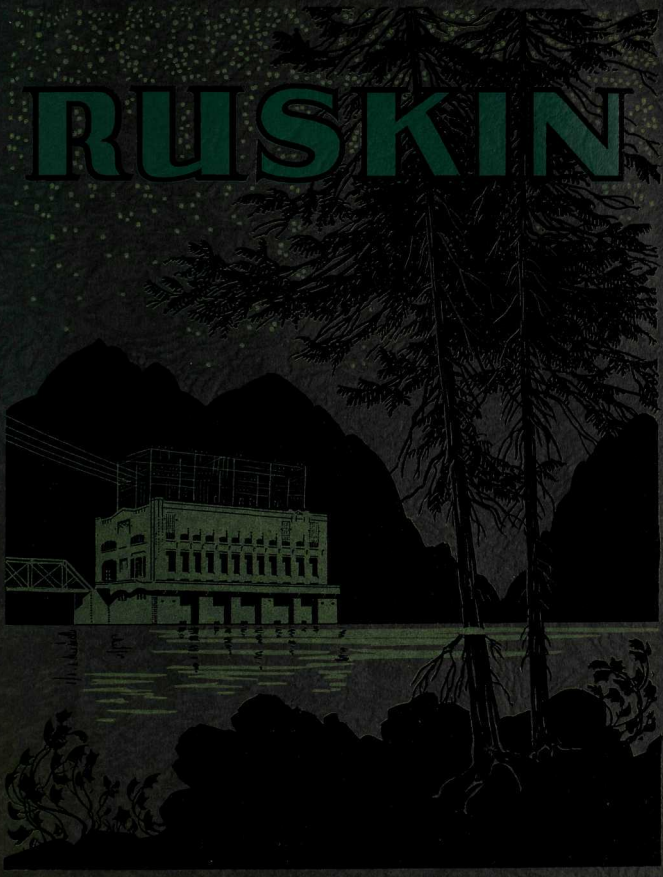
RUSKIN



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RUSKIN
POWER DEVELOPMENT

COMPLETED NOVEMBER

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BRITISH COLUMBIA POWER CORPORATION
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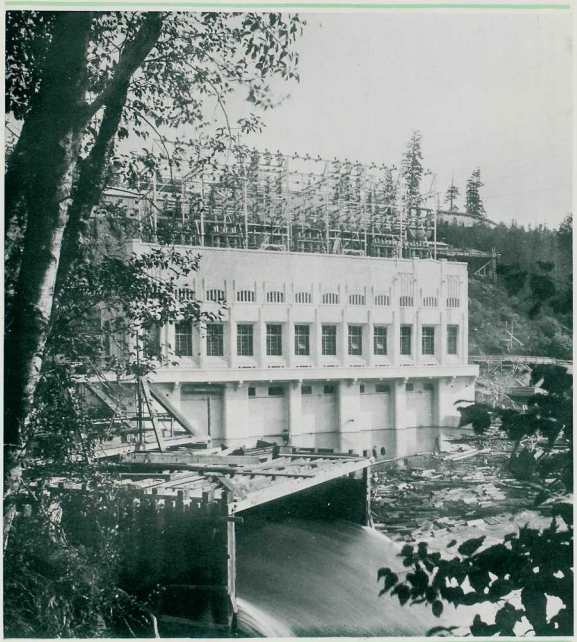
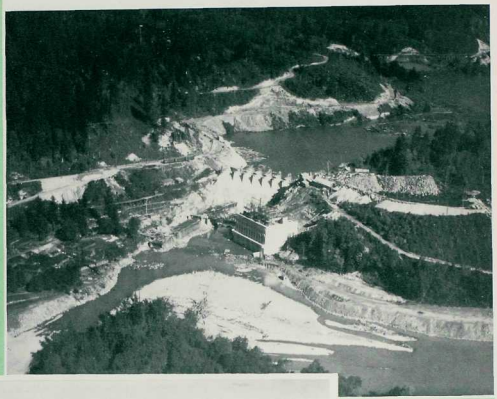
THE British Columbia Power Corporation takes pleasure in presenting this account of the work done and the record accomplished in the Ruskin power development. Built by Canadian workmen practically entirely of Canadian materials, the Company believes it will stand as a monument to British Columbian and Canadian enterprise. May it symbolize the industrial progress of Vancouver and the lower mainland of British Columbia

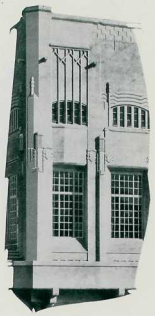


Stave River from the Air



The upper picture shows the Ruskin development shortly after the dam was closed but before water spilled over the top. The lower picture gives a view of the entire Stave river valley, looking north from where it joins the Fraser. At the mouth of Stave lake is located the Stave Falls power plant and eleven miles up the lake the Alouette power plant.

