNMENT BUILDINGS AGAINST AIR RAIDS AND ATOMIC BLAST

The Department has made a study, in co-operation with Civil Defence authorities, of air-raid effects on the design of Government buildings. A short résumé follows.

The planning of new construction affords the best opportunity for the inclusion of protective measures at minimum cost. Existing structures can, in many cases, be strengthened so as to make them more resistant to blast, fire, and radiation, but the cost of doing so is very high.

At a certain distance from ground zero, weaker conventional buildings would be destroyed. Others of greater strength would stand and afford protection. This estimated area, based on extrapolating the effects of the Japanese incidents, might range from approximately 4 square miles for a 20-kiloton bomb (the size used in Japan) to an estimated 400 square miles for a 20-megaton bomb (the latest hydrogen bomb). The area within which severe damage would occur in the stronger buildings can be substantially reduced even by slight improvements in the present conventional construction.

As protective features are added to make the area of damage smaller, cost of added protection increases rapidly. Protection beyond that provided by nominal improvements in conventional construction involves an increased cost which might be difficult to justify. A point will be reached where the cost of adding protection to all buildings over a large area will be greater than the value of the property which could be saved. Investments of this magnitude would obviously be impractical as they would result in an economic loss with or without enemy action. However, within the two limits mentioned is a possible range of protection well worth consideration. Practical limits for any given building depends on many factors: some of these are the type of construction, its functional use, its strategic value, and its location relative to targets. Certain types of construction can be given a great deal of protection at little cost, and can be more readily converted to protective designs than others.

Among key structures for which protection against attack is desirable are selected Government buildings. There are two general approaches to the matter, and both assume there will be sufficient warning of attack to move personnel to a safe spot. The first is to provide protection in certain sections within buildings, such as corridors and the basement. These sections would be constructed so as to provide protection despite collapse and damage to other portions of the structure. The second is to provide special shelter areas, and in addition improve the entire structure in an attempt to limit structural damage. The latter approach by improving the whole building would seek to keep the structure usable after attack. It could then be used, firstly, for emergency services such as housing, first-aid stations, hospitals, and emergency feeding, and, secondly, for office purposes.

The net pressure on exterior walls and roof is lessened where there are large window openings to permit blast to enter and counteract external pressures. By removing debris and covering window openings, these areas could function for post-attack use. In multi-story buildings the shelter would be on the lower or basement floor. Above this only the frame would be expected to survive. So far this report has dealt only with the effect of blast pressures on buildings, not with radiation or heat effects. Protection against gamma radiation and heat effects can be afforded by a sufficient thickness of concrete. The concrete, though later destroyed by blast, will serve as a shield against gamma rays penetrating the shelter areas.

In conclusion the following points are emphasized:—

(1) It must be part of policy to decide which buildings are to have shelter areas only, and which are to be designed in addition for full structural stability.

(2) Shelter space can be provided in new buildings for very little increase in cost, if planned in advance. It is very costly later.

(3) Shelter areas are preferable in basements, if suitable access can be provided, due to the added protection of earth. In one-story buildings above grade, the shelter area is best provided by a reinforced-concrete corridor.

(4) Blast-resistant design is similar to earthquake-resistant design, and to some extent one would provide for the other.

" It is easy to be wise after the event."—*Old English proverb.*

J. R. Simpson, P.Eng.,
Senior Structural Engineer.

EARTHQUAKE DESIGN OF BUILDINGS

A small earthquake, centred on the San Juan Islands, which occurred last December served to remind us that the Pacific Coast region of the Province lies in an active earthquake zone. The National Building Code of Canada classes earthquake probability into three damage zones, the Pacific Coast region being classed as Zone 3, a zone of potential major damage. For example, the Queen Charlotte quake of August, 1949, had a magnitude of 8.1 measured on the Gutenburg-Richter scale. The recent Montana quake had a magnitude of 7.1, and the Comox-Courtenay quake of June, 1946, a magnitude of 7.3. The March, 1933, quake in Long Beach, Calif., had a magnitude of only 6.3, but due to its location caused some $40,000,000 damage. Due to widespread damage to schools, the State of California passed an Act in 1933 relating to the safety of design and construction of public school buildings. This Act states that all plans for construction or alterations of school buildings shall be passed by the Public Works Department in regard to structural safety and design.

Earthquakes consist of vertical and horizontal ground vibrations, with horizontal earth motion the most destructive force. When the ground underneath a structure is moved suddenly to one side, the structure will tend to remain in its original position because of its inertia. The acceleration of the horizontal movement varies; its maximum value is the yardstick commonly adopted for measuring the equivalent static earthquake force. If, say, the acceleration of the horizontal earth movement is one-tenth the acceleration of gravity, it is assumed that the stresses in the structure caused by the earthquake are the same as those produced by horizontal static forces equal to one-tenth of the gravity forces acting on the building. Generally speaking, and subject to dynamic phenomena, the greater the weight and rigidity of the structure, the greater are the forces which must be resisted by the structure before failure occurs.

The horizontal earthquake forces to be resisted at any point in a structure are determined by multiplying the dead load by a numerical constant. The numerical constant is dependent upon the geographical location and the portion of the structure considered. In general, the lighter the building, the less horizontal stresses to be resisted.

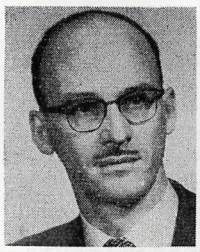
Reports show, when all types of buildings are considered, that they generally, suffer less damage when founded on hard ground than when built on soft ground. Accordingly, some building codes specify the seismic factors for design on the basis of the bearing power of the soil.

All buildings, whether so designed or not, have some inherent resistance to lateral forces. This has been shown by the survival of some buildings of little or no designed resistance to severe earthquakes. The lateral forces resulting from wind, earthquake, and blast are not uniform static forces or pressures, but are of a chaotic and dynamic nature, unpredictable in the extreme. The dependence upon chance lateral resistance or peculiar dynamic phenomena to save a building or its occupants from disaster in a region subject to extreme lateral forces is dangerous and negligent. The only reliable procedure is to have adequate design for the specified risk or risks by competent engineers familiar with the subject and to ensure that the construction is carried out according to the design.

Good design for earthquake forces limits the use of cornices, facings, and ornamental details that are not rigidly tied to the building. It has been shown that these portions of a building have caused great damage even when the building frame has resisted a quake.

Buildings of any uniform and controlled material can be erected to withstand heavy windstorms or severe earthquakes with little or no damage and with little additional cost. The requirements are good design and good construction according to the design.

J. R. SIMPSON, P.ENG.,
Senior Structural Engineer.



F. D. STURDY, B.E., P.ENG.

Born in 1920 at Saskatoon, Sask. Attended University of Saskatchewan from 1937 to 1941, graduating with a Bachelor of Engineering degree. After graduation joined the Royal Canadian Navy as an engineer officer.

Upon receiving discharge from the Navy in 1945, joined the staff of the College of Engineering at the University of Saskatchewan as a lecturer. The following year went to Eastern Canada and was employed as maintenance engineer in an oil-refinery. In 1948 entered the service of the Provincial Goverment as a mechanical engineer in the Department of Public Works.

Member of the Association of Professional Engineers, Province of British Columbia, and the Society of Heating, Refrigeration, and Air Conditioning Engineers.

REPORT OF THE MECHANICAL ENGINEER

GENERAL

The Mechanical Engineers Division again experienced a busy year, in which most of the activity was directed toward capital projects. Many of the large ones under way at the beginning of the year were completed during the year.

Start-up of mechanical equipment in large buildings requires considerable time and effort. First, to balance the various systems with each other, and, secondly, to correct " bugs " or minor maladjustments or malfunctioning.

There is an increase in the demand for summer cooling, especially in the Interior of the Province. One feature of summer cooling must be emphasized: it is that an increase in the electrical-power bills during the summer must be expected.

The use of natural gas as fuel has increased. In many cases the decision to use natural gas has not been based upon fuel economies, but the indirect advantages accruing from the cleanliness of the fuel and ease of making automatic installations.

CAPITAL PROJECTS

Most of the capital projects that the section has been connected with are described elsewhere in this Report.

There were, however, a number of capital projects handled by the Division which merit special mention. Among these were the following:—

Completion of the large addition to the boiler-house at the Provincial Mental Hospital, Essondale, and the installation of a 75,000-pounds-per-hour steam generator. This project was scheduled for completion early in this fiscal year, but a strike of the plumbing and heating trade delayed completion considerably.

The installation of summer air-cooling in the Court-houses at Kelowna and Cranbrook. These systems have increased the comfort of the personnel greatly, especially so in the extremely hot weather.

In the fourth quarter a start was made upon additional steam-generating capacity at the Oakalla Prison Farm. This plant was very badly in need of additional capacity due to the growth of the prison. Space limitations led to the decision to use natural gas as the fuel on an interruptable basis. The existing coal-burning units would serve as the required alternative method of firing.

MAINTENANCE

Maintenance of the mechanical equipment continued at a high plane, although an increasing amount of work, relatively, had to be contracted. There has been a

decrease in the amount of preventive maintenance carried out due to the fact that the institutions have grown at a much greater rate than the mechanical staffs looking after the equipment. In other words, a larger portion of the staffs' time had to be devoted to straight operating.

The value of a preventive maintenance programme is not always apparent, but when it is contrasted with " breakdown " type of maintenance with its attendant inconvenience and emergency measures, it is easy to see that preventive maintenance is the best and the cheapest way to assure that equipment will function when it is required and will have a long and useful life.

SUPERVISION OF PLANT OPERATION AND OPERATING PERSONNEL

During the year a number of field-trips were made to visit the various steam plants to discuss operating procedures and problems with the operating staffs. These trips resulted in a better understanding between the headquarters staff and the plant operators.

This year the first major change to the plant rating scheme took place since it was developed five years ago by this Division. The plant rating scheme is a method of evaluating the steam plants with each other and thus formulating an organization of otherwise independent plants. The change, which grew out of some deficiencies of the original scheme and the desire of all the operating engineers for more exact recognition of their operating certificates, appears to have cleared away the criticisms of the scheme. It is interesting to note that the Civil Service Commission use the plant rating scheme for the setting of operating engineers' salaries.

W. E. MILLS,
Senior Mechanical Engineer.

REPORT OF THE SENIOR MECHANICAL ENGINEER

THE EMERGENCE OF THERMO-ELECTRICITY

Out of the research laboratories has come a new type of electric generator: one which could possibly simplify the generation of electric power and, certainly now, allow remote areas to enjoy the advantages of electric light, electrified machinery, and radio. The generator has no moving parts; it converts heat directly into electrical power. The same type of generator, operating on a different effect, can be built into inexpensive refrigerators. A further variation can be applied to heat indoor working and living spaces.

