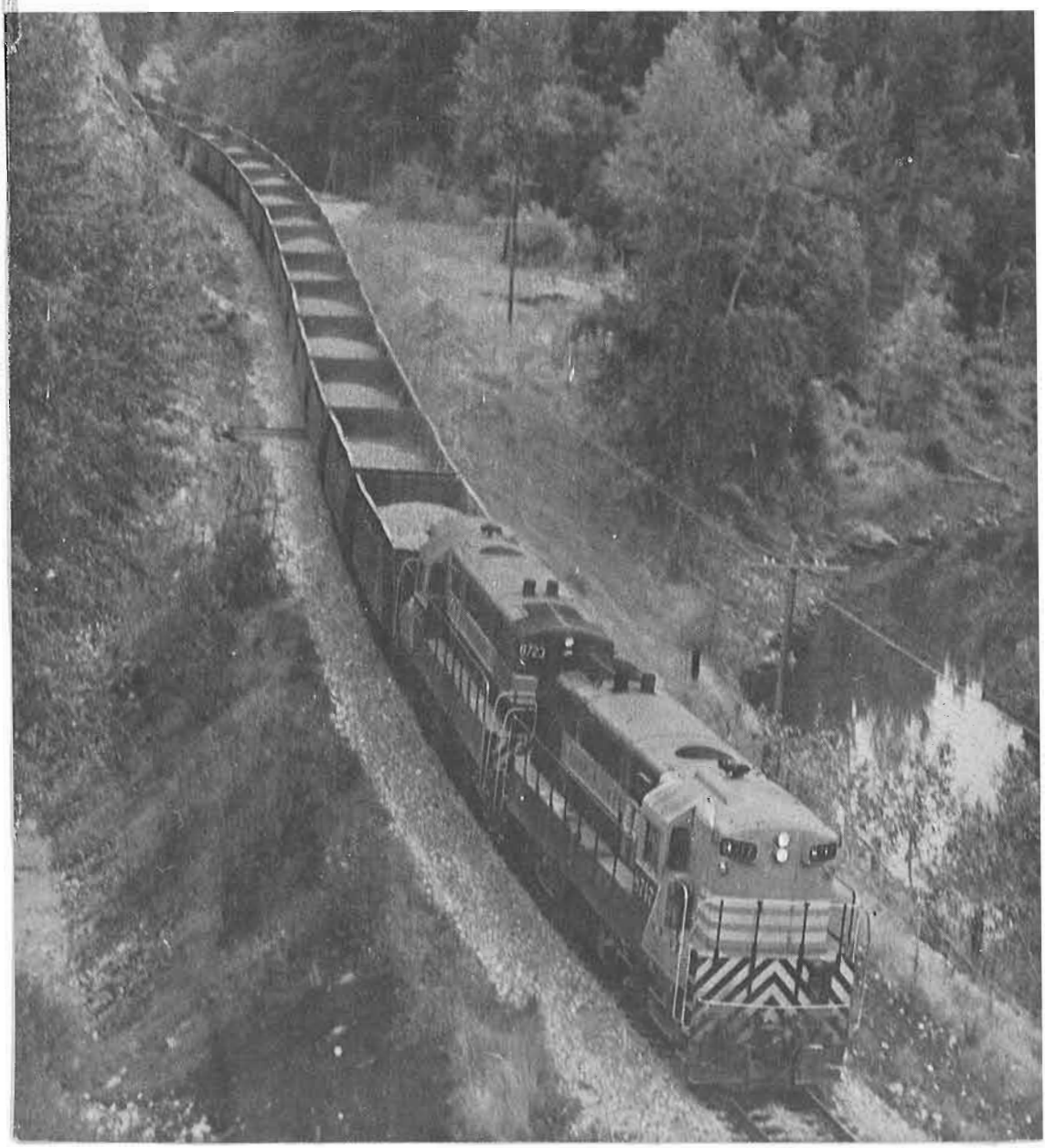
Canadian Rail

NO. 218
FEBRUARY 1970




8723

COAL TO JAPAN

Robert A. Loat

In the deepening shadows of the main range of the Canadian Rockies, it is a late winter's evening and the village is quiet. The few lights glitter on the sparkling snow, sometimes silhouetting the cars in the railway yard. Dominating the sounds carried by the chilly breeze from the towering mountains is the occasional subdued chant of a GM 567, as the diesel unit idles on the siding.

To the south, another sound, intermittant at first, but becoming constant, heralds the approach of the westbound freight, with a lash-up of F-M opposed piston units on the head-end. Growing louder and louder, it suddenly diminishes, just out of town. The glow of the headlight anticipates the load rumble as units and train traverse the bridge and grind to a stop in the yard. Against the rhythmic, background rumble of the diesels, the snow squeaks and scrunches under the head-end brakeman's boots, as he walks over to the station. Minutes later, he returns to throw the switch for the yard lead. His lantern describes graceful arcs in the darkness and then follows a crooked path through the rails and switch-stands.

With a preliminary, mounting roar, the F-M o-p's grumble into action, roaring into the fourth and fifth notch before the heavy train begins to move. Swinging through the switch, the lead unit's headlight sweeps the station briefly, catching the name "Golden" on the station board, momentarily. Behind the three units, a dozen box cars of lumber, cars of lead ingots from the smelters of Trail and an endless string of hoppers follow, - coming and coming, all full to capacity with Crowsnest coal. The caboose clears the main- line switch and, with the screech of protesting brake shoes, the train stops. With the bang of parting air-hoses, the units cut off from the head of the train.

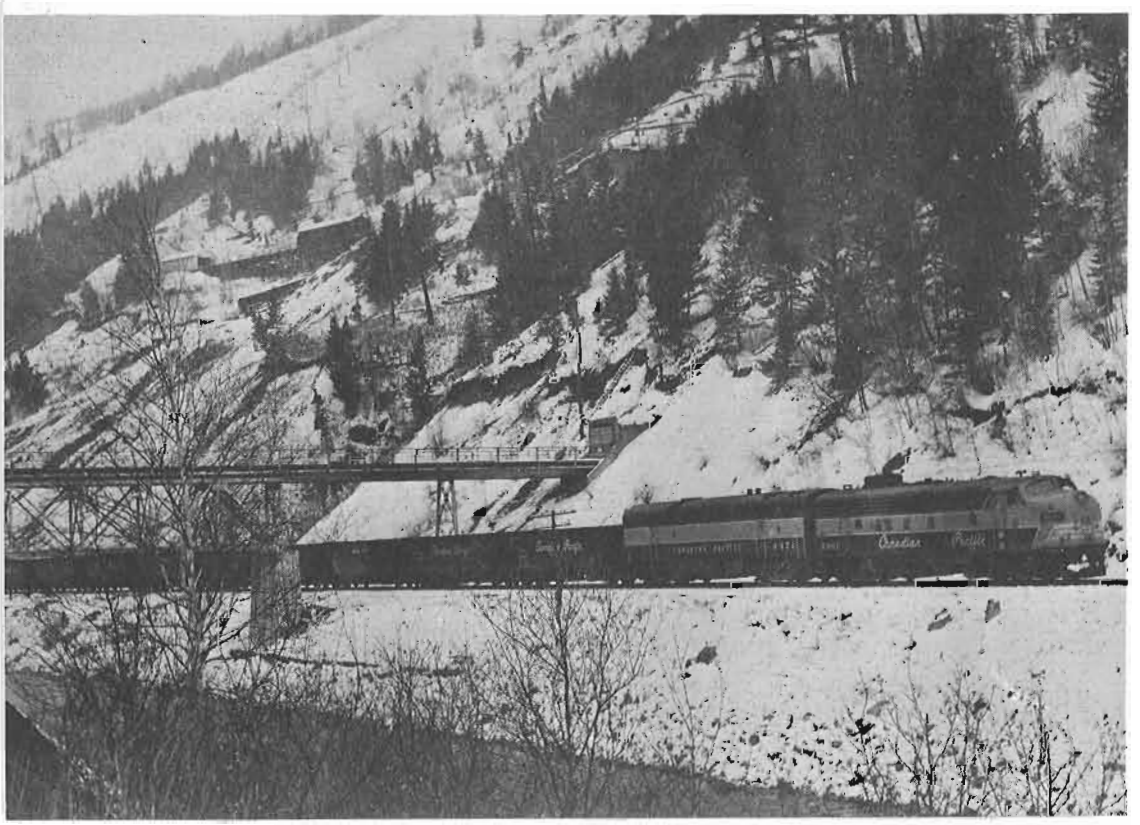
The photograph on the cover is CP RAIL's extra north 8717, twinned with no. 8723, FM H-16-44's growling along Bull River, B.C., 5 miles west of Colvalli, on a gravel train on the Windermere Sub. Photographed September 20, 1968 by W.R.Linley, Ottawa, Canada.

Extra north 8723 plus 4439 plus 4062 of CP RAIL, one mile south of Wasa, B.C., Windermere Subdivision, on August 24, 1968. Photo courtesy R.A.Loat.

Suddenly,there is the intense whine of heavy dynamic braking superimposed on all other night sounds,as four SD-40's,led by no. 5558,rumble out of the canyon's mouth to the east,around the looping curve of the Kicking Horse River,with a long westbound manifest freight. Car after car of prairie grain,potash,natural gas and bulk sulphur dominate the consist. About half-way in the length of the train are four more SD-40's and ROBOT II,no. 1001. It is with this kind of power that CP RAIL will be moving Canada's natural resources from the Prairies and the Rockies to Pacific tidewater,come 1970.

Up and down the length of North America's west coast,the usually balmy ocean slopes are separated from the harsh climate of the great central plain by a system of mountain ranges known as the Western Cordillera. The easternmost range of this system is called the Rocky Mountains which in Alberta and southern British Columbia form the boundary between the two Provinces and also represent the Continental Divide. West of the Rockies lie three other major ranges: the Selkirk,Monashee and Coast Ranges. The latter

CP RAIL Train 72 , units nos. 4061 & 4471 at the east switch beside Elk Creek near Michel,B.C. R.A.Loat captured the train on film on April 14, 1968.