"Sermons in stones, books in the running brooks, tongues in trees, and good in everything."
SHAKESPEARE: *"As You Like It."*



THE story of Ruskin is one of conquest, of bending the rushing torrent to the will of man, of removing nature's barriers and replacing man's. Could the stones and ripples of the river but speak, they would tell a tale of speed, how in twenty months the swirling eddies and rapids gave way to a placid lake, how men suddenly came and as suddenly departed leaving a new landscape and a new structure containing its humming machinery driven by the force of pent-up water.

Today Ruskin, the power plant, sends its 47,000 horse power and its half million kilowatt hours a day over the shining wires; yesterday ran the river through its rocky gorge unmolested and untrammeled as it had been for millions of years.

The development of the lower Stave at Ruskin had been anticipated even when the Stave Falls plant was being projected, but only on December 12, 1928, was the decision made to go ahead. From a standing start, a power development of the first magnitude had to be completed in less than two years so as to be available for the heavy demand season of the autumn of 1930.

That date was the zero hour and out of a clear sky plans for dam, tunnels and power house had to be completed, designs made for turbine and generator, supplies to be ordered, roadways and railways to be relocated, electric power to be delivered and the thousand and one details in connection with such a construction project attended to.

In six weeks, by dint of extraordinary efforts by the construction department of the company, plans, specifications and contracts for the dam and appurtenant works were completed and on January 29 tenders were asked, returnable on February 14. Seven days later the contract for the construction of the dam was awarded to Stuart Cameron & Company Limited, and four days after that the work of building the camp began.

In the meantime, the hydraulic and electrical equipment of the power house—intricate and highly specialized pieces of apparatus which take long to make—were being studied by the staff engineers and by the experts of the best electrical manufacturing companies on the continent. Two days after the decision to proceed with the Ruskin development, telegrams to the leading companies requested them to rush preliminary information both as to design and as to price. Formal proposals were promptly asked and the technical experts of these manufacturers in incredibly short time submitted their recommendations. The best of these being selected, the contract for the generator was awarded on April 6 to the Canadian Westinghouse Company Limited. On the same day contract for the turbine was awarded to the Dominion Engineering Works Limited.

To have current available by November, 1930, required that every detail of construction work dovetail into the other. A time schedule drawn

up at the outset showed the date in which each operation should be completed. Knowing the length of time required to fabricate the turbine and manufacture the generator, these orders had to be given early in the day. Moreover, the design of the power house could not be made until the dimensions of these machines were known.

The time schedule also showed the date on which the river should be diverted from its channel, the date excavation for the foundations of the dam should be completed, the date concrete pouring should commence and finish, the date the power house steel should arrive, the date the transformers should be ordered, the date the switching equipment should be installed and operating, and a hundred and one other items.

One of the earliest contracts was for relocating the Stave Falls railway and road, the old locations being below the proposed water level above the dam.

The construction camp at the dam soon took form, bunk houses, machine shops, blacksmiths' shops, carpenters' shops, stores and offices springing up. Two overhead cableways were erected over the canyon. A gravel hoist and screening plant was erected down the river. Power shovels, locomotives, pile drivers, narrow gauge railways and concrete plant were assembled. Night work was instituted at the start and throughout the big job double shifts were maintained on all parts of the work.

During the spring and summer of 1929 the following contracts were let in quick succession:

Contract for penstock tunnels and power house substructure and superstructure awarded	April 13, 1929
Surveys started for transmission line	May 4, 1929
Contract for main transformers awarded	May 11, 1929
Contract for "butterfly" valve awarded	May 18, 1929
Contract for bridges for power house spur awarded	May 25, 1929
Contract for switching and control equipment awarded	June 15, 1929
Excavation of tunnel intakes started	July 13, 1929
Contract for power house cranes awarded	July 20, 1929
First easements for transmission line right of way signed	August 31, 1929
Contract for power house steel frame awarded	September 7, 1929
Contracts for clearing transmission line awarded	November 9, 1929
Contract for steel penstocks awarded	December 14, 1929
Contract for steel outdoor switch and bus structure awarded	January 4, 1930
Contract for steel towers for river crossings awarded	March 1, 1930

All through the summer of 1929, work on the flume continued and on November 2 of that year the cofferdam which had been thrown across the river at the mouth of the flume was partly closed and water flowed through the flume for the first time. By the end of the year the cofferdams above and below the dam site were sealed and unwatering began.

The commencement of 1930 found the dam as yet not beginning to rise and only a start made on the power house building. It seemed inconceivable that a dam 195 feet in height and a completely equipped power house should be finished within ten months. Yet as the year went on the changes became more and more rapid and the work began to assume an orderly appearance.