The direct transformation of thermal energy into electrical energy is based upon the Pelteir, Thompson, Hall, and Seebeck effects. These effects, discovered by these early workers, are so basic that it is worth while reviewing them.

In 1823 Thomas Seebeck discovered that if a circuit is formed of dissimilar conductors and one junction kept at a higher temperature than the other, a voltage will be generated between conductors which is proportional to the temperature difference. This is the basis of the thermocouple.

In 1834 Jean Pelteir, of France, found that if an electrical current is passed through a circuit composed of dissimilar metals, heat is evolved at one junction and absorbed at the other. Furthermore, the heat evolved is proportional to the current, and reversing the current will reverse the temperature difference.

Next, William Thompson (Lord Kelvin) predicted, correctly, that heat generation and absorption could take place in a single material if a current were passed through it. In most materials, though, this effect is so slight that it is hardly useful.

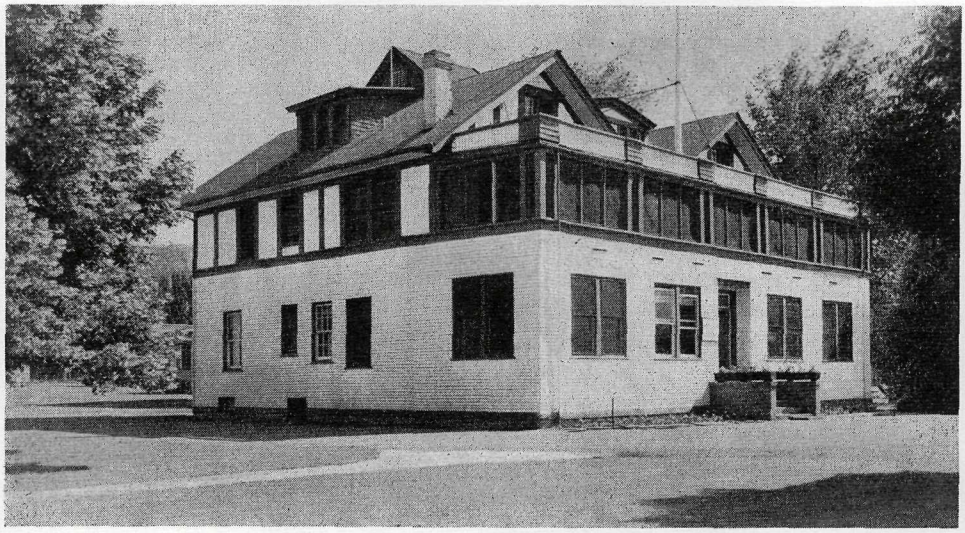
In the late 1870's E. H. Hall, of John Hopkins, discovered that if a strip of metal carrying an electrical current were placed in a magnetic field, a voltage gradient would be developed across the strip, skewed in one direction or another, depending upon the material.

These effects were noted, and to some extent put to work. The magic touch required to awaken the possibilities of developing heat-to-electricity converters was the discovery, by an American engineer, Lars O. Grandhal, in 1926, that some materials have directional selectivity for electric currents. He showed that an oxidized copper plate conducts electricity in one direction easily, but offers high resistance to the other. This was the first of a number of substances later discovered to have the same property and are now called " semi-conductors." Semi-conductors greatly amplify the Thompson and Hall effects.

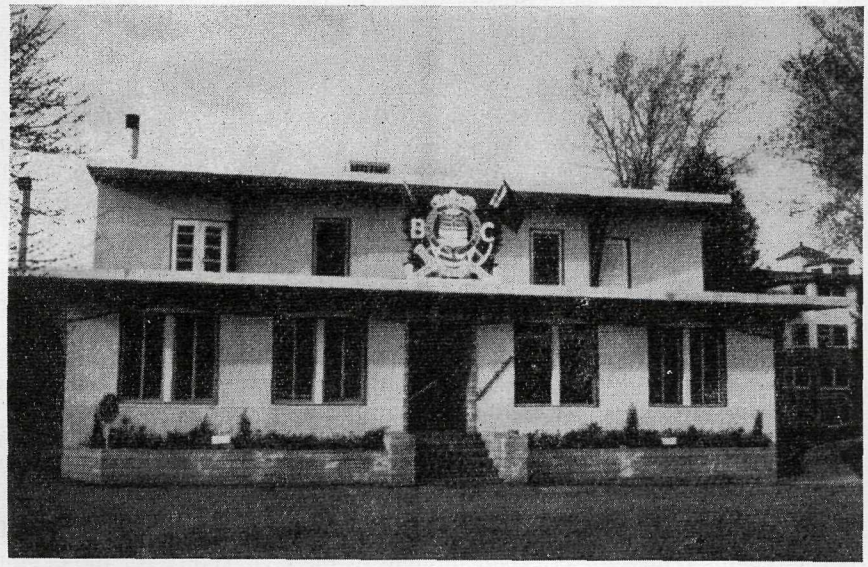
Large-scale commercial availability of semi-conductors opened the flood-gates for dreams of motive power produced directly by the conversion of heat to electrical energy. Five-kilowatt converters have already been produced and tested. They are compact and light weight, and thus readily portable. Prototype refrigerators are being tested. Although these converters are not " competitive " in the commercial sense, they pave the way for units that are economical enough for special applications.

The uses of thermo-electric converters have not been fully explored, but vistas have been opened wide enough to promise a bright future.

W. E. MILLS,
Senior Mechanical Engineer.



Administration Building, School for Mental Defectives, Tranquille, showing the building before and after modernization by Maintenance Division of this Department.



REPORT OF PLANNING DIVISION

> " It is not possible to have any right morality, happiness or art, in any country where the cities are thus built, or thus, let me rather say, clotted and coagulated; spots of a dreadful mildew spreading by patches and blotches over the country they consume. You must have lovely cities, crystallized, not coagulated, into form; limited in size and not casting out the scum and scurf of them into an encircling eruption of shame."—*John Ruskin in Fors Clavigera.*

This year has seen the consolidation of some previous projects, the continuance of others, a branching into public relations, and an effort to show the general public as well as the Legislature that the Department is responsible for, and achieves, a great deal as each year evolves.

The Public Works Department was represented for the first time at the Junior Chamber of Commerce Fair, Victoria, and at the Pacific National Exhibition, Vancouver. Exhibition stands were designed and models shown, all of which received favourable comment from the right sources. With the completion of the Government House contract, the making of a scale model by a professional firm of model-makers was carried out, culminating with the showing of the work at the Pacific National Exhibition.

Campus plans have now been prepared for the University of British Columbia at Victoria, both at Lansdowne Road and Gordon Head. The Department is assisting the faculty to the best of its ability with the drive for further accommodation in a fast expanding student-body.

Pressure for space is most apparent in the legislative precinct, and is badly needed for personnel, cars, and also storage. The Department is actively considering microfilming of plans and records. Improvements are progressing at the rear of the Connaught Library, and this will be known as " Birdcage Walk." A Provincial museum is being planned in accordance with master plans for the precinct prepared in 1954/55. It is most gratifying that these plans should be materializing. A step which is equally important and affecting the efficiency of all departments is the need for another office block with similar floor space to the Douglas Building. Parking areas to accommodate over a thousand automobiles are needed, and planning to provide this facility must proceed.

Projects still continuing both within and without the Civil Service are: Traffic planning in the James Bay area, Essondale planning, Gordon Head playing-fields, crests for Government House ballroom, Oakalla Prison, and Court-houses for smaller communities. Mention should be made here of Oliver in the Okanagan, where an integrated scheme involving the Federal, Provincial, and municipal governments has resulted in an orderly and harmonious grouping of public buildings. The enthusiastic support of regional officials of the departments concerned has been readily given and most welcome. This is an instance of planning at its most sensible and economic level.

A most important project has been the co-ordination of the Victoria Law Courts site, keeping alive the constant thought of the civic centre for the capital of British Columbia. In this the Department has received utmost co-operation from other interested authorities.

As part of the modern philosophy of the orderly development of cities, we must strive, as much as is possible within the sphere of our Provincial responsibilities, to place and lay out our buildings in accord with this worthy and orderly outlook. In planning new public and governmental precincts, civic and cultural

centres, we should endeavour, in concert with interested authorities at other levels, to work toward an urban pattern where people in offices, people in stores, people requiring to visit public buildings, can do so with a maximum of convenience and comfort. This ideal calls for a high degree of interest and co-operation at all tiers of government, and I am happy to report that these objectives have received considerable impetus over recent times. It is most encouraging to observe a sharp improvement in liaison between planning authorities and to realize that this Department has played a leading part in achieving this constructive attitude.

The word " planning " has assumed, by its usage, a degree of pretentiousness which is unfortunate; it clouds the simplicity of the aims and objects for which we strive. What is required is a long-term general strategy that will call a halt to disorderly, ugly, and wasteful development, which will retain a maximum of natural beauties, and which will recreate, in as large a measure as possible, some order and harmony from the environmental deterioration which has been so tragically allowed to evolve.

It makes no sense to regard planning as something that floats around in the blue—as an activity unrelated to the daily processes of politics and government. Planning is part of the executive and legislative functions, and must be developed, discussed, adjusted, and adopted by the whole community. There should be no planning independent of the power to act, and no power to act without planning.

The spade that digs and finds beauty and order in the ruins of ancient cities will one day dig into the monuments of this century as well. What the spade uncovers will help determine how we lived and what our values were. Mr. Justice Brandeis is credited with saying, " The wastes of Democracy are among the most obvious wastes." This is not an epitaph; it is a challenge.

W. D. LOUGHER-GOODEY,
Architect-Planner.

LEONARD BUTTERWORTH

Mr. Butterworth was born November 25th, 1909, at Hull, Yorkshire, England. He received schooling in England to a British equivalent to Canadian Grade XII. He took a correspondence course on motor engineering and workshop practice in England, 1932–33; a science and biology course at Hull University, 1944–45; a general horticultural course at the University of British Columbia, Vancouver, 1951–52, and received a first-class diploma for general horticulture. He also took a course on botany at the University of British Columbia, in 1952–53.

He commenced employment with the Department of Public Works as Gardener—Grade 1, March 8th, 1954, at Government House, after many years of experience in both England and this country. He was promoted to Gardener—Grade 2 in March, 1957, and to Head Gardener, October 1st, 1958.

JOSEPH E. G. TIDBURY

Mr. Tidbury was born May 21st, 1900, at Wimbledon, England. He received his schooling in England and Canada. He served in the First World War with the 5th C.G.A. from June, 1916, to August, 1918. He was previously employed as gardener at the Empress Hotel and by Capt. W. H. Modon. Mr. Tidbury commenced employment with the Department of Public Works on December 1st, 1944, as gardener, and was promoted to Foreman Gardener, Parliament Buildings, April, 1953.