Extra south CP RAIL 8676 and Extra north 8653 at the north switch at Edgewater,B.C. on August 24,1968. Photo courtesy R.A.Loat,Calgary,Alta.

two are separated by the high and rugged Cariboo Plateau. Along the International Boundary to the south,mountain ranges and river valleys make east-west railroading very difficult.

This southern region has always been rich in mineral deposits. Indeed,gold and silver have periodically produced mass population migrations from other areas of the two Provinces,as well as some neighbouring areas of the United States. Today,the Sullivan Mine at Kimberley supplies lead-zinc ore for COMINCO's refinery complex at Trail and Tadanac. Vast coal deposits from Fernie,B.C. to Blairmore,Alta.,have heated homes,fed coking furnaces and fuelled steam locomotives and ocean-going ships for more than half a century.The coal mining industry in the Crowsnest Pass region is presently poised on the brink of a boom which will see a quadrupling of coal production in 1970.

Rail transportation from the prairies to the Pacific became a reality in November 1885 and began in earnest in 1886,when the Canadian Pacific's line from Montreal to Port Moody was open for business. However,southern British Columbia was without a railway at that time and trade moved up and down the rivers,which led to the neighbouring United States. Some 13 years later,in the fall of 1898 the Canadian Pacific opened a line from Medicine Hat,Alta.,via Lethbridge to Crowsnest Pass and Kootenay Landing,B.C. Later,a "branch" railway was built from this line at Colvalli,to Golden,B.C. on the main line of the Canadian Pacific and today,CP RAIL moves fifty to

one hundred hoppers of coal daily from the Crowsnest Pass area to Port Moody,near Vancouver,on the shores of Burrard Inlet where it is loaded on ships destined for the steel mills of Japan. Hopper cars permanently assigned to this "back and forth" service are prominently lettered "COLEMAN-PORT MOODY Coal Service". Additional cars from the general pool of open bottom-dump hoppers are similarly labelled and supplied as required.

Most of the loaded coal hoppers from the Crowsnest are picked up by the subdivision way-freight and set out at Colvalli in the early hours of the morning.Later the same day,a train originating on the main line at Cranbrook,some distance west,picks up these loads and takes them north over the Windemere sub to Golden. From Golden west,over the magnificent stretches of the upper Columbia River and Beaver Creek valleys,the coal moves over Rogers and Eagle Passes to Port Moody in main-line freights.

The process of filling out westbound tonnage and assigning the required power requires a considerable amount of yard and service trackage.On occasions when main-line tonnage is exceptionally heavy,coal hoppers may accumulate in the Golden yard to the point where a solid coal train may be made up and operated as far west as Kamloops. With the anticipated 1970 volume of coal traffic through Golden,CP RAIL is presently seeking permission from Golden's municipal authorities to enlarge the existing yard,which is located in the town's centre. Although CP RAIL and its associated activities are the life-blood of the community,civic officials are resisting this expansion,preferring instead that the new yard be located north along the Columbia,in a rather marshy area,which will evidently be more expensive to drain and fill.The area immediately south of the town is even more marshy and has been excluded from further consideration.

The current traffic in coking coal is being shipped to NIPPON KOKAN,a consortium of Japanese coal companies and coal users, by Coleman Collieries Limited,of Coleman,Alta. This contract is now in the second year of a 15-year period,supplying a total of 13 million long tons. Kaiser Coal Limited of Natal,B.C.,just west of the Crowsnest,is also supplying coal to Japan from its Michel mines,at the rate of 400,000 tons per year. In addition to production for Japanese customers,Kaiser also sells 400,000 tons of coal and 200,000 tons of coke annually to Canadian customers. Thus,there is already considerable traffic by rail from the mines in this area. New power and new cars for CP RAIL will be for a completely new movement of traffic,not just an upgrading of facilities to handle current shipments.

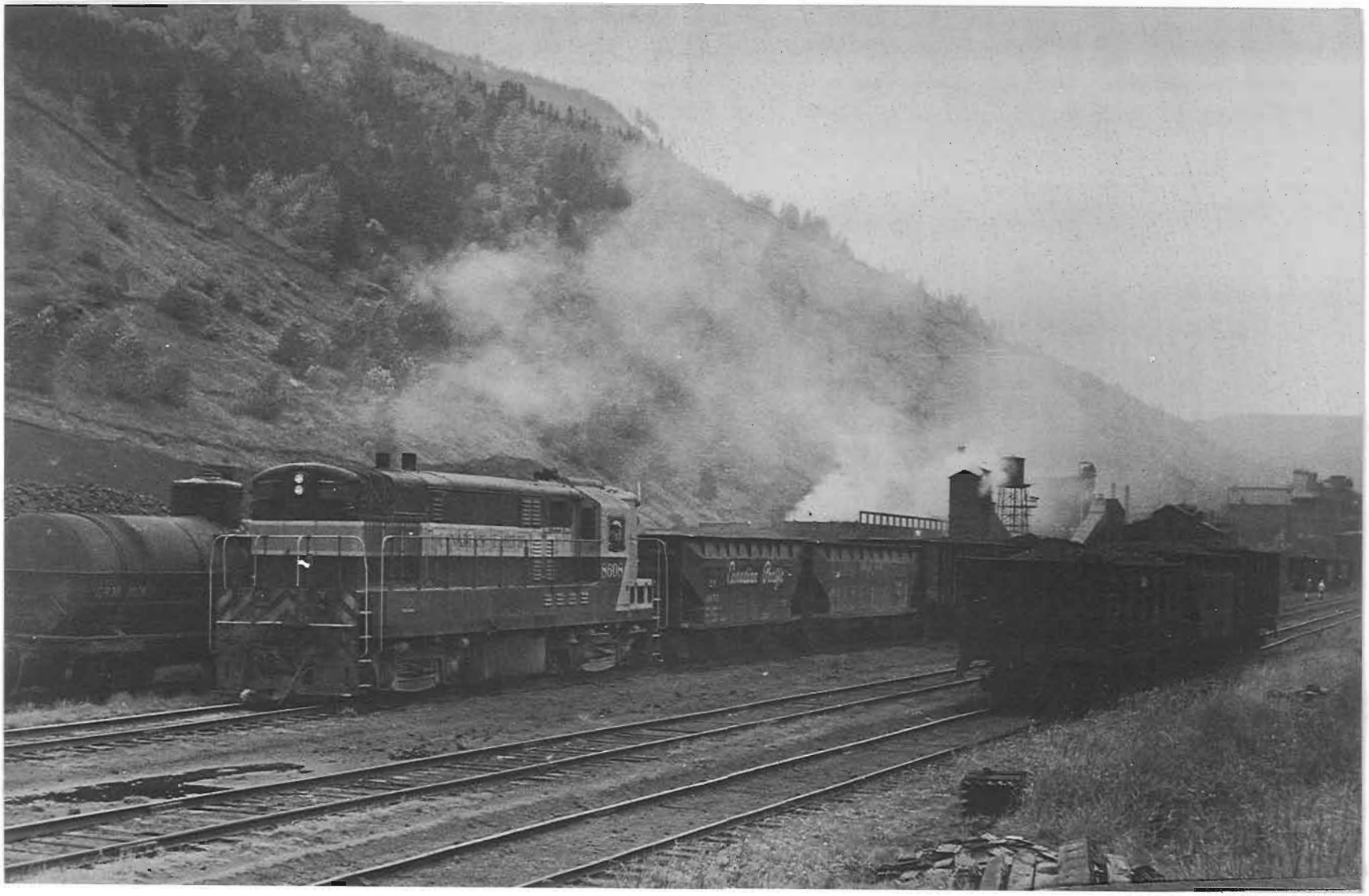
On March 1,1968,Kaiser Coal Limited,a wholly-owned subsidiary of Kaiser Steel Corporation of Oakland,California,purchased the mineral rights on vast stretches of land,to the north of Crowsnest Pass,from Crowsnest Industries Limited. These rights included the land in most of the Elk River Valley and the tributaries of Elk River,plus the presently-operating mines of Crowsnest Industries . Kaiser proposes to strip-mine these vast areas to satisfy the con-

Two FM "Trainmasters",nos. 8719 & 8716 on the shop track at Golden, B.C. with nos. 8813 and 8685,captured August 24,1968 by Bob Loat of Calgary .

tract requirements,which will be 3.2 million tons per year, as of 1970.

Other-than-mining operations associated with the coal delivery project employ 400 Canadians,about 200 working at the Roberts Bank superport on the Straits of Georgia and 200 at Natal in the Crowsnest,surveying and constructing.Within sight of the B.C. government's Tsawwassen Ferry Terminal for the Vancouver-Victoria run, huge dredges are at work two miles from the shore line building up land from the shallows for the Superport,while at the same time,deepening the approaches to provide 65 feet of water to float the Japanese supercarriers to dockside. At the extreme opposite side of the Province near Natal,eighty-foot wide roads criss-cross Harmer Ridge,under which lies most of Kaiser's coal.

The scope of this mammoth mining operation overwhelms the imagination. Using drag-line and power shovels of the largest kind the excavated coal will be transported from one interior valley to the "breaker" (sorter and washer) on the Natal side. Auxiliary transportation will be accomplished through the use of 100-ton dump trucks,whose nine-foot wheels are powered by individually-mounted electric motors,which take their power from an independent diesel-electric generator set.At the loading point of Sparwood,coal hoppers will be loaded while moving at a speed of 1 to 2 miles per hour.


8608
Canadian Pacific

With these super-production methods,it might be concluded th-at the underground deposits would soon be exhausted,but the unbe-lievable fact is that Number Ten Seam alone is fifty to seventy five feet thick,for a distance of at least seventy miles!Estimates have been made that at a mining rate of 4 million tons a year, the deposits of black diamonds will last at least ONE THOUSAND YEARS ! Geologists believe that there are six thousand million (in figures 6,000,000,000) tons of good metallurgical coking coal in the Num-ber Ten Seam. Kaiser has signed an agreement with the Japanese in-terests to provide 3.2 million tons annually for 15 years.