It was a longer task to divert the river than to build the dam. Unfortunately, when the excavating for the foundations of the dam was just beginning, a break occurred in the flume caused by the rock on which it rested subsiding. A delay of three weeks resulted and it was the middle of April before excavation was complete, it having to be carried below the old river level a distance of 60 feet before bed rock was found.

Pouring of concrete was started in earnest on April 26 and although progress was limited to five vertical feet a day, the entire mass of 105,000 cubic yards up to the spillway was poured before October 8.

The dam to all intents and purposes at this writing is finished. It has yet, however, to be surmounted by seven very large Taintor gates and the traffic bridge. These gates, fabricated in Vancouver, measure 33 feet by 26 feet in size, weigh 40 tons each and will cost $170,000 installed. Their purpose being to regulate the flow of flood water, they can pass 130,000 cubic feet per second, although the mean or average flow is only 4200 cubic feet per second and the maximum on record 90,000 cubic feet per second.

Electrical machinery ordered during 1929 began to arrive early in 1930. Crated and protected as if they were precious stones, the pieces of apparatus lay in the material yard under the wing of the fire hydrants. To lose a single piece might hold up the entire project.

Erecting engineers now began to arrive to put together and install the generator. The rotor, 28 feet in diameter and too large to be shipped intact, was picked up by the travelling cranes from the position on the floor where it had been built and gently lowered into place. Mechanics and engineers also installed the motor-driven machines for opening and closing the great pivot valve at the entrance to the turbine; the governors which maintain the generator at constant speed under varying power demands by admitting more or less water to the turbine; the transformers, four in number, weighing 43 tons each, for raising the current to 66,000 volts for transmission to Vancouver; the oil pumps for lubricating the machines and filling the transformers; the automatic devices for protecting the delicate generator; the high tension switches on the roof and their control levers and relays in the control room of the plant; the lightning arresters and the innumerable other features of the plant.

But electric power is of no use unless it is brought to the place where it is to be used. Therefore, while the plant was being built, it was necessary to see to the transmission line. To give as much separation as possible from the existing Stave Falls lines which follow the Dewdney trunk road north of the Fraser river, a route south of the river was chosen. This was to insure continuous supply, as conditions affecting one group of lines were not apt to affect the other.

In mapping out the route an air survey was made. One of the company's engineers flew directly over the proposed right-of-way guiding the photographer in taking photographs from which a mosaic map was made. In this way it was possible to save weeks of precious time in mapping out a route which avoided buildings or topographical irregularities which might be expensive to cross.

In July, 1929, negotiations for easements for the right-of-way were begun. There were 220 separate parcels of land, each of which had to be surveyed and described by metes and bounds and made the subject of a separate contract. The detail of this work was enormous but it was completed in remarkably short time. Clearing the 150-foot right-of-way was begun in October, 1929, and completed in May, 1930. In the meantime, poles had been set and the line erected in the cleared sections.

There are five river crossings on the transmission line necessitating sixteen steel towers. The longest span is 2,141 feet and the highest tower 285 feet. The transmission lines represent a cost of $760,000.

The south lines form, with the north lines, a complete transmission loop between the Alouette-Stave-Ruskin group of plants and Horne-Payne and Burnaby receiving stations. Eventually there will be four lines on each side of the river with tie lines between power plants and receiving stations, thus enabling power from any or all the plants to be transmitted by either route.

Finally it was necessary to prepare adequate receiving apparatus for the Ruskin current at the Burnaby substation which was therefore entirely remodeled for the purpose. A complete new station building and outdoor structure with high tension transformers and the necessary high tension switches was built at a cost of $350,000.

ON October 12, at 4.30 o'clock in the afternoon, the first of a series of events which marked the culmination of the Ruskin project took place. At that time a huge timber gate weighing 18 tons was lowered on the front of the dam, closing up the 36 foot by 12 foot opening through which the water in the flume had poured.

Immediately the water flowing down Stave river began to rise and a new British Columbia lake was born. At 10.30 o'clock in the morning of October 14 the turbine was started up for the first time.

At 6.24 o'clock in the morning, on October 16, water cascaded over the top of the dam.

For 13 days the generator was operated at low pressure to be dried out, and on October 31, for the first time, as an experiment, current flowed over the high tension wires to Vancouver.

THE Ruskin power house is an embodiment of the most modern features of hydro-electric engineering. It is radically different in appearance and in many other ways from all other B. C. Power Corporation plants.