REPORT OF LANDSCAPE DESIGNER

Though landscaping of Government properties has been carried out for some time, starting with the Penticton Court-house about 1951, this work has only been established during the last year as an integral part of the design and maintenance of Provincial properties as a whole.

A great amount of work requires to be done and, therefore, of necessity this will need much thought and planning. However, it is the intention to have the grounds of the Provincial Government buildings slowly developed to display a setting that will be a credit to the prestige of the Province.

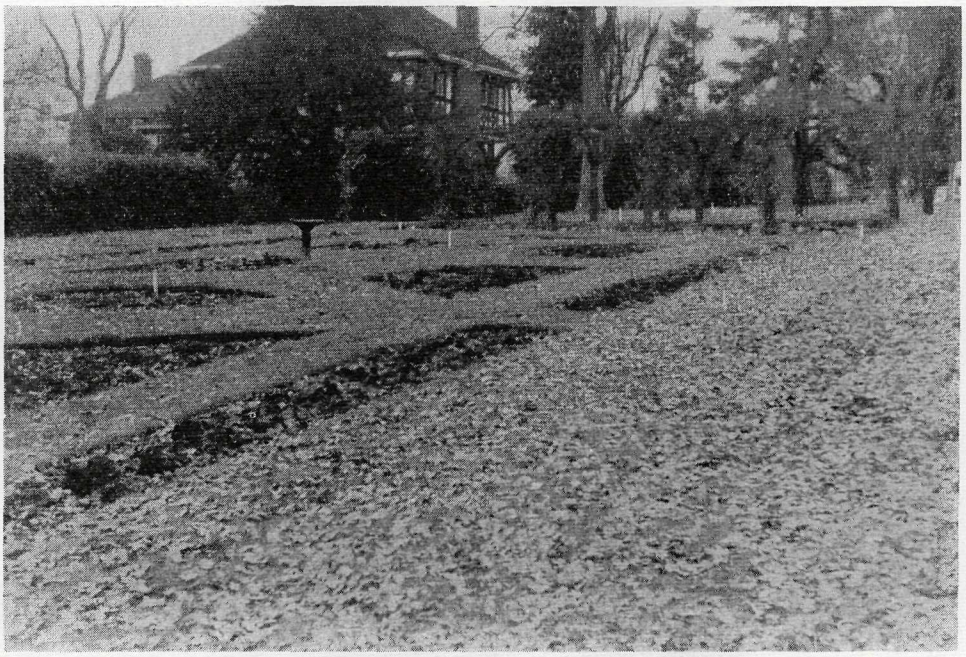
The formation of a Landscape Division gives full recognition to the importance of this phase of Government operations, and also affords a more efficient plan of production.

During this first year of its operation, this Division was able to bring its projects at the new Government House in Victoria to completion in the area of the main design. With regard to the alpine and rose garden units, only a few rare roses and some rhododendrons remain to be received during the coming spring.

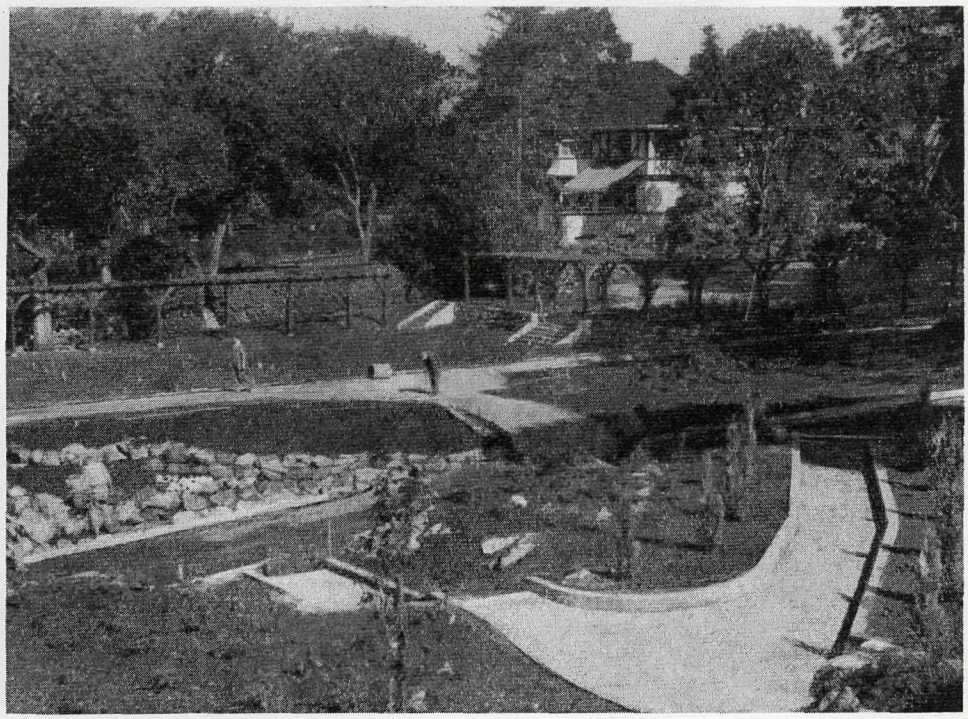
The complete drainage system was redesigned for the service of the water garden, thus enabling the regular cleaning of the fountain pool, which not only is a saving of time, but also a considerable saving in expense in operation.

This year saw the final production of the lawns at the Girls' Industrial School, Burnaby. These lawns, it is believed, are the best at any Provincial property and add much to the spacious appearance of this institution.

At this same property a scheme of ground-cover planting was taken in hand to cover the very extensive banks which occurred. It is considered these ground covers, when established, will very largely reduce the maintenance costs of a difficult condition arising from such slopes. A progressive start was made on the grounds at the Vocational School, Burnaby, where lawn areas have been planted



Government House, Victoria—old rose garden before reconstruction commenced.

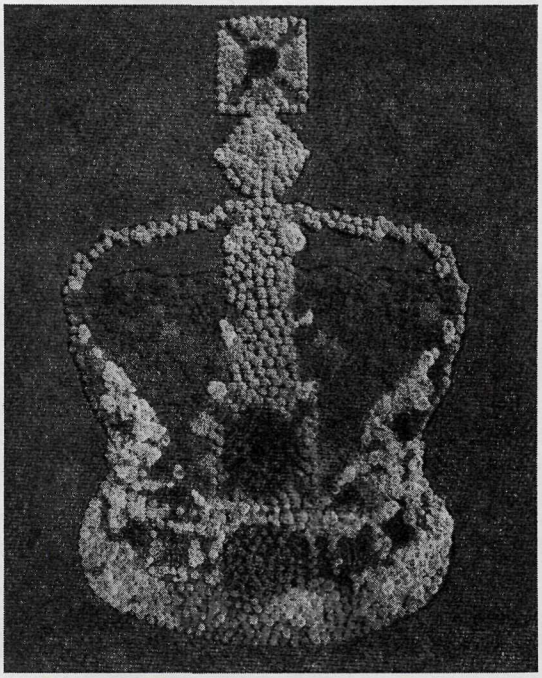


Government House, Victoria—reconstructed rose garden nearing completion.

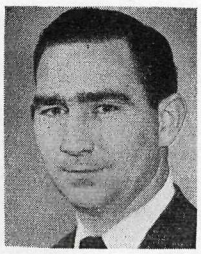
and the same treatment by ground covers referred to above has been on certain large banks that have occurred. At the time of writing, specifications are out covering the planting of boulevard trees, and it is hoped this work will be under way by the coming planting season.

A representative of this Division visited Court-house and Government office properties during the past summer as far north as Williams Lake and as far east as Grand Forks. From the information gained and the detailed reports, now received and compiled from the various properties, it is hoped that a certain amount of constructive work throughout the Interior of the Province may be a continuing project in the future.

R. H. SAVERY,
Landscape Designer.



Floral crown constructed on the grounds of Kamloops Office Buildings to honour visit of Her Majesty.



W. R. HENDERSON

Mr. Henderson was born in 1930 in Moose Jaw, Sask. He commenced employment in Government service in 1949. After a brief period of employment in the Department of Lands, he transferred to the Department of Public Works, Accounts Section. His experience since transfer embraced both Headquarters and District Office office administration, culminating in appointment as Assistant Personnel Officer in February 1955.

REPORT OF THE PERSONNEL OFFICER

STATISTICS

There was very little change in staff totals in the Department from the previous fiscal year. The peak period, June 30th, involved the employment of 639 employees, and with the normal winter slow-down, this total was reduced to 623 at December 31st. This situation was, however, offset to some extent by a winter works programme which resulted in day-labour forces being engaged on a short-term basis. One hundred and thirty-five requisitions for appointment were prepared to cover replacement of employees who were promoted or terminated employment with the Department.

APPOINTMENTS

Of major importance, in keeping with efficiency and economy, was the appointment of Mr. R. H. Savery to the position of Landscape Designer. He is responsible for the review of existing grounds where landscape treatment is necessary and for the design, planning, and specifications of the ground areas for new buildings. In the same field, Mr. L. Butterworth was selected for the position of Head Gardener at Government House, and he has, along with the Landscape Designer, created a show-piece the Department can be proud of.

RETIREMENTS

Mr. P. W. Mackereth, our popular Superintendent of Works, Victoria, was to be officially retired from the Service on January 31st, 1958; however, by reason of his ability and value to the Department, his retirement was deferred for one year.

ORGANIZATION

The only major organization change this year was the combining of two heating plants under the supervision of one chief stationary engineer. This was at the Child Guidance Clinic and the new Girls' Industrial School, and has resulted in a saving to the Department. Plans have been made for a major Departmental organization and, if approved, will be fully detailed in the Report for the next fiscal year.

TRAINING

Mr. J. P. Taylor, Chief Clerk, J. R. Simpson, Senior Structural Engineer; W. E. Mills, Senior Mechanical Engineer, and S. Lloyd, and W. W. Ekins, architects, were selected by the Department to take the Provincial Government sponsored Executive Development Training Course. These employees have justified the Department's confidence in them by obtaining good results in examinations. The need for a more immediate and practical training of supervisory personnel was

recognized, and, as a result, H. R. Eastham, Foreman of Works, Victoria; A. J. Lord, Chief Janitor, Victoria; A. C. D. Budd, now Superintendent of Works, Victoria; W. A. Campbell, Foreman Electrician, Vancouver; and H. R. Browne, Foreman Painter, Vancouver, attended a foreman's course on "Supervising Employees on the Job and Safety," sponsored by the Department of Technical and Vocational Training.