Not to be outdone,Canadian Pacific Oil and Gas Limited,a cor-porate brother of CP RAIL,have suggested that the results of a recent geological survey conducted in the area in the Elk River valley north of the Kaiser holdings,indicate that there may be a further deposit of coal of the order of TEN TIMES that which Kai-ser will start working in 1970. True or false,CP RAIL has applied for and received a charter to build a branch line 34 miles north from Sparwood,the Kaiser Coal loading terminal. The cost of the new branch is estimated at $10-million,but it will not take long to pay back this capital investment.

In addition to the Japanese contract,Kaiser is hoping to sell coking coal to Hamilton,Ontario steel plants,if east-bound unit - train operation can lower freight costs enough to make this econ-omically feasable. Other marketing possibilities exist in the neighbouring state of Idaho,which is now supplied from coking ov-ens in the neighbouring state of Utah. Kaiser's own steel mill in Fontana,California might be a potential customer and there are good possibilities in the steel mills of southeast Asia.

Kaiser's current 800,000 tons is rather a small portion of the total current export coal trade to Japan. Existing contracts now total more than seven million tons annually to the country a-cross the Pacific. Luscar Limited,with mines in the Luscar- Foot-hills district of Alberta,are producing on a 15 year,50-million ton contract. They are shipping through CP RAIL's bulk terminal at Port Moody,B.C. Presently negotiating in Japan are other CP subsidiaries,in view of the apparently extensive reserves in the Crowsnest region,in the upper reaches of the Elk Creek Valley.

Aside from the four railways (CP,CN,BC Hydro and Great Nor-thern) presently negotiating problems of CP RAIL access to the new Roberts Bank superport,the only other potential difficulty could be with the conservationists and tourist bureaux. Courtesy of the conservationists,a good deal of propaganda and opposition from the public to the strip-mining scheme has been generated. Historically strip-mining operations have laid waste large areas in the Appal-

On a visit to the Crowsnest area on September 20,1968,Bill Linley of Ottawa caught CP RAIL's FM "Trainmaster" no. 8608 switching hopper cars at the coal washing plant at Natal,B.C. Nearby at Sparwood,Kaiser Coal will load unit-trains for export to Japan,via Roberts Bank.

CP RAIL's FM "Trainmaster" no. 8608 shuffles coal hoppers in the yard at Natal,B.C. on September 20,1968. Photo courtesy W.R.Linley,Ottawa,Ont.

achian Region of the eastern United States. More recently, in November,1968,the main Crowsnest highway,No. 3,was suddenly covered to a depth of 15 feet for nearly a half-a-mile,when excessive rain, an underground stream and natural fluidity combined to turn loose a mountain of mine waste. Fortunately this slide caused no property damage or loss of life. But it did obliterate the highway.

To move Crowsnest coal by CP RAIL,several motive power cycles have been suggested. Four "Pacesetter" diesel units with "creep control" will power the train through the loading chutes and thence to Colvalli and Golden. At Golden,the four "Pacesetters" would hand over the train to other power,themselves returning south to Sparwood with a train of empty hoppers. The loads would go west with four new units leading,augmented by a ROBOT and four "repeater" or slave units about two-thirds of the way back in the train. At Beavermouth,a three-unit lash-up (pusher) would be added about halfway back and together the 11 units would move the train up the 22-mile climb to Glacier,B.C.,at the western entrance to the Connaught Tunnel. This run is in fact a helper district,one of the few left on CP RAIL,in the days of the diesel.

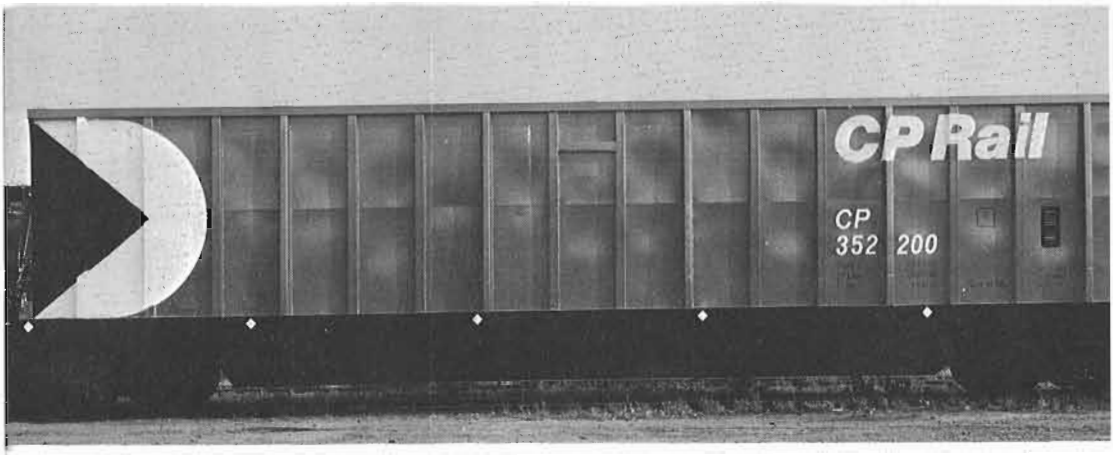
The four-unit pusher would come out of the train at Glacier and the eight remaining units and ROBOT would slide down the Illecillawaet River to Revelstoke and on to Eagle Pass. At Canoe,B.C., the line tops the ridge,on the other side of which lies Kamloops and the fairly level stretches of the North Thompson-Fraser River system.Logically,ROBOT and the four slaves will be dropped at ei-

ther Canoe or Kamloops. The four lead units can then take the whole train on to Roberts Bank,with no trouble. ROBOT and slave units can probably pay their way back to Golden on eastbound tonnage trains, by providing essential brake control,although the power component is unnecessary. Judging from power requirements,it is probable that there will be at least four ROBOTs,- three of which will be in service at any one time,with the fourth in reserve. Final power combinations will likely be decided after actual road-testing with the new units to be delivered in 1970 by MLW-Worthington,not forgetting the "experimental" single unit included in the batch of recently-ordered units.

At the western end of the Crowsnest-Roberts Bank run, a route must be selected from the main line of CP RAIL to Roberts Bank.The Prime Minister of British Columbia,the Honorable W.A.C.Bennett,always on the lookout for revenue for his Province is advocating the operation of this link by Provincially-owned BC Hydro Railway. CP RAIL would obviously prefer to do it themselves,since they handle the trains for the 600-mile lion's-share of the movement. CN, not to be left out of the competition,avers that since the Superport operation will be federal-government built and controlled, they will,of course,supply the railway service to the facility. Great

CP RAIL extra north 8712,aided by 8556,4471 and 4065,one mile north of Colvalli,B.C. on the Windermere Sub.This is along the route of CP RAIL's unit-train operation. Photo June 30,1968 by D.E.Wingfield.


NATAL



This is the sort of open hopper which will be doing a lot of moving to and from the Roberts Bank Superport, early in 1970. The multimark and inscription CP RAIL identify it beyond question. Photo courtesy CP RAIL.

Northern Railroad from the neighbouring State of Washington, having an historic interest in railway entrances to Vancouver, are also on the alert for transportation opportunities. Regardless of the outcome of these negotiations, CP RAIL has already sought and obtained operating rights over about 40 miles of track between Mission and the approaches to Roberts Bank, presently owned by Canadian National, BC Hydro and Great Northern.

Three routes from CP RAIL at Mission, B.C., have been proposed. Route 1 outlines the extension of an existing CN branch line, with appropriate upgrading. Number 2 suggests the use of BC Hydro right-of-way from a connection with CP RAIL, south of Mission and thence over a new line around Boundary Bay. Proposal 3 describes a new line from CP RAIL, across the Fraser River at Fort Langley, over the BC Hydro (ex BC Electric Railway) line and west on a new line, approximately parallel to BC Highway 10, the Ladner Trunk Road. Suggestions 1 and 2 are not totally acceptable to the ubiquitous conservationists, as they involve construction along river banks and seashores and are thus anticipated to interfere with wildlife in these areas.

Latterly, ROBOTs I and II of CP RAIL, being tested in the exacting conditions of Rogers Pass, seem to have proved out satisfactorily. Bugs were not absent however, on occasion, as several derailmnets were ascribed to the vagaries of radio-controlled slave-units. Nonetheless, when preliminary trials terminated in midsummer (1969), both the LOCOTROL and WABCO systems were declared to have been "satisfactory". From this neutral evaluation, it is difficult to say how successful they were, or which system will be selected.

Final details of the project are expected to become public piecemeal in the latter part of '69 and early '70. One thing is certain: 1970 will be a very interesting year for the Rocky Mountain railfan! Yes, very interesting!

CP RAIL's station at Natal, B.C., the east end of the unit-train operation for "Coal to Japan". Photograph September 20, 1968 by W.R.Linley, Ottawa.

THE REASON WHY.

Doug Cummings.

Any person not interested in railways and some who are, would have a number of mighty big questions to ask, when they discovered the two, genuine, live Shay locomotives, working around Vancouver Wharves, Limited in North Vancouver, B.C. Why in the world, in this modern day of diesels, should two Shay locomotives be considered practical?

Well, there are reasons.

Ten years ago, when Vancouver Wharves Limited opened, their first units of motive power were two small six-wheeled jack-shaft drive diesels, built in England ten years previously. Since a good deal of the traffic was potash, sulphur and copper concentrates, it was not long before these diminutive diesels were proven to be inadequate for the task of moving the cars and tonnages anticipated They might have been satisfactory for use in England, where cars and loads are smaller and perhaps for small jobs in Canada, but they were not the answer to the challenge of heavy work.

....continued on page 51

Pacific Coast Terminals' three-cylinder PC Shay no. 115 at North Vancouver, B.C. When Vancouver Wharves Limited first opened in North Van in 1959, they owned two small English jackshafted six-wheeled diesels of dubious power. In February, 1962, no. 115 arrived on the scene from Canadian Forest Products, where it was also numbered 115.