The generator itself is the largest in physical dimensions in Canada and one of the largest on the continent, being 33 feet in outside diameter. It is rated at 47,000 horse power, as compared with 16,000 horse power for the largest generator in any other company plant, namely, at Stave Falls. It is thus practically equal in power capacity to three of the five units in the Stave Falls plant. It is one fifth more powerful than the entire No. 2 Lake Buntzen plant with its three generators, and has almost twice the capacity of the No. 1 Lake Buntzen plant with its seven machines.

It increases the available horse power of the mainland hydro-electric power supply by 30 per cent. and is sufficiently large to supply all the electric light and power requirements of an average city of 60,000 people.

On entering the Ruskin power station practically nothing in the form of fast rotating machines usually associated with power plants greets the eye. With the exception of the "exciter," a small generator for energizing the magnets, the entire unit composed of generator and turbine are below the main floor level. This indicates another difference. The generator at Ruskin is on a vertical axis, whereas, with the exception of the Alouette plant, all other company plants are equipped with generators on horizontal axes.

The Ruskin generator may not be seen to such advantage, but of its size there can be no doubt. From the top of the exciter to the floor of the draft tube is a distance of 66 feet, equivalent to the height of a five-storey building.

Another distinction in the Ruskin plant is the absence of any switchboard gallery on which are to be seen in other plants the numerous dials and levers for controlling the units. In the Ruskin plant the remote control apparatus is located in the control room on the top floor of the rear wing. Upon two desk-like bench boards

are mounted in miniature the switches and devices so designed that the touch of a finger can manipulate the heavy circuits at the will of the operator. In the rear and on the floor below are the relays and other devices for instantly transmitting the signals to open or close the generator switches of the outdoor oil-insulated circuit-breakers on the roof of the plant. The entire station can be operated by one man.

As the heavy switches are operated by electric power on signals from the control room, any failure of the power supply itself might make it impossible to restore service. While the contingency of the station being put out of commission and isolated from other power stations at one time, as by a lightning bolt, is most remote, the consequences would be so great that every safeguard must be taken. The switches are therefore operated not from the regular power circuits but from storage batteries which are kept constantly charged.

Naturally there is practically nothing in the power house that will burn and thus jeopardize the supply of energy, but again every possible contingency must be guarded against. A short circuit in the generator might cause the insulation to catch fire. To throw water on such an outbreak would not only be dangerous; it would put the machine out of working order for several days until it could be dried out.

In the Ruskin plant any possible fires in the generator or oil room would be extinguished by gas. The moment the temperature rises, the unit is automatically closed down, the ventilating louvres in the casing automatically close, and a supply of carbon dioxide is released which instantly quells the blaze. So quickly does this work that no damage is done other than that from the original outbreak and repairs can be made in a short time.

The generator is provided with all the usual protective features to shut down automatically in case of hot bearing or electrical trouble. It is totally incased by a steel hood. Cold air is drawn into the lower portion of the unit after passing through air cleaners and rises through the machine and is discharged through a duct leading outside. This warm air may be used to heat the building and in the ultimate installation to keep the idle generators warm and ready for instant service.

The turbine cost $138,000, the generator $427,000 and the main step-up transformers $111,000. Other items brought the cost of the hydraulic and electrical equipment up to $1,000,000.

The power house building cost $800,000.

THE Ruskin plant is the fifth hydro-electric plant in the B. C. Power Corporation's mainland system and occupies a particular position in this group. At its ultimate capacity of 188,000 horse power it will be primarily a "peak-load" plant; that is, it will be called into use mainly in the peak hours, whereas the Bridge River plant now under construction will be mainly for the base load.

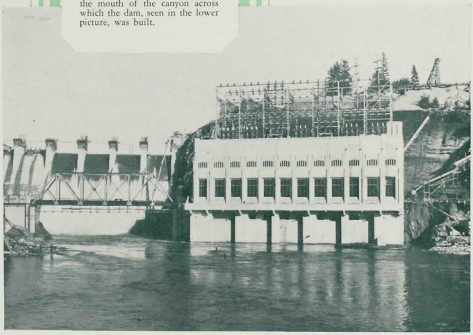
It will readily be understood that with the Stave Falls plant developing 79,000 horse power under approximately the same "head" of water as the Ruskin plant, the latter plant could not develop 188,000 horse power from the same volume of water except by operating fewer hours each day.

Actually the Ruskin plant could deliver over three quarters of a million kilowatt hours every day, but as this would entail a similar output from the Stave Falls plant, and as there is no demand during the night or off-peak hours for the combined capacity of these two plants, they could not be operated to capacity the entire 24 hours. The three plants, Alouette, Stave Falls and Ruskin, will be normally operated in conjunction, Alouette running most of the 24 hours, Stave Falls somewhat less and Ruskin during the peak hours.