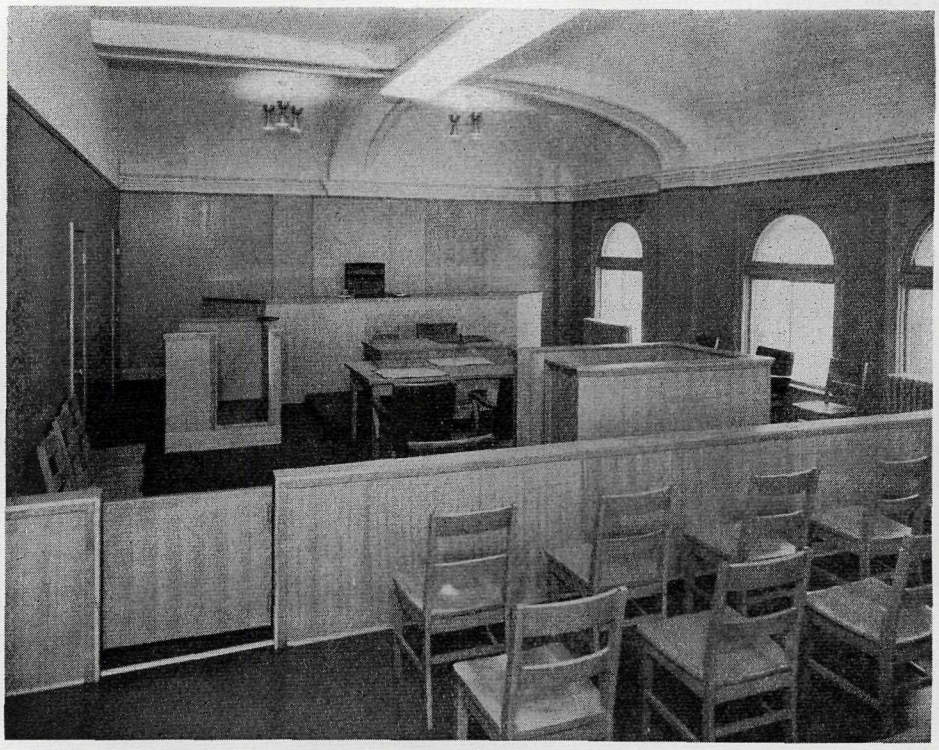
SOME PERSONNEL OFFICE OBJECTIVES

1. To promote and encourage the development and use of improved methods and higher standards in personnel administration.

2. To keep Departmental executives fully informed on, and to recommend, programmes of personnel administration for the purpose of bettering the conditions and relations of employees in their occupations and increasing the effectiveness of administration.

3. To provide a medium of information to employees concerning conditions of employment.

H. C. DAVIES,
Personnel Officer.



Interior view of Court-room, New Westminster Court-house, remodelled from garret office space by maintenance staff of the Vancouver area.

MRS. MARY T. WHIFFIN

Born and educated in Vancouver, B.C., and started with the British Columbia Telephone Company, in 1938.

Five years' P.B.X. experience before becoming a Civil Servant in 1951 as a Grade 2 Operator, and has since risen to the position of Assistant to the Supervisor of Telephones.

REPORT OF SUPERVISOR OF TELEPHONES

During the past year every phase of telephone work exceeded expectations. Actual telephone traffic, on all Government switchboards, has increased to such an extent that a number of switchboards are heavily overloaded. The operators, who are known to rank among the best in their field, are finding it increasingly difficult to extend the type of service that is expected of them.

In the past year we have installed several new switchboards, namely:—

Prince George: One 2-position No. 555 switchboard, replacing a 1-position No. 551-B which was originally installed in January, 1954.

North Vancouver: One 1-position No. 555 switchboard to facilitate the new regional office of the Department of Highways.

Trail: One type 22 automatic for the health unit.

Victoria: One type 22 automatic replacing the old No. 50 monotype for Public Utilities.

B.C. Civil Defence: One 10-line cordless replacing a very old type of magneto switchboard.

The type 22 automatic and 10-line cordless are very small switchboards that do not require full-time operators and are very efficient when serving small groups of offices.

Additional facilities were cut into service at the Nanaimo Court-house and Haney Correctional Institution. This again was necessary due to increase in traffic.

Two switchboards were taken out of service when the offices served were closed. These were the British Columbia Centennial Committee and Tranquille Sanatorium.

Our humanitarian effort for the year was a unique installation for polio patients in iron lungs at the Pearson Hospital, a picture of which accompanies this report. Access to a normal telephone for these patients was impossible. After considerable study and with the co-operation of the British Columbia Telephone Company, British Columbia Polio Fund, and Mr. Jack Patterson, maintenance staff, Pearson Hospital, we were able to install a portable-type pay-station which the patients could use without the effort of even holding a receiver to their ear. The Telephone Company did the actual installation at cost, Mr. Patterson fashioned a portable stand from an oxygen-tank carrier, and the British Columbia Polio Fund paid for the installation.

Surveys on new and existing buildings have been completed for the following:—

(1) Willingdon School for Girls, Burnaby.
(2) Parliament Buildings, Victoria.
(3) Mental Health Services, Essondale.
(4) Government House, Victoria.
(5) Federal-Provincial Trades and Technical School, Burnaby.
(6) Several health units throughout the Province.

(7) Foreign exchange service for
(*a*) Highways, Cloverdale-New Westminster.
(*b*) Haney Correctional Institution, New Westminster.
(*c*) Parliament Buildings, Victoria-Vancouver.

The Forest Service, because of its fire-season telephones, was again our largest single source of installation work. However, changes and creation of new Government departments—that is, Commercial Transport, Industrial Development, Trade, and Commerce, Social Welfare, Health Services and Hospital Insurance—contributed to making this a record year for volume of work completed.

BUSINESS SERVICE

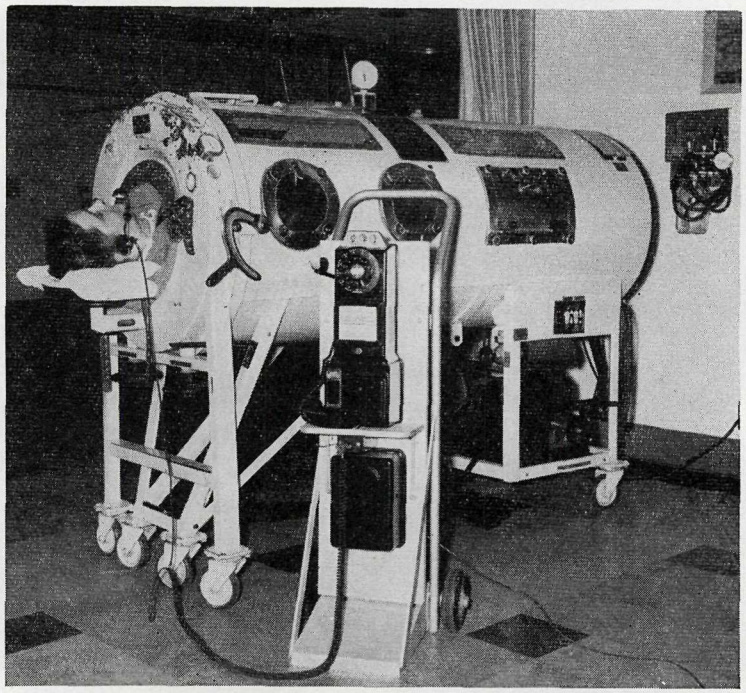
Several installations of the illuminated button type key telephone have been completed. This equipment allows each telephone the use of two to five lines, dial selective intercom, holding feature, etc., up to a maximum of nine appearances. Such service, only available in automatic areas, greatly increases the efficiency of an office.

Several loud-speaking units have been installed in offices where the employee has both hands in use and is still required to give or receive information on the telephone.

One dialaphone has been installed on a trial basis in an office where the telephone is used almost continually.

The majority of business service orders were placed by the Highways Department and Forest Service, both departments having numerous offices in the field, where traffic does not warrant the expense of a switchboard installation.

(Miss) Ruth E. Thompson,
Supervisor of Telephones.



Portable telephone installed in the Polio Ward, Pearson Hospital, Vancouver, for the use of patients.

STANLEY SMITH
Assistant Chief Inspector

Mr. Smith was born in London, England, and received his engineering training at Stanley Technical School, Croydon Polytechnic, and in apprenticeship with R. H. Green & Silley Weir Ltd., Ship Repairers, Engineers and Boilermakers, London.

He entered the service of Canadian Pacific Steamships as engineer officer in 1928 and served in this capacity throughout the war in troopships on the Atlantic. He joined the Boilers and Machinery Inspection Division in 1946 and became Assistant Chief Inspector in 1952.

REPORT OF THE CHIEF INSPECTOR OF BOILERS AND MACHINERY

In accordance with the provisions of the *Boiler and Pressure-vessel Act,* I have the honour to submit the fifty-seventh annual report of the Boilers and Machinery Inspection Division for the fiscal year ended March 31st, 1959.

THE ACT

Amendments to the Act made at the 1959 Session removed the requirement for annual inspection of hot-water heating plants, extended the scope of the boiler operator's certificate Class A from 50 to 100 horsepower, struck out the fifteen-minute absence clause relating to engineers' duties, transferred the fees for engineers' examinations to regulations, and placed gas-distribution mains outside the scope of the Act.

A provision was introduced requiring a person who installs a low-pressure boiler to first secure a permit.

REGULATIONS

The Fee List (Part V) was revised to provide more equitable fees for large power plants by Order in Council No. 1917/58.

The Boiler and Pressure-vessel Regulations were amended to introduce a rule whereby a heating contractor must secure a permit before he installs a low-pressure heating plant (Order in Council No. 1916/58). This rule was quickly put into action and has proved most helpful in enabling us to keep abreast with new construction. The heating trade is co-operating well.

Work has begun on new editions of our regulations—Part I, High-pressure Boilers, and Part IV, Heating-boilers.

NEW CONSTRUCTION

In British Columbia workshops twenty-eight high-pressure and eleven low-pressure steam and eighty-four hot-water boilers were built, besides 869 pressure-vessels and three pulp-mill digesters. Fewer propane-tanks are being built due to the increased usage of natural gas.

Many industrial and institutional plants have converted from oil fuel to natural gas.

Plans for the new Burrard Thermal Station are now under survey.

ACCIDENTS AND REPAIRS

There were two fatalities—one due to explosion of a steam-pipe and the other where a young lad stood on a thin furnace cover and fell into the furnace.

Three other explosions involved an oxygen-flask, an asphalt storage-tank, and a hospital sterilizer. One workman was slightly injured in the face by the oxygen-tank explosion.

Five steam-boilers were damaged by low water. In two cases this was due to control failure and in the remaining three to operator error.

All accidents were carefully investigated, repairs were supervised where necessay, and action taken to prevent recurrence.

SUMMARY OF WORK

Revenue was 79 per cent of expenditure. Inspection was made on Public Works boilers, amounting to a revenue equivalent of $2,500.