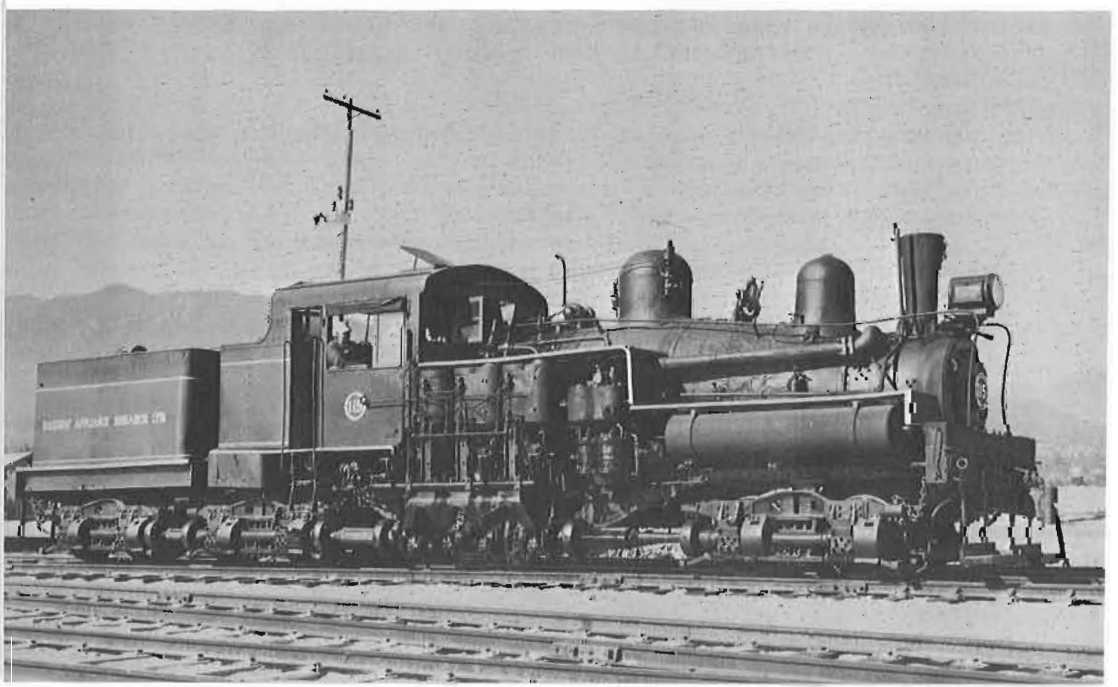
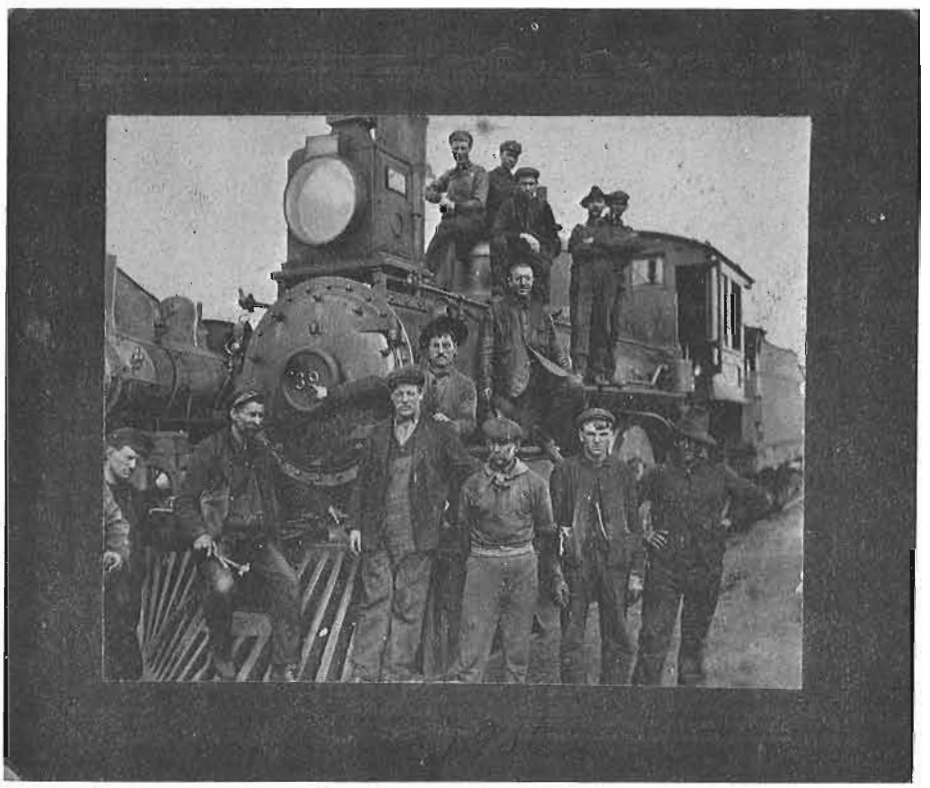


PHOTO MEMOIRS



Does anyone remember the day when the photographer came to Chalk River, Ont.? Yes, the roundhouse crew does, for they posed together with C.P.R. engine no. 39 on that sunlit day in 1906 and this is the result!
Photograph courtesy of the Leach Collection.

In the dear departed days of the splendour of steam, the station of the Canadian Pacific Railway at Ste-Agathe, Qué. rejoiced in not one, not two, but five (5) southbound steam-hauled ski trains. Some ingenious photographer took the time to preserve on film this truly epic scene.
Photograph courtesy of the Leach Collection.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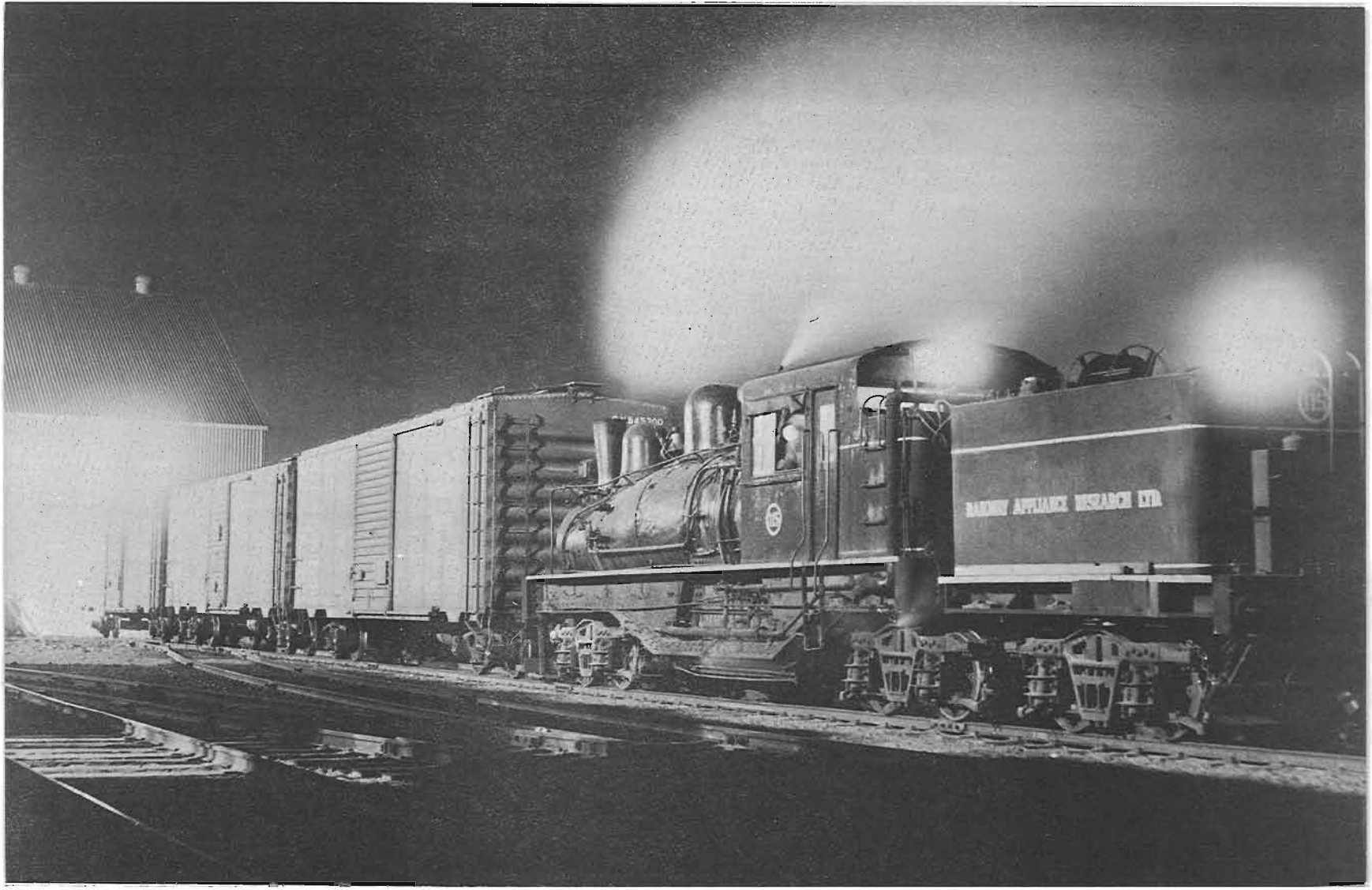

RAILWAY APPLIANCE RESEARCH LTD.

At this appropriate juncture,Mr. Robert E. Swanson, owner of Vancouver's Railway Appliance Research,Limited,purchased a Pacific Coast Shay locomotive,no. 115,from Canadian Forest Products on Vancouver Island and concluded an agreement with Vancouver Wharves for its use there. Several years later,a similar Shay locomotive was purchased from Western Forest Industries and became number 114.

