WATER-POWERS IN BRITISH COLUMBIA.

THE report for 1913 of R. G. Swan, A.M., Can. Soc. C.E., chief engineer of the British Columbia Hydrographic Survey, has just been issued and contains some extremely valuable data on the water resources of Southern British Columbia. It is published as Water Resources Paper No. 8 of the Dominion Water Power Branch.

Since the publication of the previous report some important changes have been made in the hydrographic organization of the Dominion Government in British Columbia. It will be remembered that in May, 1911, the Railway Belt Hydrographic Survey was inaugurated, under the direction of Mr. J. B. Challies, then hydraulic engineer of the Railway Lands Branch, now Superintendent of Water Powers, Department of the Interior. Mr. P. A. Carson, B.A., D.L.S., was appointed chief engineer in direct charge of the survey, the objects of which were: (1) To investigate the complex water rights situation on the ground; (2) to suggest a practicable and efficient form of Dominion water administration; (3) to study the water supply of all streams and the water resources of the Railway Belt; (4) to investigate storage possibilities with a view to conserving and beneficially using the limited water supply; (5) to make the surveys necessary to the proper conservation and use of the said water resources; and (6) to report on the various irrigation, reclamation and water-power projects.

This railway belt was a strip of territory about 40 miles wide and 500 miles or more in length, extending from the eastern boundary of the province (i.e., the summit of the Rocky Mountains) almost to the Pacific coast, being bounded on the west partly by the Mesliloet River and partly by the north arm of Burrard Inlet. Previous reports of the hydrographic survey in British Columbia referred entirely to this railway belt. Besides the hydrographic data in them, there is some interesting historical information concerning the water right situation and the legislation referring thereto which have been referred to in previous issues of this journal.

The year 1914 witnessed proceedings between Mr. J. B. Challies, Superintendent of Water Powers, and Mr. William Young, Comptroller of Water Rights, Department of Lands, British Columbia, regarding the extension of territory for hydrographic work to ultimately cover the entire province. This met the approval of both governments in September, and the title of the work was thereupon changed to "British Columbia Hydrographic Survey." About this time Mr. P. A. Carson, chief engineer, tendered his resignation, and the position was accepted by Mr. R. G. Swan, who had been assistant chief engineer. The territory of the lower section of the province was divided for the time being into three main divisions, with headquarters at Kamloops, New Westminster and Nelson. In charge of these respective divisions were Messrs. E. M. Dann, C. E. Richardson, and C. G. Cline, as division engineers.

From the newly-issued report, which, in addition to hydrographic data from metering stations, etc., contains for each division, a general description of its main characteristics, particularly climate, agriculture, irrigation, reclamation, lumbering, fishing, transportation, mining, manufacturing, municipal water supply, and water power, we abstract the following summary of the last-mentioned resource:—

Coast Division.—There are a large number of good sites for developing water-power in various amounts. Several plants have already been constructed, and a number of other propositions are being investigated by various companies and individuals. The following are brief descriptions of developed sites:—

Coquitlam River.—The Vancouver Power Company generates its power mainly at its two plants on Buntzen Lake. These plants are situated on the north arm of Burrard Inlet and use the water of the Coquitlam River under a head of 400 feet. There is a storage dam on Lake Coquitlam, and the water is conveyed through a tunnel 12,775 feet long to Lake Buntzen. This latter lake acts as an equalizing reservoir, and from it the water is led through penstocks to the power-house.

The power generated is used for lighting and industrial purposes in Vancouver, New Westminster, Steveston, Chilliwack, and the lower mainland generally, as well as for operating city and interurban car lines in the same district.

Stave River.—The Western Canada Power Company has a plant at Stave Falls. A series of dams near the power-house raises the level of Stave Lake, and provides good storage. Short steel penstocks carry the water from the dam to the power-house. The head varies from 100 to 120 feet, according to the level of the lake.

Gilley Creek.—Gilley Bros., of New Westminster, operate a rock quarry on Pitt Lake by means of water-power from Gilley Creek. A wooden stave pipe is used to convey the water to two small Pelton wheels, which drive the screening plant and air-compressor mechanically. A third wheel is used to drive a small dynamo, which supplies current for lighting at night. There is a storage dam on Munro Lake to regulate the flow of the stream. The total available head is about 2,000 feet, but only 600 feet is being used at present.

Jordan River.—The Vancouver Island Power Company has a plant on Jordan River and supplies power to the Victoria branch of the British Columbia Electric Railway Company.

Puntledge River.—The Canadian Collieries (Dunsmuir), Limited, has a plant on Puntledge River, near Union Bay, on the east coast of Vancouver Island, supplying power to a number of mines and operating electric railways connecting the mines with tide-water.

Powell River.—There is a water-power plant on the Powell River, which operates by direct mechanical drive the large pulp mill of the Powell River Co., Limited. This company manufactures news-print paper exclusively and has an annual capacity of 70,000 tons. The hydro-electric plant has a capacity at present of 24,000 h.p., with an ultimate capacity of 34,000 h.p.

The following are the undeveloped power sites in the division (exclusive of Vancouver Island):—

Bridge River.—A head of 2,000 feet could be developed at Bridge River by driving a tunnel through the ridge separating it from Seton Lake. The water would be diverted into the tunnel from Bridge River and conveyed from the other portal by steel penstocks to the power-house situated on Seton Lake. A great amount of power could be developed here, but the cost of the tunnel would render a large initial development necessary. The Pacific Great Eastern Railway, which is being constructed along the north side of Seton Lake, would provide good transportation, but extra precaution would have to be taken to prevent a washout by any leaks or breaks in the tunnel or penstocks. Special provision might have to be made for carrying the extra discharge from Seton Lake.