Designs registered	528
Boilers built under inspection	126
Pressure-vessels built under inspection	869
Total boilers inspected	4,371
Total pressure-vessels inspected	2,043
New boiler installations	408
Engineers examined	623
Welders examined	1,923

FEES COLLECTED

Design office	$6,284.80
Shop fees	4,942.43
Annual fees—boilers	53,997.61
Special inspections	1,329.66
Pressure-vessels	11,841.89
Engineers	3,732.50
Welders	7,662.50
Temporary certificates	1,995.00
New heating installations	1,763.48
Miscellaneous	339.06
Total revenue	$93,888.93
Operating expenses	118,472.79

Burrard Thermal Station, Ioco, now under construction (all pressure-vessels used will be inspected by Boiler Inspection Division).

ANALYSIS OF EXAMINATIONS

Engineers

	Year Ended Mar. 31, 1958			Year Ended Mar. 31, 1959		
	Examined	Passed	Failed	Examined	Passed	Failed
First	23	9	14	22	6	16
Second	63	43	20	67	43	24
Third	141	101	40	138	85	45
Fourth	328	224	104	256	173	83
Class A	57	40	17	52	39	13
High Pressure B	15	10	5	16	12	4
Low Pressure B	92	68	24	80	57	23
Totals	719	495	224	623	415	208

Welders

Electric	1,382	1,105	277	906	778	128
Oxy-acetylene	822	684	138	399	347	52
Down-hill	213	190	23	159	133	26
A.S.M.E.	194	194	----	277	271	6
Municipal gas				182	170	12
Totals	2,611	2,173	438	1,923	1,699	224

D. DENHAM, P.ENG.,
Chief Inspector.

J. R. WALKER

Senior Electrical Designer

Mr. Walker was born in Methel, Scotland, in 1903, and moved to Vancouver Island in 1912, where he completed his education. He served apprenticeship on electrical and mechanical installations, and completed advanced courses on electrical and communications design.

Employed during the war, 1941-45, with a large Canadian aircraft company in charge of electrical sub-assembly design, development, and production. Joined this Department in 1946 as electrical design draughtsman, and appointed to present position as Senior Electrical Designer in 1948. Is a member of Illuminating Engineering Society, and served two years on the board of managers of this society.

REPORT OF THE INSPECTOR OF ELECTRICAL ENERGY

In accordance with the *Electrical Energy Inspection Act,* I have the honour to submit my annual report for the fiscal year ended March 31st, 1959.

BOARD OF EXAMINERS FOR ELECTRICAL CONTRACTORS

The Honourable Minister of Public Works has been pleased to appoint the following members to the Board, effective January 1st, 1959: L. G. Sewell, electrical contractor, representing the Associated Electrical Contractors of British Columbia; R. Beaumont, electrical contractor, representing the Vancouver Electrical Association; and, R. Gee, electrical inspector for the City of Vancouver, representing cities and municipalities. Other members of the Board are L. Robson (Chairman), Chief Inspector of Electrical Energy, and L. Handy, Assistant Inspector of Electrical Energy. Seventeen meetings were held throughout the year.

The total number of certificates of competency in effect during the year was as follows:—

Class A	143	Class PA	67
Class B	363	Class PB	191
Class C	393	Class PC	440
Total			1,597

No temporary certificates were issued during the year.

Four hundred and eighty-one candidates for electrical contractors' certificates of competency were examined during the year, with the following results:—

Class	Number of Candidates	Passed	Failed
Class A	46	26	20
Class B	162	73	89
Class C	273	171	102
Totals	481	270	211

PERMITS

The total number of permits issued during the year was as follows:—

April, 1958	3,219	November, 1958	3,711
May, 1958	3,659	December, 1958	3,288
June, 1958	3,663	January, 1959	2,707
July, 1958	3,676	February, 1959	2,934
August, 1958	3,362	March, 1959	3,395
September, 1958	4,311		
October, 1958	4,693	Total	42,618

This represents an increase of 4,956 permits or 13 per cent over the preceding year.

The following is a record of inspections undertaken during the year:—

DISTRICT OFFICES AND INSPECTIONS

Office Location	Inspections
Abbotsford	3,548
Alberni	2,865
Chilliwack	2,995
Courtenay	2,825
Cranbrook	2,149
Dawson Creek	1,440
Duncan	2,946
Fort St. John	1,317
Kamloops	2,859
Langley	3,013
Nanaimo	2,255
Nelson	1,969
New Westminster (three Inspectors)	6,107
Penticton	2,362
Powell River	2,205
Prince George (two Inspectors)	5,251
Quesnel	1,491
Prince Rupert	1,746
Richmond (two Inspectors)	6,109
Trail	1,712
Vancouver	1,105
Vernon	2,824
Victoria (three Inspectors)	8,231
Total	69,324

The total number of inspections completed during the year represents an increase of 9,215 or 15 per cent over the preceding year.

A new office was opened at Trail, effective May 5th, 1958, and a new Inspector was appointed to this office.

Due to increased construction activity in the Lower Mainland, it was necessary to implement the following to provide improved service:—

(1) An additional Inspector was appointed to the New Westminster office, July 7th, 1958, to assist with inspections for Port Coquitlam, Coquitlam, Ioco, Port Moody, and District Lot 172. Two Inspectors now provide service for these areas.

(2) An Inspector was transferred from Richmond office to New Westminster office, effective September 18th, 1958, to undertake inspections for North Delta, Annacis Island, and University of British Columbia. A new Inspector was appointed to Richmond office.

(3) Effective January 26th, 1959, clerical assistance was employed at New Westminster office to commence issuing permits.

Permits may now be obtained at the following locations: Vancouver, Victoria, New Westminster, Prince George, and Dawson Creek.

Effective August 6th, 1958, inspections for the City of Nanaimo were undertaken by this Division. The city is now incorporated with the district being served by the Inspector located at Nanaimo.

PROSECUTIONS

One prosecution was initiated during the year, and a conviction obtained.

EXAMINATION OF MOTION-PICTURE PROJECTIONISTS

The Division assisted the Provincial Fire Marshal in conducting eight examinations for projectionists. The regulations covering such examinations provide that the Inspector of Electrical Energy be a member of this Examining Board in company with the Fire Marshal. In this connection, all fees arising from these examinations accrue to the credit of the Fire Marshal's department.

RECOMMENDATIONS

I would like to recommend that consideration be given to the following factors, which, in my opinion, would improve the service now being given:—

(*a*) This Division now employs twenty-eight district Inspectors, who are located in various centres throughout the Province. The situation at present is such that sufficient time is not available for the Chief Inspector to frequently check the work undertaken. Better service and correlation would result if a regional plan were developed. I suggest we should employ three regional supervisors, to be located in Victoria, Prince George, and either Kamloops or Vernon. Due to the financial policy which has now been indicated, I have deferred including an amount in the coming fiscal year's estimates to provide for this implementation.

(*b*) A study should be undertaken to consider whether the present service should be extended to include further municipal areas under the direct operation of this Division. At the present time, only the City of Victoria and the Municipality of Oak Bay on Vancouver Island operate under municipal jurisdiction. On the Mainland, the following centres operate under municipal jurisdiction: City of Vancouver, City of New Westmister, City of North Vancouver, Municipality of West Burnaby, Municipality of Surrey, Municipality of Maple Ridge, Municipality of Pitt Meadows, City of Kitimat, City of Vernon, City of Kelowna, City of Penticton, City of Fernie, City of Revelstoke, Municipality of Summerland, and Municipality of Rossland. All other cities, municipalities, villages, and unorganized territory are served by this Division directly. The benefits to the public would be in better correlation and direction as well as providing a more efficient service through skilled and trained personnel.

(*c*) Further decentralization in the matter of issuing permits and collecting fees is recommended where such practice can be justified on the basis of volume.

(*d*) The regulations governing certificates of competency should now be given some study. They have been in effect since 1950, and some improvement may be effected. The Department of Labour, through the Apprenticeship Branch, is initiating courses of training for electricians. Some correlation with that Branch may be beneficial to all concerned.

CANADIAN STANDARDS ASSOCIATION

The Chief Inspector continued to represent the Province on the Approvals Council of the Canadian Standards Association and on committees on the Canadian Electrical Code. He continues to act as chairman of the Canadian Electrical Code, Part I, Committee, which Committee is responsible for the preparation and editing

of the Canadian Electrical Code. The seventh edition was finalized in the early part of this year and was officially adopted as the minimum requirement for electrical installations generally, in May of this year, by Order in Council No. 1098. The new revised edition is the first complete issue since 1953 and brings our regulations up to date.

Two meetings of the Canadian Standards Association Approvals Council (Electrical) and of the Committee on the Canadian Electrical Code, Part I, were attended, the first during May in Winnipeg and the second during October in Montreal. The standards are constantly under review, reflecting the use of new materials and improved techniques developed by industry.

POLE-LINE PERMITS

During the year the Division checked 814 applications for the erection of pole-lines on Crown lands or Provincial highways. Recommendations on each application were forwarded to the Regional Engineer of the Department of Highways.

PUBLIC WORKS AND HIGHWAYS

The Division continued to prepare electrical plans and specifications for our Department and the Department of Highways. It was necessary to employ casual assistance to assist in the preparation of these plans and specifications. Such casual assistance was charged against the various projects on which this class of personnel was employed.

Forty-six projects, for a total value of approximately $200,000, were designed for the Department of Public Works and twenty-one for the Department of Highways, at an approximate value of $125,000.

In addition to the preparation of plans and specifications, supervision was also exercised over each contract during construction. The Division also acted in a consulting capacity to other Government departments.

ACCIDENTS

There were nineteen accidents recorded during the year. Of these six were fatal, which represents a decrease of one in the number of fatalities reported for the previous year.

May I again express my appreciation for your splendid co-operation and continued interest in our problems and to your Departmental staff for valuable assistance rendered during the year.

L. ROBSON, P.ENG.,
Inspector of Electrical Energy.

W. R. MONTGOMERY
Assistant Chief Gas Inspector

A native of Vancouver, B.C., born on August 15th, 1920, he received his preliminary education in Langara Public School, Kitsilano Junior High School, and Lord Byng.

Early studies at the University of British Columbia were interrupted by three years in the Royal Canadian Air Force. After the war, courses were resumed, and a degree in mechanical engineering was obtained in 1951.

Mr. Montgomery has a wide experience with construction and engineering firms. He joined the Department of Public Works as assistant Chief Gas Inspector in October, 1958.

REPORT OF THE CHIEF GAS INSPECTOR

In accordance with the provisions of the *Gas Act,* I have the honour to submit the fifth annual report of the operation of the Gas Inspection Division for the fiscal year ended March 31st, 1959.