A word about the "Pacific Coast" type of Shay locomotive might be of interest. This modification incorporated a number of improvements over the "ordinary" Shay. Some of these had been in use and some were new. The "Pacific Coast" was the first to incorporate all of these improvements and some were later adopted on non-P.C. Shays. Although most operators succeeded in individualizing these locomotives,the P.C. was a standard model of about 91 tons,classed as a 3-PC-13 in LIMA's stock-books. It had a new SHAY truck,new girder frame,piston valves,a new third-truck coupling method and a better method of mounting the cylinders. Of the many changes,this was considered the most important,- the cylinders,formerly mounted on the boiler,were now bolted to the frame. Of equal importance to some authorities was the new girder frame with its open side,permitting easy access to the firebox staybolts. The cab was also set further back on the frame and is very roomy. Moreover,there were dozens of minor detail changes and the result was something like the transition from a Mini-minor to a Rolls Royce!

The agreement between Mr. Swanson and Vancouver Wharves was obviously an aimable one. Vancouver Wharves needed "power"and the Shays prooved equal to the challenge. Switching in the area of the car-dumper,the ever-present dust is not exactly the healthiest thing in the world for diesels. Considerable trouble is often encountered with keeping relays and other electrical parts clean, not to mention obvious problems of air filtration,to prevent ingestion of chemical dust.

The two Shays proved to be very efficient machines for the work involved. The dust,rising from the dumper and settling on lubricated surfaces can be quickly and easily neutralized by a wiping and the application of more oil on the motion.The easy accessability of the Shay's motion helps considerably. A rubdown or wash of the superstructure removes all of the chemical dust and there are no engine air-intake filters to worry about. With their tremendous starting power,the Shays are ideal switchers,developing plenty of power at low speeds and capable of shoving long trains of heavily loaded hoppers,both open and covered,with comparative ease.

In 1964,I spent some time firing the 115 before the 114 appeared on the scene. No. 115 was not long from an overhaul at

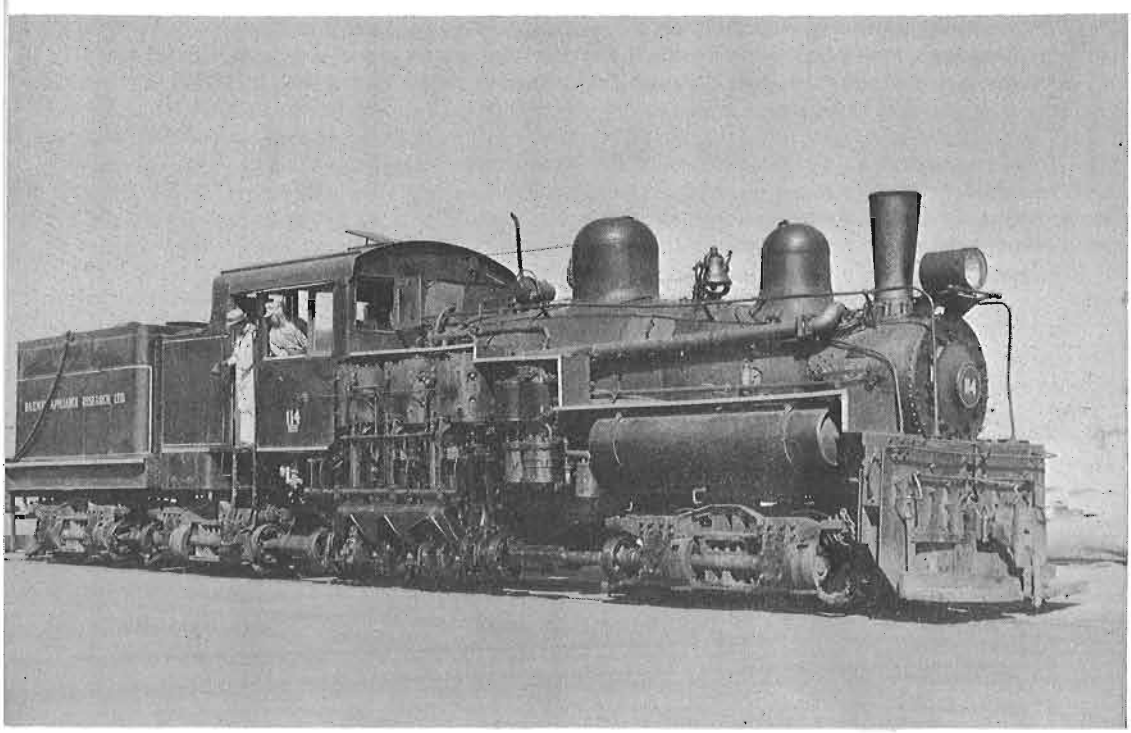
Railway Appliance Research Limited's PC Shay no. 115,working for Vancouver Wharves,Limited,North Vancouver,B.C. on January 22,1963.The Shay, with its tremendous starting tractive effort is an ideal switcher.
Photo kindness D.E.Cummings,Vancouver, B.C.

the time and was a very good steamer. The 114 was purchased to protect the 115 and to provide a second locomotive for those times when it was necessary to operate two Shays at once. The tonnages handled through Vancouver Wharves have increased steadily and whereas no. 115 at first only operated as required to unload a ship,perhaps only every few weeks,many times since it has worked round-the-clock and day-in,day-out. With two locomotives available maintenance can be scheduled better and the second Shay fired up when the first comes due for minor work or a wash-out. This means that between-shift repairs do not have to be rushed and loading of a ship is not delayed while emergency repairs are made.

Vancouver Wharves has since bought an 80-ton G.E. diesel, and more recently,an S-3 MLW,both from Canadian National. In the last ten years,the growth of Vancouver Wharves has been utterly phenomenal,- a real success story,from gravel beach to a bustling bulk terminal,with several miles of trackage. None the less, the Shays continue to perform the heavy work.

This summer or next,when you visit Vancouver,be sure to look across Burrard Inlet to North Vancouver. If you see a faint haze of smoke or hear an old,familiar sound,you can be certain that it is a genuine,Pacific Coast Shay in operation and that's not bad for 1969!

Railway Appliance Research Limited 3-cylinder PC Shay no. 114 was formerly Western Forest Industries Limited's no. 5. RARL is the property of Mr. Robert E. Swanson,developer and marketer of railway locomotive accessories,principally air-horns and whistles. No. 114 was photographed at North Vancouver,B.C.,August 17,1968. Photo courtesy D.E.Cummings,Vancouver.



A THING OF BEAUTY

Canada's "Dorchester"Modelled in 3½" Gauge.

Duncan Heriot.

The "Dorchester" - Canada's first steam locomotive for a public railway,the Champlain and St. Lawrence Railroad,is alive and well and will soon be living at the Ontario Science Centre in Toronto. When the Centre opens in September,1969,visitors will be treated to the remarkable sight of Canada's first tiny steam locomotive alongside a Canadian National "Northern" - a giant of the last days of steam. Both locomotives are models in 3½"-gauge.

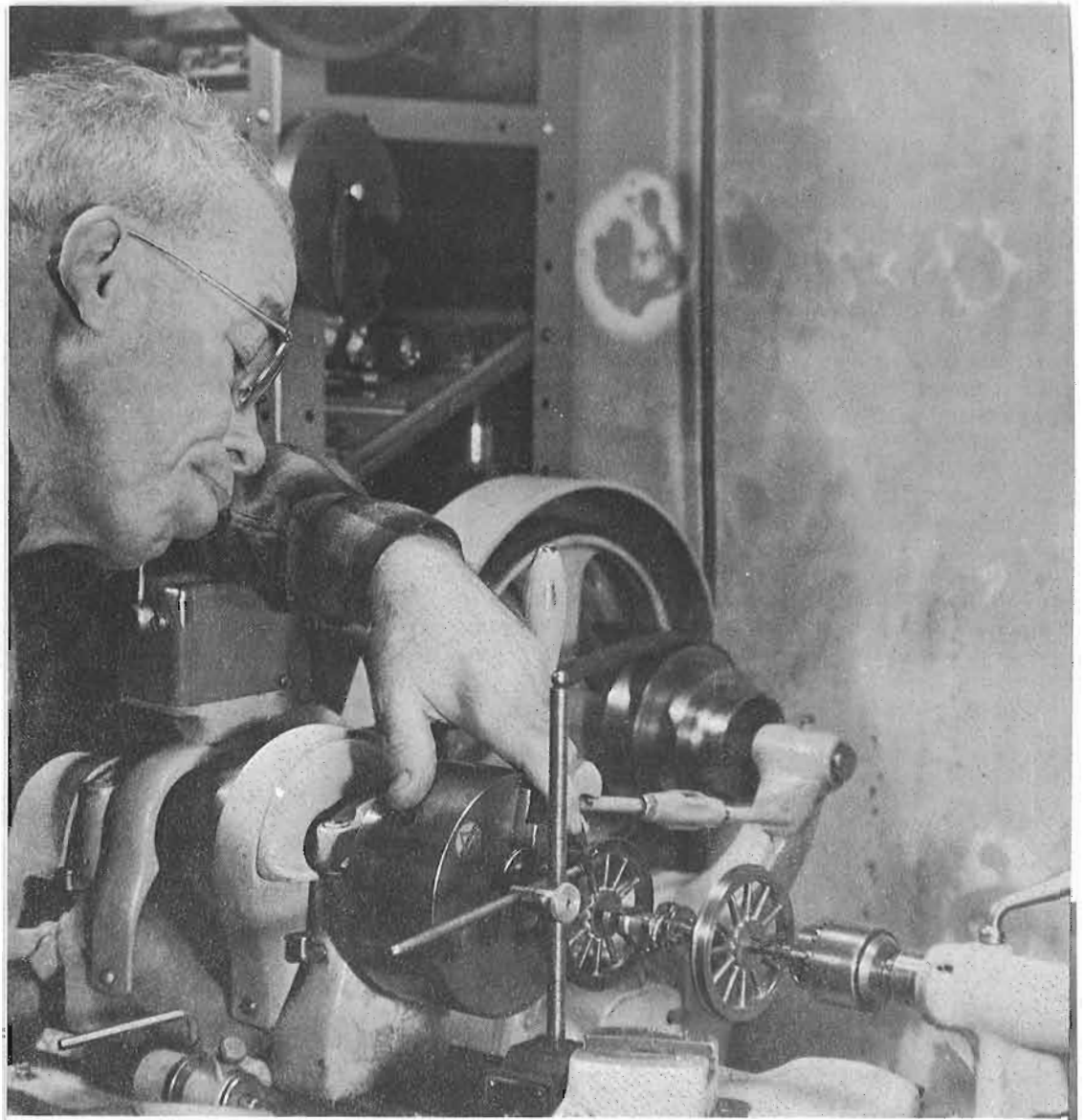
The exquisite model of the "Dorchester" is the work of Mr. Harry Allin,well-known Canadian locomotive modeller of Bowmanville,Ontario. Mr. Allin has designed and built the model to operate on a few pounds of compressed air.