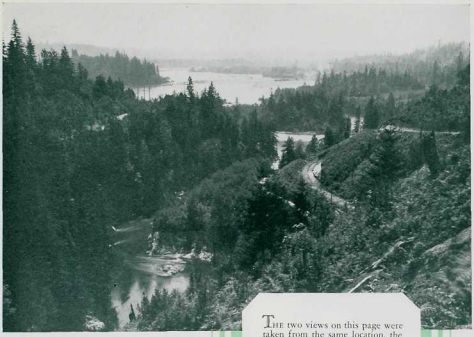
The Ruskin plant has another significance. Its comparatively short distance from Vancouver, 29 miles by transmission line to Burnaby substation, and its large capacity, give it the status of a standby plant which can take care of the heavy load for a short time in the event of transmission lines from one of the other plants being out of commission.

CONTRASTS

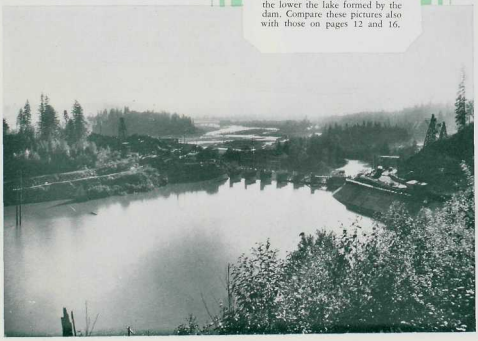
THESE two pictures, taken from practically the same spot, show the change that has taken place in less than two years. Above is the mouth of the canyon across which the dam, seen in the lower picture, was built.



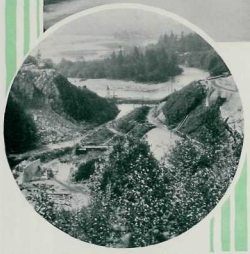
THEN AND NOW



THE two views on this page were taken from the same location, the upper showing the canyon before the development was started and the lower the lake formed by the dam. Compare these pictures also with those on pages 12 and 16.

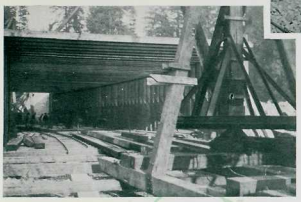


DIVERTING THE RIVER



THE greatest problem in the Ruskin development was the diversion of the Stave river from its natural channel to allow the foundations of the dam to be laid. The problem was complicated by the fact that owing to the operation of the Stave Falls power plant, the flow of water in the river is more or less regular the entire year with no dry seasons to make the work easier. The method used was to *lift* the river out of its bed into a wooden flume, 36 feet in width and 12 feet in height, large enough for a flow of 9000 cubic feet a second, or twice the normal discharge of Stave Lake and amounting at times to a million tons of water an hour.

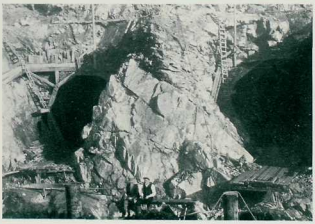
THE FLUME



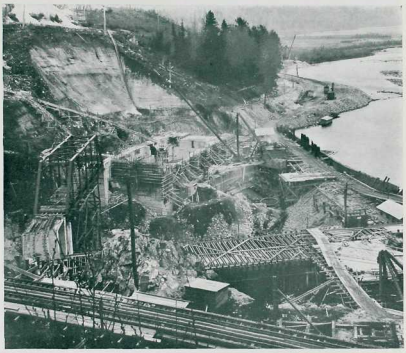
THE building of the flume was itself a major operation, equal in size to the foundation work on the power house. The west wall of the canyon had to be blasted away to make a bench for the flume, 70,000 cubic yards of rock being excavated. To gain time, this rock was attacked from both ends and from the air, three power shovels working in the canyon and two cableways hoisting rock overhead. A cofferdam at the mouth stemmed the river and diverted it into the box while another below the dam site prevented water from backing up. Once the river was conquered, powerful electric pumps were put to work to dry up the river bed so that work could begin on the excavations for the dam itself.

SOLID ROCK EXCAVATIONS

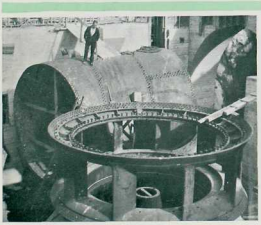
PRIOR to March 16, 1929, the site of the power house was covered with dense bush. On that date clearing was started. On May 4, 1929, two hydraulic monitors, each powered by a 200 horsepower motor, began sluicing away the loose earth and gravel. Blasting out the solid rock to make way for the foundations of the plant then began. As the foundations are 50 feet below water level, a cofferdam was raised around the power house site, for the river at that time had not been penned into the flume. On July 13, 1929, work began on the two tunnels, 24 feet in diameter and 350 feet and 416 feet in length respectively, leading from above the site of the dam into the base of the power house.