THE ACT

The *Gas Act* was amended during the 1959 Session of the Legislature, the amendment being chapter 36 of the Statutes of British Columbia, 1959, and was assented to on March 20th, 1959, by the Lieutenant-Governor.

This amendment extended the scope of the *Gas Act* to include distribution-lines, services, and mains carrying natural, manufactured, or mixed gases at a pressure up to 100 pounds per square inch, gauge.

THE DIVISION

At present the staff consists of the Chief Inspector, Assistant Chief Inspector, fifteen Gas Inspectors, one Senior Clerk (Office Manager), one Clerk-Stenographer —Grade 2, one Clerk-Typist—Grade 2, and three Clerk-Typists—Grade 1, plus one Clerk-Typist—Grade 1 in Abbotsford office and one Clerk-Typist—Grade 1 (half time) in Victoria office.

Night-school courses were again given in Vancouver, Victoria, Nanaimo, Abbotsford, and Trail. These classes were conducted jointly by this Division, the gas utility, and the School Boards. Short courses were held in Nelson, Penticton, Kelowna, Vernon, Kamloops, and Prince George. These short courses were held in conjunction with the gas utility. In all, more than 925 persons attended these courses.

Natural gas was distributed for the first time in Prince George by Inland Natural Gas Company Limited. All the utilities have greatly expanded their distribution systems in the last year. The volume of natural gas used in the past year has more than doubled that used in the previous year.

The following municipalities were added to the areas inspected by this Division: City of Prince George, City of Victoria, and District of Saanich.

REGULATIONS

In order to accommodate developments in the gas industry, the regulations were amended by the following Orders in Council: Order in Council No. 1922, "Regulations for Interim Approval and Interim Listing of Gas Appliances in British Columbia," approved August 19th, 1958; Order in Council No. 1923,

" Regulations Governing the Installation of Gas Piping, Appliances, and Venting," approved August 19th, 1958; and Order in Council No. 1924/58, " Regulations Respecting Gas Fitters, Contractors, and Dealers," approved August 19th, 1958.

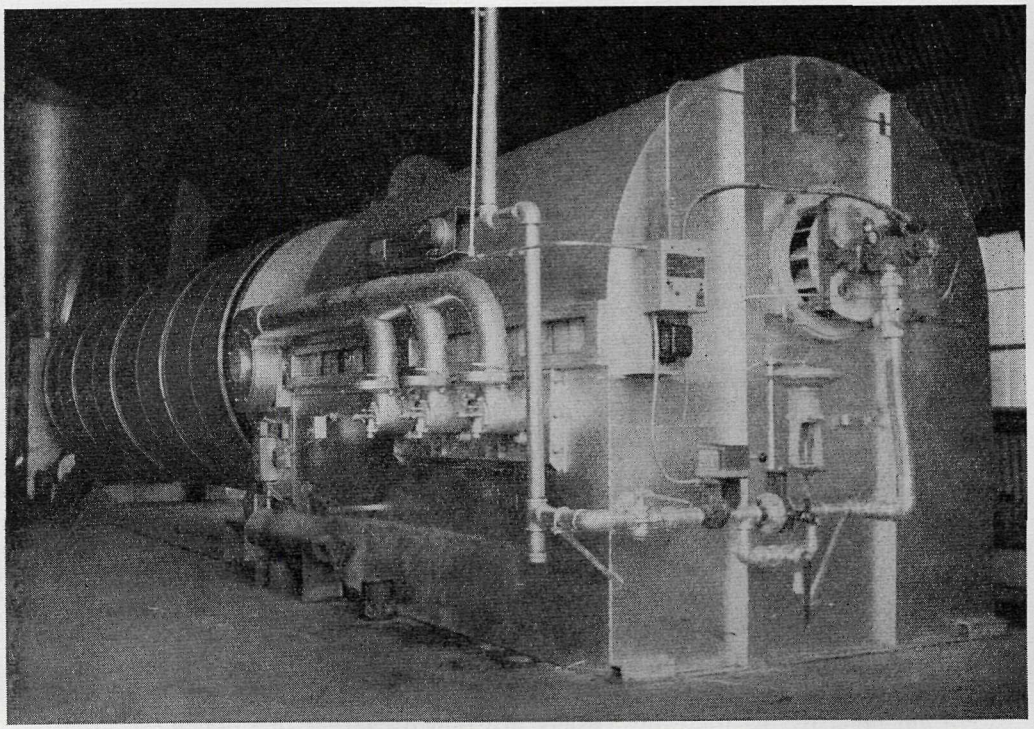
ACCIDENTS

During the fiscal year there was one explosion in a home, in the Municipality of Richmond. There were no injuries or deaths attributed to natural gas.

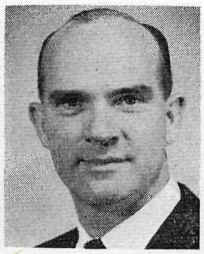
SUMMARY OF WORK

New designs checked, industrial approval	411
Gas Codes distributed	881
Gas-fitters' licences issued	1,137
Gas contractors' licences	568
Provisional licences	1,281
Gas-fitters' examinations	264
Gas-fitters' re-examinations	137
Number of gas-fitters passed examination	277
Number of gas permits issued, municipalities	17,428
Number of gas permits issued by this Division	16,230

A. G. KANEEN, P.ENG.,
Chief Gas Inspector.



Webster gas burner installed on a grass dehydrator in the Fraser Valley.



A. E. RHODES

Mr. Rhodes, a resident graduate of International Accountants Society Inc., is a native British Columbian, having been born in Merritt in 1922. He entered the Provincial Government service in 1940 as a junior clerk in the Accounting Branch of the Forest Service, and held various positions in that Branch prior to enlistment on active service from 1942 to 1946. Upon return from overseas service, he was re-employed, and later promoted to the position of Assistant Chief Accountant of the Forest Service in 1948. With the signing of the Federal-Provincial agreement for forest inventory in 1952, he was appointed as Chief Clerk of the Forest Surveys and Inventory Division, which position he held until his return to the Accounting Branch as Chief Accountant in 1955.

Mr. Rhodes commenced employment with the Department of Public Works in March, 1958, following the untimely death of Mr. J. E. Moore, former Departmental Comptroller.

REPORT OF THE DEPARTMENTAL COMPTROLLER

The following pages present the financial report of the Department of Public Works. During the fiscal year 1958/59 there were no major changes in accounting methods that would result in revised presentation of financial reports; however, the general format of the report has been revised to conform with a similar presentation of such information contained in Public Accounts.

A. E. RHODES,
Departmental Comptroller.

STATEMENT OF EXPENDITURES, FISCAL YEAR 1958/59

ADMINISTRATION AND MAINTENANCE VOTES

(For details *see* Public Accounts.)

Vote 321.	Minister's Office	$20,000.88	
Vote 322.	General Administration	133,396.54	
Vote 323.	Parliament Buildings (Maintenance)	642,435.72	
Vote 324.	Government House (Maintenance) (gross)	45,252.13	
Vote 325.	Government Buildings (Maintenance) (gross)	2,308,827.02	
Vote 326.	Rentals (gross)	347,698.16	
Vote 327.	Gas Division, Vancouver	135,043.44	
Vote 328.	Steam-boiler Inspection, Vancouver	125,771.44	
Vote 329.	Electrical Energy Inspection (gross)	297,231.13	
Vote 330.	Salary Revision	133,000.00	
Special Warrant No. 5.	Cost of completing, altering, decorating, and furnishing premises for Forestry Adviser	12,053.01	
			$4,200,709.47
Less credits—			
	Deductions for rent, Government House		*479.59*
	Rentals, etc., Government buildings		*127,460.53*
	Repayable items, Rental Vote		*10,950.00*
	Recoverable items, Electrical Energy		*43,500.00*
			$4,018,319.35

CAPITAL

(*See* expenditures by buildings listed on page 43.)

Vote 355.	Construction of Provincial Buildings	$3,247,098.88
Less Federal contributions, health units		*271,230.25*
		$2,975,868.63

SUMMARY

Net expenditure—	
Administration and maintenance	$4,018,319.35
Capital	2,975,868.63
	$6,994,187.98

STATEMENT OF EXPENDITURES—*Continued*

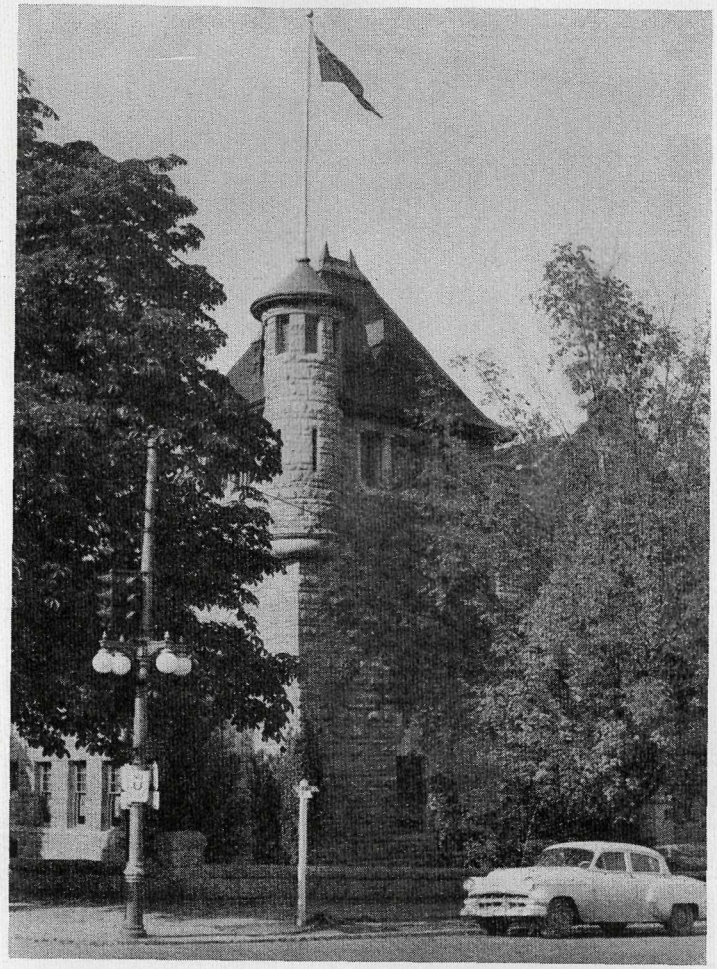
VOTE 355—CONSTRUCTION OF PROVINCIAL BUILDINGS, FISCAL YEAR 1958/59