Construction of the model occupied about ten months of Mr. Allin's on-and-off time. The "on" time was 50% devoted to the essential research and sketching and the "off" time was spent in making rolling stock for his 7¼"-gauge locomotive,as a relief from the minute and exacting work required in the building of the "Dorchester".

Harry had only recently finished his "Centennial 4" model,- a personal Centennial Project,in the form of a 7¼"-gauge 4-4-0,the prototype of which had been built in Toronto and operated between Toronto and Aurora at the time of Canada's Confederation (1867). He had then rebuilt a 7¼"-gauge Great Western Railway (England) single (2-2-2) that had been modelled by an English engineer,resident in India about 1884. This included a new boiler to replace the soft-soldered original. This rebuilt locomotive has since been run on several 7¼"-gauge tracks in Ontario.

A reproduction of an artist's painting in a history of Canadian railways gave Harry the idea of adding the "Dorchester" to his list of accomplishments. He began the search for structural details,a very difficult task,by itself.

As most students of Canadian railway history are aware, it is only in recent years that some very important points about the "Dorchester's" history have been fully explained. Harry was confronted with a succession of similar voids in the mechanical story of the locomotive.It was very fortunate that Harry's many friends at the Ontario Science Centre could provide a considerable amount of information about the locomotive. This information was amplified and authenticated by Mr. Omer S. Lavallée of Canadian Pacific Railways in Montreal. Mr. Edward Phipps-Walker of Kingston,Ont.,a long-time friend of Harry's and a dedicated steam-locomotive enthusiast,came up with a real "gem" in the form



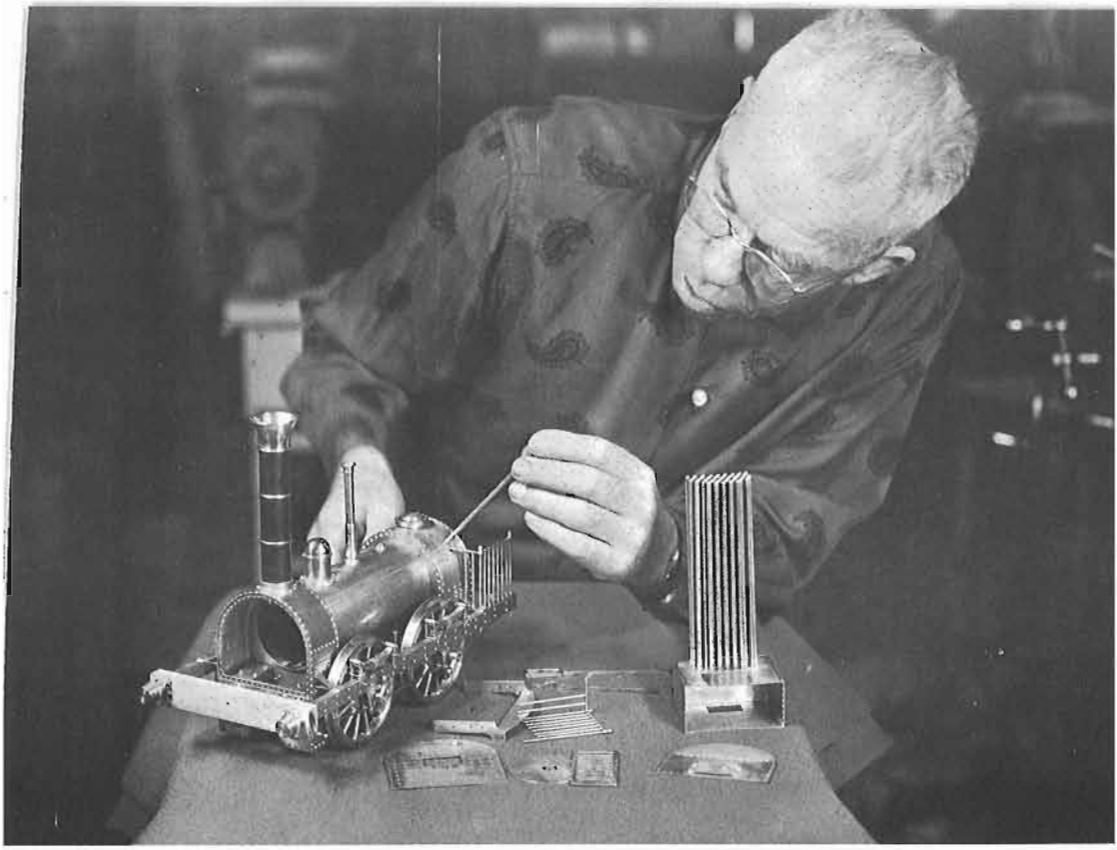
of an article on the "Dorchester's" Planet-type valve gear from a 1915 issue of the modellers' "bible",the English magazine,MODEL ENGINEER.

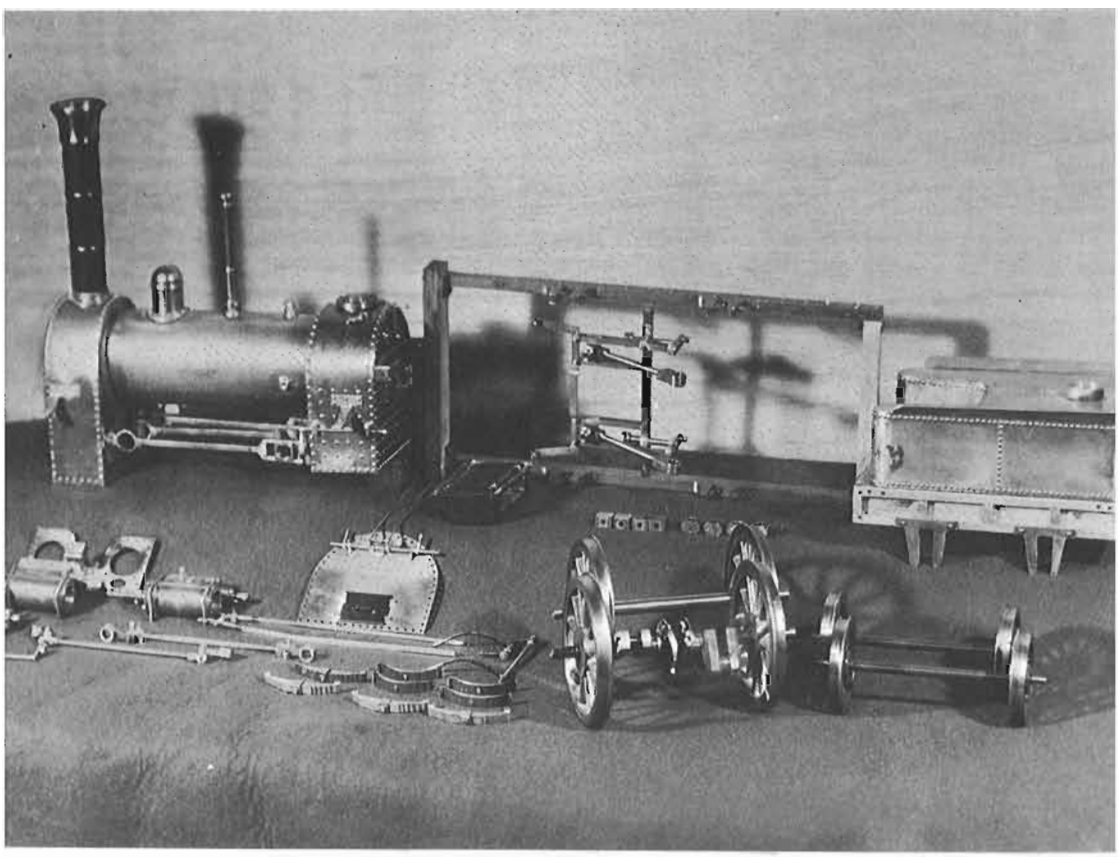
Builder's records from Robert Stephenson and Company of Newcastle-on-Tyne,England,proved succinct in the extreme. The locomotive was no. 127 in their production schedule,was of the "Planet" type,weighed six tons and was delivered in Canada in 1836,-this information being hardly the equivalent of a works erection drawing!

↑ Concentration plus precision! Down to the last thou',and Harry's drivers are turning as smooth as silk!

↗ Boiler tubes,guard rails,all precisely machined.Now for a trial assembly.

→ An "exploded" view of the "Dorchester's" components,prior to assembly.





However,when all of the available information was at hand,this,coupled with Harry's broad knowledge of the history of locomotive design,added up to a reliable basis from which to start. Some of the available drawings,whose originals had been published in 1838,a considerable time before the days of photoengraving,provided an interesting challenge in interpretation. They reflected more the artistic abilities of the engraver,than the discipline of an engineering draughtsman and had to be re-drawn to bring the machinery into workable associations.

