relatively extreme thickness of barren overburden, and the frozen or half frozen condition of the gravel.

Mr. Purington obtained from his inspection of the placer gold fields of the North the following main impressions:-(1) Operations requiring the installation of expensive plants are frequently undertaken before adequate sampling of the ground has been done. (2) The methods of mining and conveying the auriferous material, while often leaving much to be desired from the standpoint of economy, are, in the main, developing along favourable lines. (3) The gold-washing and gold-saving appliances are inexcusably crude and inefficient. Speaking of the outlook for the future, it is suggested that the interior province of Alaska (and geologically considered, the Canadian deposits of the Klondike come under this heading) promises to continue for many years to be a fairly important productive area. It is, however, pointed out that the natural conditions prevailing in the Alaska Interior gold field are that, alluvial gold is almost entirely lacking where timber and water are plentiful, grades are steep and the ground unfrozen; while where gold is distributed in paying quantities, as a rule, the water supply is inadequate and the timber is poor or altogether lacking; thus, in California and Australia the geologic and topographic conditions favour the placer miner; in Alaska and the Yukon territory they are inimical to his success. Under the head of "Costs of Mining" the following table is given, showing the average capacity and cost of gold gravel mining operations in Northwest America, but it is noted in this regard that the high duty of the miner's inch in the Klondike is a large factor in bringing down the cost of No. 1 and No. 16. Dredging estimates place the cost at eighty cents per cubic yard, where gravel must be thawed by points ahead of the dredge, but, of course, in certain districts costs are less than twenty cents per cubic It is interesting to learn that frozen ground vard. cannot be attacked with success by the steam shovel, for even where it digs the gravel successfully, if men follow it to clean bed-rock by hand, the cost of operating is sometimes doubled. Mr. Purington, however, believes that the steam shovel has a field in northern placer mining, but, regarding the mechanical operations in general, the important principle should be emphasized that the main expense is getting the material into the receptacle which conveys it to the sluice or washing pan, and that tramming even for a long distance, and to a considerable elevation, adds a very small proportionate amount to the cost of working.

Regarding the cost of prospecting in the Atlin district tunnels timbered and lagged are estimated at \$3.50 per foot at the McKee Creek. On Spruce Creek the cost of posts and caps to inches thick and 6 feet long, is fifty cents each, and lagging ten cents On Gold Run 36-inch holes are said to each. have been drilled to a depth of thirty-two feet by a churn drill, at the rate of \$1.00 per foot. In the Klondike drifts to prospect the bench gravels cost \$7.00 to \$8.00 a foot, timbered, and shafts from \$5.00 to \$10.00 a foot. In timbering, three sets of posts, sill, cap and lagging are put in for \$6.00, and as one half cord of wood is used to set, the whole cost is \$7.00 per set. In frozen creek ground two men, working three shifts, sunk a pit five feet square, twenty-eight feet deep, using about two H.P. steam during thirty hours.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
	Hydraulicking, no pumping of water.	Hydraulicking with use of hy- draulic elevator.	Open cut; shoveling into sluice boxes, including stripping top dirt : no pumping.	Open cut ; horse scraping.	Open cut; shoveling; wheeling to bucket; cable train to sluice.	Open cut; showeling into cars: track and incline to sluice.	Open cut : shoveling into buckets or skips: skidding or tramming, and derricking to sluice.	Open cut; shoveling into sluice; tailings by hydraulic lift.	Open cut; steam-shovel excavat- ing; track and incline to sluice.	Open cut; steam scraping; guner- ally on stripping work or tail- ings.	Dredging.	Drifting partly frozen or thawed ground requiring timbering.	Drifting and thawing solidly frozen ground; little or no tim- bering.	Winter drifting and spring stui-	Mining or stripping overburden by ground sluicing.	Hydrnulicking by means of pumped water.	Booming with self-dumping wa-
SOUTH COAST PROVINCE Number of operations considered Capacity, cubic yards, in 24 hours	6 833	6	6 54	 													
Thickness of gravel worked, feet Cost b	30.3 \$0.20	25 <b>\$</b> 0.31	3.7 \$2.01				•••••										
Number of operations considered Capacity, cubic yards, in 24 hours Thickness of deposit, feet Thickness of gravel worked, feet Cost b	13 1.049 37 4 37.4 50 238		20 63 8.6 3.5 \$2.39	105 20 €10 \$0.60	8 162 17.5 4.5 <b>\$</b> 2.14	450 14 \$2.43	233 15 9 \$1.75	184 8 6 \$1.25	800 22 22 \$1.46	6 92 15 8.7 <b>5</b> 0.49	1,064 35 35 <b>\$</b> 0.49	\$0 60 \$4.25	7 75 26.4 4.36 <b>\$</b> 3.38	50 26.4 4.36 \$5.14	150 9 d 9 \$0.17	4 830 33 33 \$0.65	250 7.5 <i>c</i> 6 \$0.07
SEWARD PENINSULA PROVINCE		!	ĺ		ŀ		1										
Number of operations considered Capacity, cubic yards, in 24 hours Thickness of deposit, feet Thickness of gravel worked, feet		658 12 12	10 145 6.6	5 200 5 5			550 15 11		1,000 30 27		700 8 8	80 20 7	20 35 4	83 85 4.3	 173 4 d 4	3 250 23 23	

TABLE 1 - Average capacil, and cost of gold-gravel mining operations in northwestern America a

a Lost time, the prices paid for mining property, and the cost of equipment other than that relating to actual mining (e.g., railways, wagon roads, etc.) are not taken into account, and any estimates based on these figures must make due allowance for these expenses; otherwise the costs here given will be found too how. b Dollars per cubic yard. c "Muck" and top gravel. d "Muck" or fine silt and ice: from 50 per cent to 75 per cent to