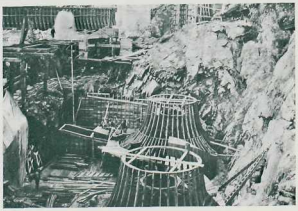


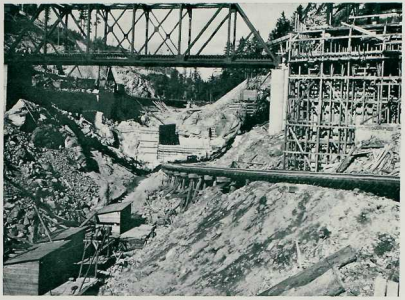
THE BEGINNINGS OF THE POWER HOUSE



THE first slab of concrete forming the very base of the power house was poured on December 28, 1929. On it were placed the wooden forms for molding the draft tubes, through which the spent water would pour after driving the turbine. These foundations of solid concrete formed a base as substantial as the bed rock itself on which the turbine and generator would revolve. As soon as the foundations were laid, the scroll case of the turbine, 42 feet in diameter, was set in position, followed by the "runner" of the turbine, 13 feet in diameter and weighing 97,000 pounds. At an early stage in the work also, the steel penstock was installed in the tunnel and the 19-foot "butterfly" valve, which admits water into the scroll case, set in place.

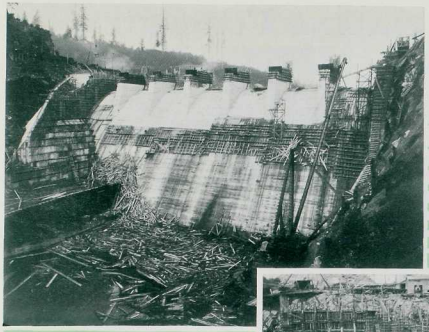




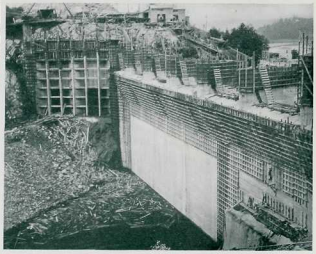


FIRST STEPS IN DAMMING THE RIVER

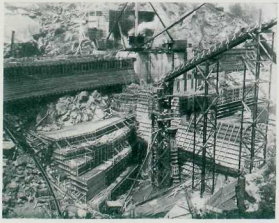
AFTER eight months of work, the river was diverted into the flume. By January, 1930, the river bed was sufficiently dry to permit excavations for the foundations of the dam to proceed. A break in the flume on January 12, caused by a subsidence in the rock on which it rested, flooded the river bed and the power house foundations and although the flume was repaired immediately, it was three weeks before the water had dropped sufficiently to enable work on the dam to proceed. Resuming operations, 22,000 cubic yards of rock were removed from the river bed, excavations being carried down 60 feet below the old river level. All loose rock removed and solid bed rock cleaned and scoured, the pouring of concrete from the mixers on the top of the east cliff began.



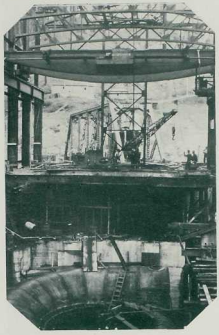
THE DAM RISES



POURING of concrete for the dam began in earnest on April 26, 1930, eleven days behind schedule. A quota of 15,000 cubic yards per month had been set. The mixing plant had been designed for a maximum daily capacity of 1,000 cubic yards. Actually 1,250 cubic yards of concrete were placed on the record day. By working night and day all summer and maintaining capacity of production, not only was the work brought up to schedule but by September 20 it was 7,000 cubic yards ahead of the anticipated amount. Altogether 105,000 cubic yards of concrete were poured for the dam, this requiring 600 cars of cement. For the dam and power house, an average of six cars a day of B. C. cement was required when the work was at its height. Altogether 720 cars, containing 576,000 sacks of cement, were used on the job.