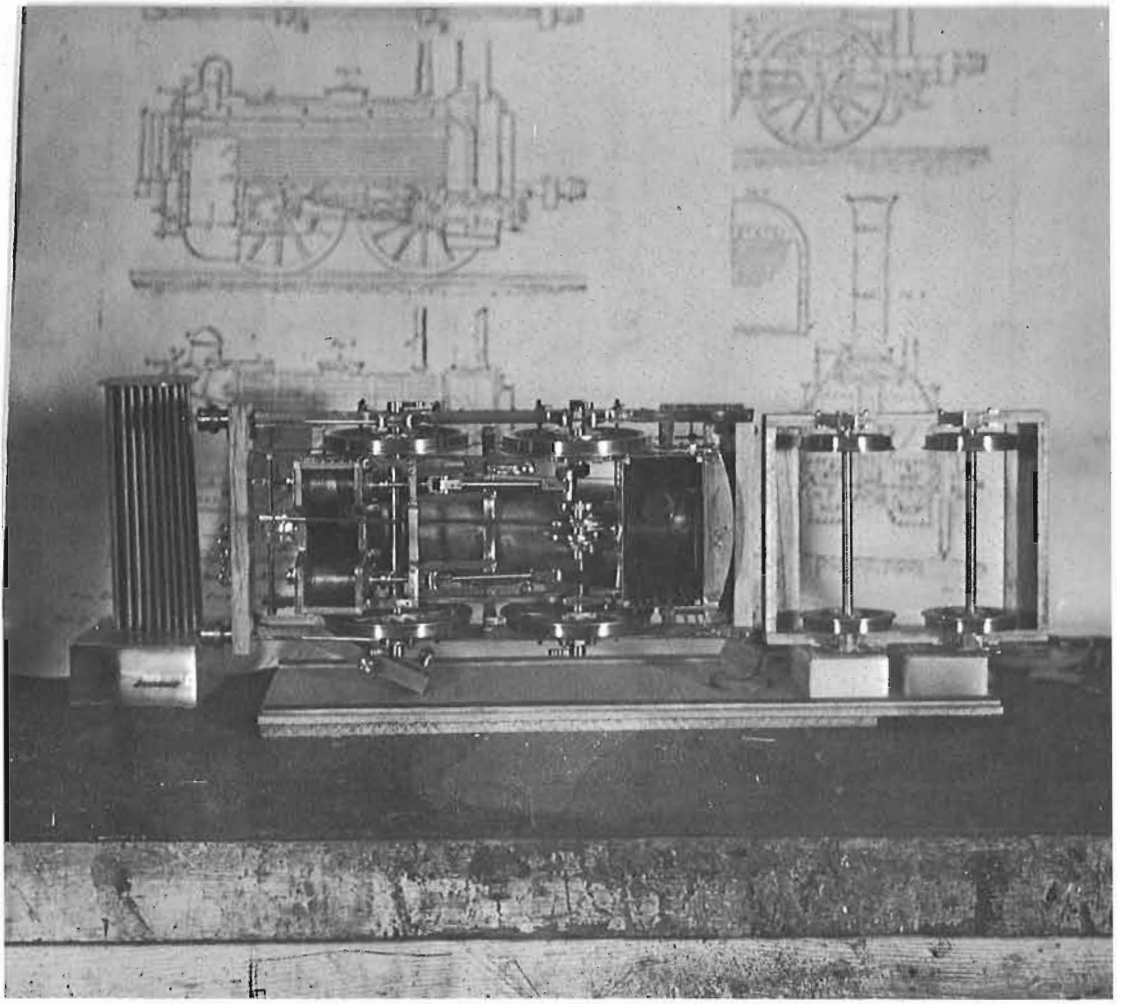
In the course of his contacts with his engineering friends at the Science Centre,Harry was introduced to a new concept. How would he like to produce a model of a locomotive for the Science Centre ? Well now,this was a matter for some reflection. To build a working model of a steam locomotive was one thing. To build an authentic model,correct to the last detail , capable of operation on a few pounds of compressed air,with the right number and correct size of every item,was quite another!

The final decision to build the model to "museum" standards was largely influenced by Harry's conviction that,once the first "experimental" model was built and working,a second steam version would be relatively straightforward to construct. And so working sketches in $3\frac{1}{2}$"-gauge were started and the outlines of the "Dorchester" began to take shape.

For the first model,the relative strength of scale-sized parts was now of reduced consequence. If the working conditions presupposed the use of high-pressure steam,this was now no longer a consideration. The principle metal used,therefore,was brass,including the boiler,tubes,plates,firebox and smokebox.Many of the complex iron castings of the original locomotive were fabricated in pieces and silver-soldered together. Hours of repeti - tive work were involved in making rivets and bolts. The several-hundred rivets needed could not be found commercially in the correct size and so they had to be shaped in the lathe. The hexagon-headed bolt,for which model stock is readily available today, had a limited use in the 1830's and was not used on the "Dorchester". Harry's answer to this particular problem was to mill square- section strips of steel to size,turn,thread and part off.

Among model engineers,there is a saying that "if you need more than one,make a jig!" So it was with the four driving wheels. Each has 16 separate parts. The 48 spokes required, are round where they fit the wheel-hub and tapering-oval in cross-section at the rim. This is a considerable exercise in neat lathe work. All of the parts of each wheel were carefully assembled in a jig and silver-soldered into a solid unit.

The connecting rods are attached to their cranks through split bearings and locked in place by slotted straps,secured to the rods by keys and wedges. Crossheads slide in guides and

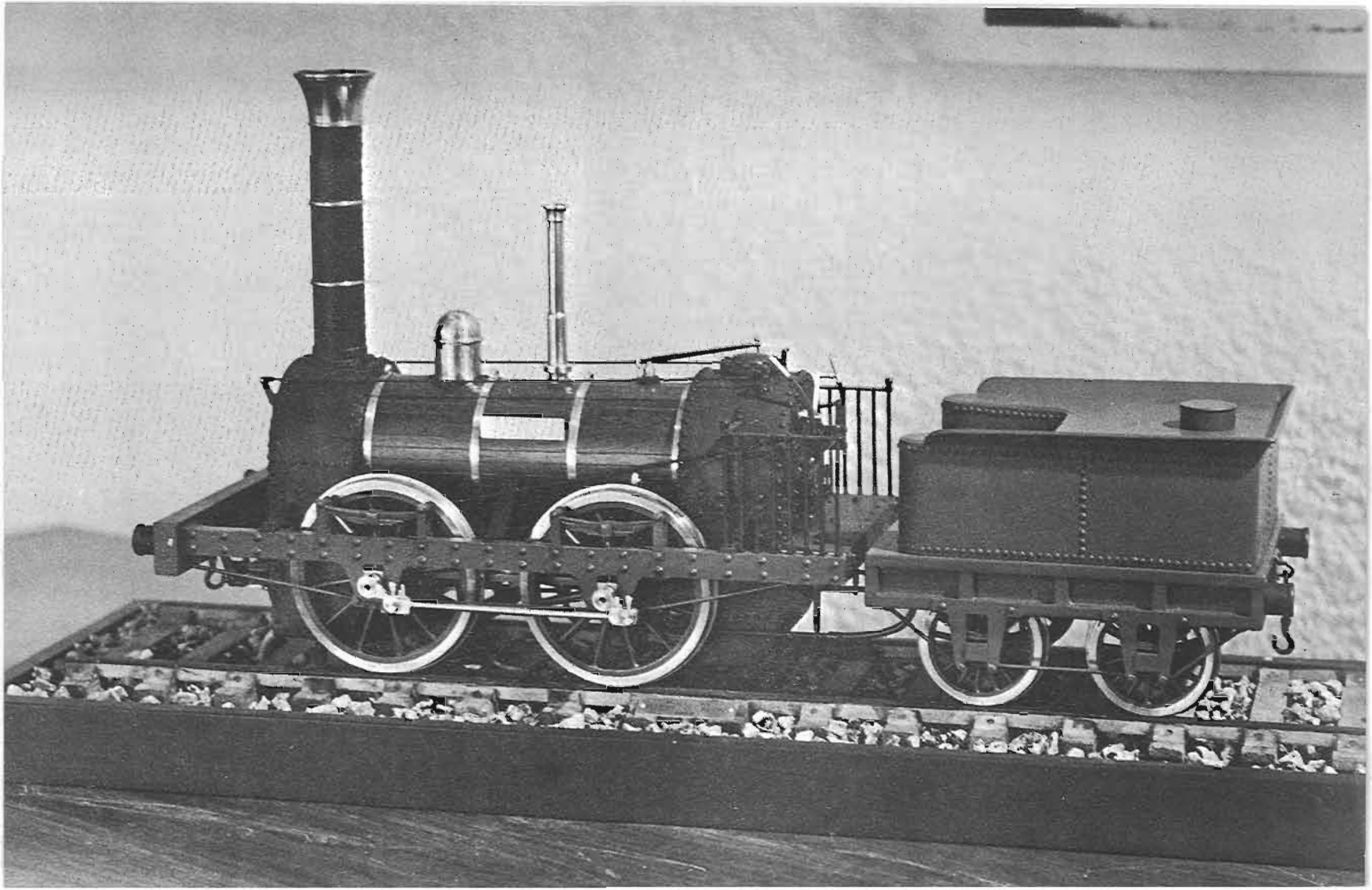


A view of the "Dorchester's" works from below; pistons, connecting rods and piston rods all clearly defined. The firebox, flues and smokebox plate assembly is pictured on the left.

are used to drive the twin boiler feed-pumps. Pistons are 9/16" in diameter with a 1" stroke.

Slide valves are used, driven by rocker-arms on cross-shafts, mounted in front of the cylinders. The eccentric rods have yokes, formed at the rocker-arm end and may be engaged or disengaged from the rocker-arms by rod and lever arrangements, operated by the engine driver. Eccentrics are free to move on the driving axle and may be engaged with studs to the left or right by a treadle arrangement on the footplate, to pick up the timing, for either forward or backward motion. Eccentrics are split and held in place by bolted-on side plates.

Two levers, mounted on the boiler backhead, connect through long rods to the valve rocker arms. When the engineer, or more correctly, the driver, was ready to move the locomotive, he would first disengage the eccentrics with the foot-treadle. Then he would lift the eccentric rods from the valve rocker-arms, crack the throttle (regulator) and move the valves manually, by means of



the boiler-backhead levers to admit steam to the correct ends of the cylinders,so that the piston rods would "crank" the driving wheels in the desired direction.

After the locomotive was moving,the driver would engage the eccentrics with the appropriate axle stud,by stamping on the foot-treadle,then lower the eccentric-rod yokes onto the valve rocker-arms. Speed control was obtained through the regulator or throttle on the boiler backhead. The backhead valve levers, which would continue to move in time with the valve mechanism,must have provided the driver with an interesting occupational hazard.