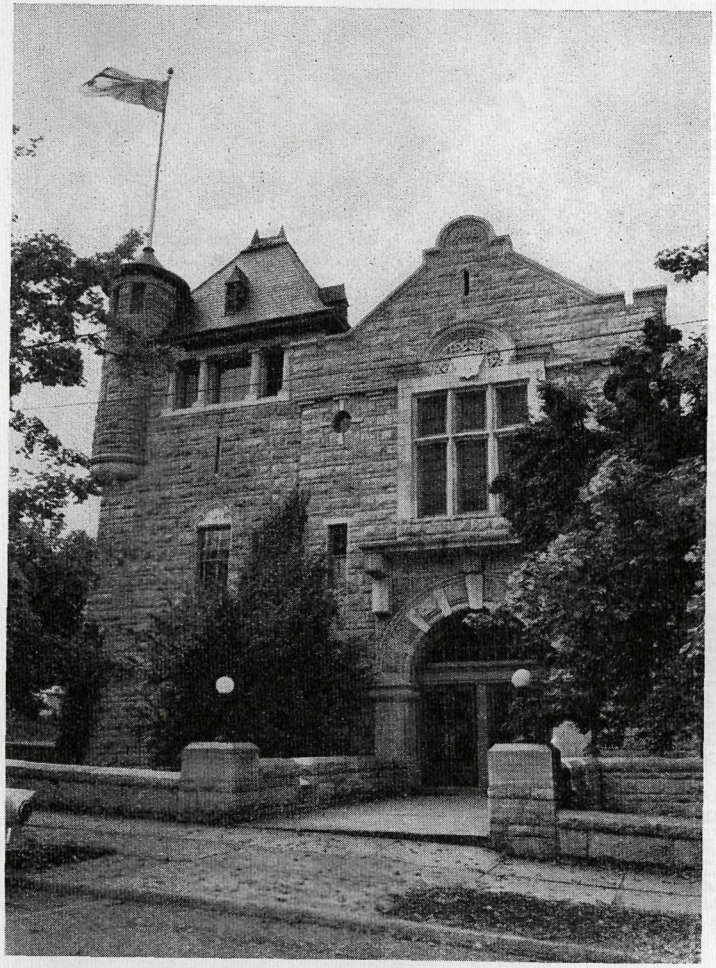
Project No.	Description	Expenditures
242-B-1	Abbotsford Poultry Testing Houses—reroofing and paving	$9,478.71
289-B	General expenses—supplies, planning surveys, etc.	159,681.08
30-B-1	Partitioning of present security unit into single rooms, Brannen Lake School	280.47
30-B-2	Renovation to counter in dining-room and tile floors, Brannen Lake School	1,497.02
30-B-3	Ramp and door installed as fire-escape from dining-room, Brannen Lake School	1,426.43
299-B	Burnaby Vocational School	256,654.48
6-B-27	Colony Farm—calf barn, new metal pens	11,136.94
306-B	Air-conditioning, Government Building, Cranbrook	39,303.88
239-B-1	Purchase of property—Gore storage-shed, Department of Mines, Dawson Creek	7,725.00
239-B-2	Purchase of property, Department of Mines residences, Dawson Creek	3,000.00
	Essondale—	
5-B-21	100-bed nurses' home and training centre (furnishings)	77,988.98
5-B-53	300-bed unit, Home for the Aged, Port Coquitlam (furnishings)	239,920.43
5-B-65	Two new boilers and addition to boiler-house	190,444.88
5-B-82	Water-supply system	35,185.92
5-B-97	Fire-escapes, Home for the Aged, Port Coquitlam, Buildings 1 and 2	*Nil*
5-B-101	New substation and overhead circuits	130,774.95
5-B-102	Alterations and renovations to kitchen, storage, and staff changing-rooms	8,335.60
5-B-112	Ventilation, West Lawn Building	8,118.88
5-B-113	Sewage-plant equipment	6,940.50
5-B-115	New cemetery	9,079.88
5-B-116	Landscaping, roads, parking, etc.	15,709.65
5-B-118	Stairwells and four additional fire exits, East Lawn Building	*Nil*
5-B-119	Garbage-handling incinerator	1,625.00
208-B	Girls' Industrial School, Burnaby (furnishings)	157,942.67
243-B-1	Fort St. John equipment-shed	16,736.01
290-B	New Government House	1,156,344.21
	Haney—	
123-B-4	Completion of wiring for vocational shops and adapt horn system	4,308.69
123-B-5	Development of grounds and irrigation system	12,011.39
123-B-6	Concrete footings for perimeter fence	8,475.97
123-B-7	Storage-tanks for gasoline and diesel oil	1,975.46
123-B-8	Additional office space and identification room	4,970.69
123-B	Chain link fencing—supply and erection	1,279.40
79-B-4	Ground development, Jericho Hill School (tree-clearing only)	1,669.05
205-B	Electrical distribution, Kamloops office building	2,223.00
305-B	Air-conditioning, Kelowna Government buildings	56,841.19
310-B	Purchase of property, Mission Provincial Government buildings	6,535.25
231-B-1	Purchase of land, Nanaimo Vocational School	4,000.00
202-B-1	Alterations to Court-house, Nanaimo	4,935.00
304-B	Renovations to Court-house, New Westminster	5,600.00
301-B-1	Regional Highways office, North Vancouver (Swedish Rest Home)	17,773.65
	Oakalla—	
39-B-18	South Wing fence continuing down Royal Oak Avenue, around property	10,794.68
39-B-31	Stand-by electrical service	12,214.12
39-B-35	Additions and alterations, Women's Gaol (laundry equipment and furnishings)	9,906.75

STATEMENT OF EXPENDITURES—*Continued*

VOTE 355—CONSTRUCTION OF PROVINCIAL BUILDINGS, FISCAL YEAR 1958/59—*Continued*

Project No.	Description	Expenditures
39-B-41	New kitchen, Young Offenders' Unit	$11,676.22
39-B-42	Renovations of old chapel	2,525.11
39-B-50	Women's huts	17,211.50
39-B-54	Ventilation of shop facilities (licence-plate shop), Westgate	7,926.54
39-B-51	Fire Marshal's recommendations	1,241.09
39-B-53	Remodel basement area into intake and reception area	14,188.99
39-B-56	Additional boiler capacity	31,044.00
233-B	Conversion of elevator, Pearson Tuberculosis Hospital	*Nil*
201-B	New Court-house, Prince George (furnishings)	71,466.43
24-B-4	Installation of dishwasher, Home for the Aged, Terrace	3,779.19
314-B	Purchase of building-site, Trail (preliminary investigation and negotiations into purchase of site for Government building)	*Nil*
316-B	Purchase of house, Prince Rupert, for Deputy Registrar	18,000.00
318-B	Public Works storage-building, Vancouver	10,691.61
25-B-7	Installation of dish washer, Home for the Aged, Vernon	5,463.49
178-B-1	Alterations, Victoria College	29,926.93
178-B-3	Addition to Ewing Building, Victoria College	154,886.50
178-B-4	Temporary huts, Victoria College	49,916.30
279-B-1	Ventilation, Multiplex Building, Victoria	16,000.00
279-B-2	Purchase of property, 302 Kingston Street, Victoria	6,250.00
279-B-3	Renovation to Legislature	5,246.05
279-B-4	Alterations to switchboard, Parliament Buildings	*Nil*
	The Woodlands School—	
7-B-26	Auditorium (furnishings)	32,692.46
7-B-37	Electrical distribution and rebuilding vault	24,471.96
7-B-38	Furnishings and equipment, Rehabilitation Centre	7,376.94
7-B-39	Toilet facilities for new playing-field	*Nil*
7-B-40	Landscaping, fencing, paving, etc.	1,740.52
7-B-41	Renovations to old kitchen	12,531.19
		$3,247,098.88





Nelson Court-house—extensive repair work, including steam cleaning, repointing, and waterproofing, was carried out under the supervision of the Maintenance Division on this historic building of the Kootenays.

TENDERS RECEIVED AND CONTRACTS AWARDED

Description of Work and Names of Tenderers	Amount	Remarks
NEW GOVERNMENT HOUSE—PLUMBING:		
Ballam & Rawlings	$69,130.00	
W. R. Menzies & Co. Ltd.	53,683.00	
T. A. Harvey Ltd.	45,630.00	Awarded.
M. Griffin Ltd.	66,000.00	
The Bay Co. (B.C.) Ltd.	50,237.00	
NEW GOVERNMENT HOUSE—HEATING AND VENTILATING:		
Shaw Sheet Metal Ltd.	83,011.00	Awarded.
T. A. Harvey Ltd.	85,529.00	
W. R. Menzies & Co. Ltd.	92,800.00	
SEWAGE-DISPOSAL PLANT, BURNABY:		
Dawson & Hall Ltd.	43,582.00	
Jarvis Construction Co. Ltd.	44,620.00	
G. W. Ledingham & Co. Ltd.	54,365.00	
Beaver Construction Co. Ltd.	35,734.00	
Mainland Construction Co. Ltd.	38,796.00	
Saxton Construction Co. Ltd.	42,895.00	
Halse-Martin Construction Co. Ltd.	42,128.00	
Flanders Installations Ltd.	43,000.00	
J. S. Johnston Ltd.	42,800.00	
Surrey Excavating Co. Ltd.	31,999.74	Awarded.
Bevenco Construction Co. Ltd.	39,997.00	
PIPING FOR ONE 75,000-POUNDS-PER-HOUR COAL-FIRED BOILER, PROVINCIAL MENTAL HOSPITAL, ESSONDALE:		
H. S. Crombie Ltd.	140,542.00	
Flanders Installations Ltd.	169,442.00	
C. B. Archibald Ltd.	114,400.00	
Vancouver Pipe & Engine Works Ltd.	145,280.46	
Fred Welsh & Son Ltd.	109,472.00	
The Bay Co. (B.C.) Ltd.	93,765.00	Awarded.
NEW GOVERNMENT HOUSE—ELECTRICAL:		
H. J. Langdon & Sons Ltd.	70,862.00	
Mawson-Gage Ltd.	79,370.00	
Mott Electric Ltd.	77,152.00	
Camosun Electric Co. Ltd.	73,800.00	
Peterson Electrical Construction Co. Ltd.	85,537.00	
Hume & Rumble Ltd.	73,985.00	
Ricketts-Sewell Electric Ltd.	67,990.00	Awarded.
AIR-CONDITIONING, KELOWNA GOVERNMENT BUILDING:		
Nelson-Payne Equipment Ltd.	57,730.00	
Fred Welsh & Son Ltd.	58,300.00	
Lockerby & Hole Western Ltd.	57,986.00	
Barr & Anderson (Interior) Ltd.	56,148.00	
Hodgson Ltd.	54,809.00	Awarded.
E. Winter Ltd.	55,277.00	
N. E. McConaghy Ltd.	62,845.00	
FOUNDATIONS AND ROADS, VOCATIONAL SCHOOL, BURNABY:		
Alliance Construction Co. Ltd.	81,524.00	
Beaver Construction Co. Ltd.	48,375.00	
Halse-Martin Construction Co. Ltd.	54,836.00	
Marpole Construction Co. Ltd.	47,900.00	
Klassen Construction Ltd.	40,655.00	Awarded.
Van Burn Construction Co. Ltd.	87,500.00	
Jarvis Construction Co. Ltd.	47,190.00	
NEW GOVERNMENT HOUSE—MASONRY (STONE AND BRICK WORK), HOLLOW CLAY TILE, CONCRETE BLOCK, STRUCTURAL GLAZED TILE, AND SLATE FLOORING:		
Allied Masonry Ltd.	183,983.70	
Elligott Masonry Ltd.	192,083.00	
P. K. Smith	51,900.00	Incomplete.
Ed Guizzetti Construction Ltd.	163,000.00	Awarded.
P. K. Smith	14,900.00	Incomplete.
AIR-CONDITIONING, CRANBROOK PROVINCIAL GOVERNMENT OFFICES:		
Hodgson Ltd.	41,820.00	
Patmore's Plumbing & Heating Co.	39,868.00	
Ben's Heating & Sheet Metal Co.	37,810.00	
Fred Welsh & Son Ltd.	36,519.00	Awarded.
Barr & Anderson (Interior) Ltd.	39,425.00	
Bennett's Ltd.	38,100.00	
Grant's Plumbing & Heating	40,241.50	
Crankbrook Sheet Metal and Shaw's Plumbing & Heating	38,768.61	
Lethbridge Sheet Metal	34,825.31	
ADDITION TO EWING BUILDING, VICTORIA COLLEGE:		
G. N. Wheaton Ltd.	155,950.00	
Commonwealth Construction Co.	166,326.00	
Parfitt Construction Co. Ltd.	148,987.00	
Farmer Construction Ltd.	161,763.00	
A. & B. Construction	147,499.00	Awarded.