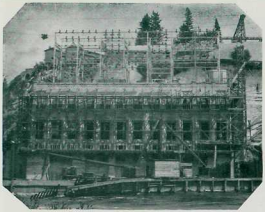


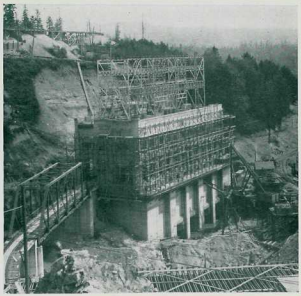
Steel and Concrete

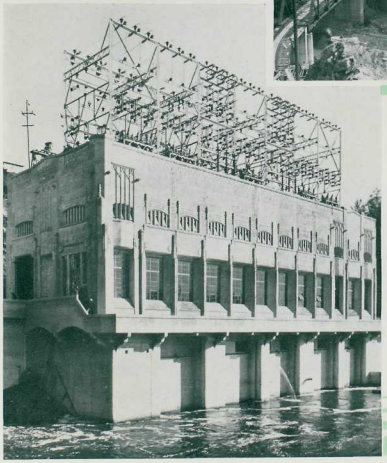


The foundations of the power house completed, the structure began to take on a semblance of its finished state. The steel bridge across the river bed was completed on March 15, 1930, enabling heavy pieces of machinery to be shipped by rail direct to the building. The erection of the steel frame of the power house was commenced and as soon as this frame was in readiness, the duplex travelling cranes, capable of lifting 260 tons, were put in operation, lifting the heavy parts of the generator and the heavy transformers which were now arriving. On May 24, the building of the generator rotor, which was too large to be shipped intact, was begun inside the power house.

The Power House

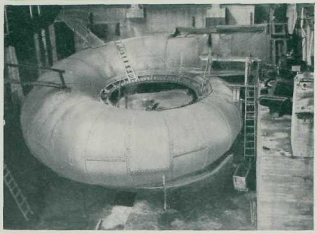


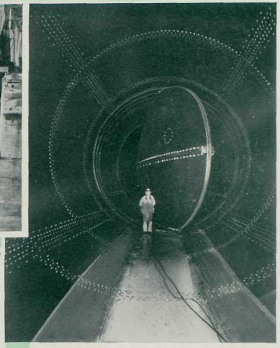




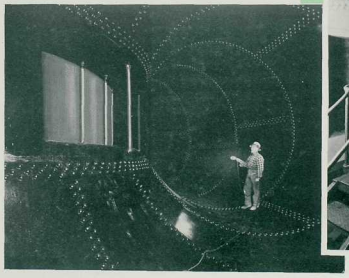
While the erectors for the companies supplying the electrical equipment were assembling the turbine, the generator, the transformers and the control equipment, the power house building was proceeded with on every hand. The intricate forms, which gave the building its architectural form, were made by the carpenters and placed in position. As the concrete was poured, ducts for the electric cables were imbedded inside the forms. As soon as the roof of the building was finished, the skeleton for the outdoor switching station was erected and electricians then placed and connected the oil-insulated high tension switches, operated from the control room in the rear of the plant.

IN THE DEPTHS OF THE PLANT

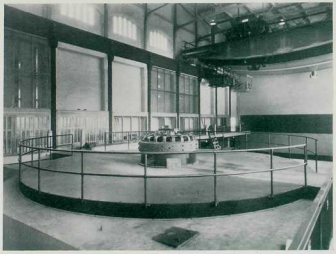




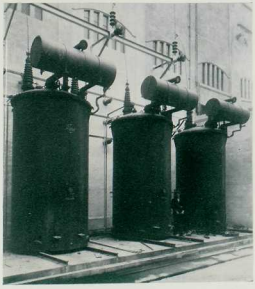
THE turbine and generator in the Ruskin plant are on a vertical axis. The water is admitted through the huge damperlike valve, in the picture (right), and courses around the scroll case, the outside of which is seen in the top picture and the inside in the bottom left picture. In its journey it impinges against the blades of the turbine runner, and the water, bereft of its force, falls through the centre core and returns to the river through the draft tubes underneath the power house. A section of the shaft between the turbine and generator is shown in the remaining picture. It is 50 inches in diameter and bears a weight of 650,000 pounds, revolving 120 times a minute. The entire weight of turbine and generator together with the "hydraulic thrust" is 1,000,000 pounds, all of which is borne on one bearing.



Electrical Equipment



The interior of the Ruskin plant is simple in appearance yet majestic in proportions. It embodies the latest advances in engineering science. The present building is 172 feet long and stands 82 feet above the tail water, while foundations go 50 feet below. The ultimate building will be 298 feet long. The centre picture shows the generator, the small protuberance being the "exciter." There is room for two generators in the structure as built but eventually there will be four in the enlarged station. The control room, shown below, is in the rear wing of the building while the transformers (lower left) are outside, also at the rear.



The Ruskin Development in a Nutshell

Present development	47,000 horse power
Ultimate development	188,000 horse power
Estimated cost of first development	$7,250,000
Men employed, *maximum* weekly average	560

THE DAM:

Length along crest	420 feet
Height from lowest foundation	195 feet
Maximum width	134 feet
Excavation	126,000 cubic yards
Concrete	105,000 cubic yards

TURBINE AND GENERATOR:

Diameter of stator	33 feet
Weight of rotor	260 tons
Weight of revolving parts	650,000 pounds
Total weight of revolving parts plus hydraulic thrust	1,000,000 pounds
Height from draft tube floor to top of exciter	66 feet
Speed of unit	120 revolutions per minute
Operating "head" of water	130 feet

POWER HOUSE:

Length of present building	172 feet
Height above tail water	82 feet
Depth of foundation below tail water	30 feet
Length of ultimate building	298 feet
Excavation	33,000 cubic yards
Concrete	14,000 cubic yards

The British Columbia Power Corporation's System

MAINLAND:	Present Capacity Horse Power	Ultimate Capacity Horse Power
Lake Buntzen No. 1	28,200	28,200
Lake Buntzen No. 2	35,800	35,800
Stave Falls	79,000	79,000
Alouette	12,000	12,000
Ruskin	47,000	188,000
Agassiz	50	50
Steam Plant	23,500	23,500
Bridge River (under construction)		600,000
Total Mainland	225,550	966,550
KAMLOOPS:		
Barriere	2,000	2,000
Kamloops Steam Plant	2,000	2,000
Total Kamloops	4,000	4,000

VANCOUVER ISLAND:	Present Horse Power Capacity	Ultimate Horse Power Capacity
Jordan River	21,500	39,500
Jordan River Dam	2,250	2,250
Goldstream	2,300	2,300
Brentwood Steam Plant	5,400	5,400
Qualicum Beach (Diesel)	160	160
Campbell River		110,000
Total Vancouver Island	31,610	159,610
Total Mainland, Kamloops and Island	261,160	1,132,160
UNDER CONSTRUCTION:		
Bridge River	54,000	
Jordan River	18,000	
GRAND TOTAL	333,160	

Principal Contractors on the Ruskin Project

CONTRACTOR	DESCRIPTION OF WORK
Stuart Cameron & Co. Ltd., Vancouver, B. C., with which is associated Armstrong Morrison & Co., Ltd.	Dam, penstocks and power house
Canadian Westinghouse Co. Ltd., Hamilton, Ont.	Generator, switching and control equipment
Canadian General Electric Co. Ltd., Peterboro, Ont.	Main transformers
Dominion Engineering Works, Ltd., Montreal	Main turbine and butterfly valve
Dominion Bridge Co. Ltd., Vancouver, B. C.	Bridges, power house steel, erection of steel crossing towers
Ellis Cotton Co. Ltd., Vancouver, B. C.	Constructing the relocated Stave Falls railway
Horton Steel Works, Ltd., Bridgeburg, Ont.	Steel Penstocks
Western Bridge Co. Ltd., Vancouver, B. C.	Outdoor switching and bus structure and Taintor gates
Canadian Bridge Co. Ltd., Walkerville, Ont.	Supplying steel crossing towers
Stewart & Barber Limited, Vancouver, B. C.	Steel crossing foundations
Vancouver Engineering Works Ltd., Vancouver, B. C.	Travelling hoists for intake stop logs and Taintor gates
Vancouver Machinery Depot Ltd., Vancouver, B. C.	Taintor gate operating mechanism
Canadian Johns-Manville Co. Ltd., Vancouver, B. C.	Supplying and installing power house roofing
Canada Wire & Cable Co. Ltd., Toronto, Ont.	Transmission conductors
B. C. Cement Co. Ltd., Bamberton, B. C.	Cement
Canadian Ohio Brass Co. Ltd., Niagara Falls, Ont.	High tension insulators
Canadian Porcelain Co., Hamilton, Ont.	Suspension insulators
Peterson & Cowan Ltd., Vancouver, B. C.	Elevator
Scott Foster & Co. Ltd., Vancouver, B. C.	Air cleaning equipment
Northern Electric Co. Ltd., Vancouver, B. C.	Copperweld conductors
Western Steel Products Ltd., Vancouver, B. C.	Steel doors and sash
Boeing Aircraft, Ltd., Vancouver, B. C.	C-O^2 Fire Extinguishing Equipment

C. E. Blee
Principal Assistant Engineer, Construction Department

E. H. Hatch
Construction Engineer, Construction Department

C. W. Colvin
Electrical Assistant Engineer, Construction Department

S. P. Wing
Designing Engineer, Construction Department

P. C. Gill
Superintendent of Transmission and Distribution, Electrical Department

R. M. Skinner
Superintendent of Electrical Construction and Maintenance, Electrical Department

Stuart Cameron
President, Stuart Cameron & Co. General Contractors

J. H. Halpin
Superintendent Stuart Cameron & Co.

THE Ruskin project came under the jurisdiction of Mr. J. I. Newell, vice-president and plant manager, and the development was designed and carried out by the construction department under the direction of Mr. E. E. Carpenter, consulting engineer. A few of those in charge of the construction work are portrayed on this page.

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