TENDERS RECEIVED AND CONTRACTS AWARDED—*Continued*

Description of Work and Names of Tenderers	Amount	Remarks
NEW GOVERNMENT HOUSE—MILLWORK, WINDOWS, AND EXTERIOR DOORS:		
Moore-Whittington Lumber Co.	21,066.00	
Sigurdson Millwork Co. Ltd.	13,800.00	Awarded.
Builders Sash & Door Ltd.	18,986.00	
NEW GOVERNMENT HOUSE—COPPER AND BUILD UP ROOF:		
Jackson Sheet Metal & Roofing Ltd.	13,798.00	Awarded.
M. Griffin Ltd.	20,975.00	
Willshire Roofing & Steel Co. Ltd.	11,100.00	
Pacific Sheet Metal Works Ltd.	15,353.00	
Universal Sheet Metal Ltd.	18,999.00	
McCready-Campbell Ltd.	21,526.00	
NEW GOVERNMENT HOUSE—RESILIENT FLOORING:		
T. Eaton Co. Canada Ltd.	11,820.00	Awarded.
Douglas Building Supply Ltd.	12,385.00	
Floor Craft Ltd.	11,746.00	
NEW GOVERNMENT HOUSE—CERAMIC TILING, WALL AND FLOOR:		
W. N. O'Neill Co. Ltd.	22,980.00	
Darlington, Haskins & Co. (1943) Ltd.	19,718.00	Awarded.
NEW GOVERNMENT HOUSE—INSULATION:		
Pacific Industrial Insulations Ltd.	22,000.00	
F. Drexel Co. Ltd.	12,010.00	Awarded.
McCready-Campbell Ltd.	15,300.00	
NEW GOVERNMENT HOUSE—CEDAR SHAKES:		
Ben Webb Roofing Co. Ltd.	13,465.00	
M. Griffin Ltd.	9,180.00	
Beaufort Industries Ltd.	9,796.00	
McCready-Campbell Ltd.	7,968.00	Awarded.
Pacific Coast Insulation & Roofing Co. Ltd.	9,318.00	
NEW GOVERNMENT HOUSE—GLASS AND GLAZING:		
Canadian Pittsburgh Industries Ltd.	5,058.00	Awarded.
O'Neill Glass & Paint Co. Ltd.	6,380.00	
NEW GOVERNMENT HOUSE—ACOUSTIC TILE:		
Pacific Industrial Insulations Ltd.	17,165.00	
F. Drexel Co. Ltd.	10,300.00	
Dominion Sound Equipment Ltd.	9,211.00	Awarded.
INSULATION OF PIPING AND EQUIPMENT FOR POWER PLANT EXTENSION, PROVINCIAL MENTAL HOSPITAL, ESSONDALE:		
Walker-Rutledge Ltd.	30,806.00	
Fleck Bros. Ltd.	19,863.00	
F. Drexel Co. Ltd.	19,320.00	Awarded.
COLONY FARM—CALF BARN, NEW METAL PENS:		
Lickley Construction Co. Ltd.	10,194.00	Awarded.
Holand Construction Ltd.	14,177.00	
Coyne & Ratcliffe Construction Co. Ltd.	19,203.00	
FENCE FOR RESERVOIR, PROVINCIAL MENTAL HOSPITAL, ESSONDALE:		
R. K. Smith	12,900.00	
British Ropes Canadian Ltd.	11,000.00	
Cal-Van Construction & Engineering Ltd.	8,095.00	Awarded.
Wright's Canadian Ropes Ltd.	9,266.05	
A.I.M. Steel Ltd.	9,518.20	
CONVERSION OF ADMINISTRATION BUILDING, BISCO, ESSONDALE:		No contract let.
Lickley Construction Co. Ltd.	138,828.00	
Coyne & Ratcliffe Construction Co. Ltd.	141,499.00	
Klassen Construction Ltd.	136,322.00	
Holand Construction Ltd.	148,140.00	
12-K.V. DISTRIBUTION FACILITIES, ESSONDALE MENTAL HOSPITAL:		
J. H. McRae Co. Ltd.	131,024.00	
B.C. Bridge Electrical Co. Ltd.	137,100.00	
Mott Electric Ltd.	118,653.00	
The Tide Co. (B.C.) Ltd.	117,977.00	Awarded.
STUCCO, EXTERIOR WALLS OF ARMY HUTS, VICTORIA COLLEGE, VICTORIA:		
R. K. Smith	4,700.00	Awarded.
H. D. Pottinger & Sons	6,490.00	
Stanley Olson	7,000.00	
NEW GOVERNMENT HOUSE—INTERIOR MILLWORK:		
Sigurdson Millwork Co.	152,545.00	Awarded.
Builders Sash & Door Ltd.	169,913.00	
NEW GOVERNMENT HOUSE—WOOD-BLOCK FLOORING:		
V.I. Floor Centre Ltd.	10,500.00	Awarded.
NEW GOVERNMENT HOUSE—LATHING AND PLASTERING:		
E. Dann Ltd.	90,598.00	Awarded.
Duncan & Heighes	148,410.00	
E. Jensen & Sons Ltd.	180,981.00	
Palmer & Sons	92,917.00	

TENDERS RECEIVED AND CONTRACTS AWARDED—*Continued*

Description of Work and Names of Tenderers	Amount	Remarks
WATER DISTRIBUTION MAIN, PROVINCIAL MENTAL HOSPITAL, ESSONDALE:		
Christian & Allan Ltd.	25,475.64	
General Pipe Contractors	23,920.00	
The Bay Co. (B.C.) Ltd.	34,567.00	
Allied Business Enterprises Ltd.	37,911.51	
Van's Contracting Co. Ltd.	32,300.00	
Fred Welsh & Son Ltd.	41,722.00	
G. W Ledingham & Co. Ltd.	28,350.00	
Surrey Excavating Co. Ltd.	21,938.38	Awarded.
Harry Sanderson Construction Ltd.	41,427.47	
ALTERATIONS TO UNDERGROUND ELECTRICAL SERVICES, THE WOODLANDS SCHOOL, NEW WESTMINSTER:		
The Tide Co. (B.C.) Ltd.	30,572.00	
Ricketts-Sewell Electric Ltd.	29,950.00	
Mott Electric Ltd.	30,600.00	
H. J. Sayer Co. Ltd.	32,000.00	
J. H. McRae Co. Ltd.	30,435.00	
Hume & Rumble Ltd.	27,777.00	Awarded.
ALTERATIONS TO SECURITY WING, BRANNEN LAKE SCHOOL FOR BOYS:		
W. M. Quast Construction	9,869.00	
A. & B. Construction Co. Ltd.	8,347.00	Awarded.
SUPPLY AND INSTALLATION OF 20,000-POUNDS-PER-HOUR BOILER, OAKALLA PRISON FARM, BURNABY:		
Vancouver Iron & Engineering Works Ltd.	30,585.00	
Foster-Wheeler Ltd.	29,604.00	Awarded.
Bumstead-Woolford Ltd.	43,741.00	
John Thompson Leonard Ltd.	31,235.00	
Babcock, Wilcox, Goldie & McCulloch Ltd.	34,543.00	
LANDSCAPE DEVELOPMENT, GIRLS' INDUSTRIAL SCHOOL, BURNABY:		No contract
Holland Landscapers Ltd.	32,467.65	awarded.
Chris Williams	9,841.40	Incomplete.
Conniston Construction Co.	19,300.00	
Norman H. Woods & Associates	26,494.00	
Berger-Smith Landscaping Ltd.	30,701.30	
Gunter's Landscaping Ltd.	59,321.41	
NEW GOVERNMENT HOUSE—BALLROOM MILLWORK:		
Builders Sash & Door Ltd.	19,765.00	
Sigurdson Millwork Co. Ltd.	14,351.68	Awarded.
NEW GOVERNMENT HOUSE—PAINTING AND DECORATING:		No contract
Ed Longman Co. Ltd.	17,784.00	awarded.
Mort Brown Ltd.	21,350.00	
Old Country Decorators Ltd.	56,850.00	
R. H Neven Co. Ltd.	28,900.00	
J. T. Devlin & Co. Ltd.	22,720.00	
Heal & McAllister	23,887.00	
Fraser Bros. Painting Contractors Ltd.	29,000.00	
NEW GOVERNMENT HOUSE—STONE MASONRY FOR MAIN TERRACE AND PLANTERS ON NORTH FACADE:		
Allied Masonry Ltd.	11,700.00	Awarded.
Ed Guizzetti Contracting Ltd.	15,634.00	
LANDSCAPE DEVELOPMENT, GIRLS' INDUSTRIAL SCHOOL, BURNABY:		
Holland Landscapers Ltd.	27,894.00	
V. B. Johnson	22,810.00	
Norman H. Woods & Associates	25,550.00	Awarded.
Berger-Smith Landscaping Ltd.	28,987.30	
Conniston Construction Co. Ltd.	25,872.50	

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