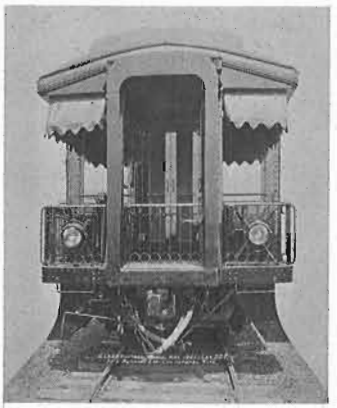
The story of the original "Dorchester" has been well-chronicled in the pages of CANADIAN RAIL. The locomotive arrived in Canada from Newcastle-on-Tyne in the spring of 1836 and,due to the accidental burning of some of the boiler tubes,limped through its inaugural run in July of that year. It was worked between La Prairie and St.Johns,Quebec,during the summer seasons,until 1849, when it was sold to the Industry Village Railway on the North Shore of the St. Lawrence,some distance east of Montreal. It continued to haul trains on this line until 1864,when a boiler explosion caused so much damage that the veteran engine was scrapped.

Harry Allin's model of the famous "Dorchester",complete with 4-wheeled tender,will be exhibited at the Science Centre on a length of track similar to that used on Canada's first public railway in 1836. This was constructed of longitudinal square timbers,topped by long iron strips,which were held in place by spikes. Although wild stories are told of the unpleasant circumstance where one of these rails "peeled" off the timber base,with accidental penetration of the carriage floors,only one fatality,due to this cause,has ever been recorded. Obviously,the repeated passage of the engine and train caused the spikes to work loose, but good preventive maintenance kept these primitive rails in a condition to carry the light-weight trains of the time.

Visitors to the Ontario Science Centre will be able to visualize the very beginnings of steam-locomotive transportation on Canada's railways. This was the power that did so much to unify the nation's vast land mass.

Meanwhile,it is fairly safe to say that Harry Allin's modelling friends will see,some day soon,a second model of the "Dorchester",probably in $7\frac{1}{4}$"-gauge,performing under steam on the thousand-foot-long track which he is planning to build at his new home.

The Thing of Beauty! Harry Allin's completed 3/4 inch-to-the-foot scale model of Canada's first locomotive on a public railway. The model operates on compressed air. Photo courtesy Ontario Science Centre.



OBSERVATIOS

WITH F.A.KEMP

1970: A NEW YEAR - A NEW DECADE - AND A NEW CN TIMETABLE.

Canadian National Railways has taken the unprecedented step of issuing a new system passenger timetable,taking effect January 7,1970,apparently intended to cover the full year. There are substantial service changes,especially in the Maritime Provinces and western Canada,mainly due to the elimination of some trains and the re-routing of others. The PANORAMA,Trains 5 & 6, between Winnipeg and Vancouver and the CHALEUR,Trains 16 & 17, between Montréal and Moncton,N.B.,were the principal trains discontinued , but service cuts also affected the Halifax-Truro,Saskatoon-Regina, Saskatoon-Prince Albert and Québec-Chicoutimi lines,as Trains 601-602 (old numbers),680-683 (Saskatoon-Regina portion) and 681-682 (Saskatoon-Prince Albert,Sask.portion) were discontinued and 176-177 was again reduced from tri-weekly to once-weekly operation until April 26,although the Québec-Rivière à Pierre line now is served by mixed trains 275-276 on the other two days.

The removal of the CHALEUR has resulted in the OCEAN , Trains 14 & 17,resuming the original route via Campbellton,N.B.instead of the Edmunston route,on which it replaced the CABOT late in 1967. The Matapedia-Gaspé portion of the CHALEUR,Trains 118-119 continues to operate,but through cars run from Montréal and Lévis on Train 12,the SCOTIAN,returning on Train 15,the OCEAN. This, in turn,required rescheduling of the Halifax-Truro-Sydney services,as through cars formerly carried from Sydney to Montréal on Trains 19 and 15 are now run on Train 11 from Truro.

RAILINER 603 has reverted to its early departure time from Sydney,N.S.,in order to connect with Train 15 at Truro.RAILINER 605-606 was renumbered 601-604 and retimed 40 minutes earlier to connect with Train 12 at Truro. The Halifax-Sydney service formerly provided by RAILINERs,connecting at Truro with Trains 18 and 19 is now supplied by "connections" between Trains 15 & 18 and between 19 & 12,the latter allowing 2 hours and 15 minutes for a leisurely dinner in Truro!

The Edmunston "shortcut",so suddenly bereft of its first-class service after only three years,now is supplied with daily RAILINER services to Montréal and Moncton. The cars of Trains 616-617 are handled at the rear of Trains 122-123,between Montréal and

Charny,Qué. Trains 618-619,between Edmunston and Moncton,N.B.,have a similar schedule to the tri-weekly services which existed before the CABOT began operation,but the connections of Train 618 leave much to be desired. "Regular S.M.T. bus service" between Fredericton and Newcastle,N.B. has replaced the CN charter service to and from McGivney and the lengthy connection times only serve to point out the exasperation of passengers trying to make train-bus connections at most points in Canada. Fredericton,the capital of New Brunswick,is getting a raw deal,as usual! No wonder people drive cars!

The matter of connections,- or lack of them,is also evident in other portions of the new schedule. In Newfoundland, Trains 203 & 204 are shown as carrying passengers between Deer Lake and Badger. While Train 203 has a fairly convenient connection from ROADCRUISER 511 at Badger,passengers leaving it at Deer Lake must wait 2 hours and 23 minutes for ROADCRUISER 507 to come along. Train 204 is somewhat less convenient,as its departure time from Deer Lake is 14 hours and 30 minutes after ROADCRUISER 512 disappears into the swirling snow,while passengers detraining at Badger have only 3 hours 30 minutes to await the welcome headlights of ROADCRUISER 518!

The reduction in service between Saskatoon,Regina and Prince Albert,Sask.,has made a continuous rail journey between Regina and Prince Albert impossible and passengers must either spend all day in Saskatoon or continue their journey by bus,utilizing an optional ticket-honouring privilege which is now available. This may not be so easy however,as the station in Saskatoon is more than five (5) miles from "downtown" and the bus terminal. Another snag in connections will surely arise during the period when Daylight Saving Time is in effect in other parts of Canada (but not in Saskatchewan or Alberta). This will cause Train 1 (westbound SUPERCONTINENTAL) to arrive at Saskatoon at 0810 and leave at 0835, but Train 680 does not arrive until 0910 and Train 681 not until 0905. No alternative schedules are shown,although this has been done in the case of Trains 1 & 2 and the Winnipeg-The Pas,Toronto- Chicago and Detroit-Chicago services,also for Jasper-Prince Rupert Trains 9 & 10,which resume daily operation June 19 to September 12, 1970. A separate Toronto-Vancouver section of the SUPERCONTINENTAL (Trains 3 & 4) will operate June 17-September 9 westbound and June 19-September 11,eastbound. This train will feature "Scenaramic " cars between Toronto and Vancouver,the first time they have been run through to the east in regular service. All of the six available cars will be required for this run and Trains 1 & 2 will be without them during the summer of 1970. For the remainder of the year,they will run from Edmonton to Vancouver on Trains 1 & 2.The "Skyview" lounge-sleepers will run in Montréal-Gaspé service,while the CHALEUR is in operation next summer (June 24 to September 9), but their assignment during the rest of the year is not shown in the equipment tables.

CP RAIL GETS THEIR GALLERY CARS. The first two of the nine "gallery" cars,- otherwise suburban coaches,on order from Canadian Vickers Limited,were delivered late in December,1969 (for the second time),but were not placed in service immediately. CP RAIL has stored them at Glen Yard,Montréal and is testing the heating and air-conditioning systems,while awaiting delivery of enough additional units for a complete train of four or five,including a control car. The first two cars,numbered 920 & 921,are of the traditional design first introduced on the Chicago and North Western Railroad in 1954. They are of stainless-steel construction, with an "action red" stripe below the upper windows. They ride on two four-wheel,cast-steel trucks of orthodox design,which should provide a comfortable ride. Electrically-operated sliding doors enclose the roomy centre entrances. Other doors permit entry into the passenger compartments at either end.

Double reversible seats are on the lower deck,which slopes upward at the ends of the car,- the floor being slightly depressed to allow sufficient headroom on both levels. Spiral stairways permit access to the galleries on each side of the car,just inside the entrance doors. The gallery seats are single reversible except at the ends,where inward-facing bench seats are provided. Windows are positioned for each pair of seats on each level; they are double-glazed and sealed,with rounded ends. Power for lighting, heating and air-conditioning is furnished by a diesel engine and 220-volt generator on each car,making steam-heating unnecessary.

After several days of indoor testing,one set of United Aircraft Company's TURBOTRAIN made a trial run from Montréal to Cornwall and return on January 8,1970. No details of this test run with the re-engineered train set were immediately available,but it is reasonable to suppose that the results are being carefully studied,particularly with regard to the effects of low temperatures on the fresh water and compressed air systems,main causes of the original failure in revenue service.UAC is hopeful that TURBO may be re-introduced in service in the spring of 1970. The TURBOTRAIN departed from CN's Central Station,Montréal,about 1800 and was observed at Dorval,Qué. at about 1830,passing at speed (60 mph) much to the surprise of passengers awaiting regular CN trains. The original TURBOTRAIN service was cancelled almost exactly a year ago ,- on January 6,1969.

UAC engineers have,in the interval,made many design modifications,including complete insulation of the fresh water system, changes in valves to stop freezeups and much rewiring. The interior noise level was also reduced.CN officials confirm that cold-weather tests will extend to points well beyond the Montréal-Cornwall run, certainly as far as Toronto and possibly as far north as North Bay. CN officials are careful to point out that TURBOTRAINs are completely under the control of United Aircraft Company at the moment with CN providing facilities for the tests as well as information pertinent to their role in rail transportation.

The TURBO trainset which has been re-engineered and is being used in the current test programme is that with power car numbers P-101-P-201 (old numbering),presently numbered CN 126 & 151.

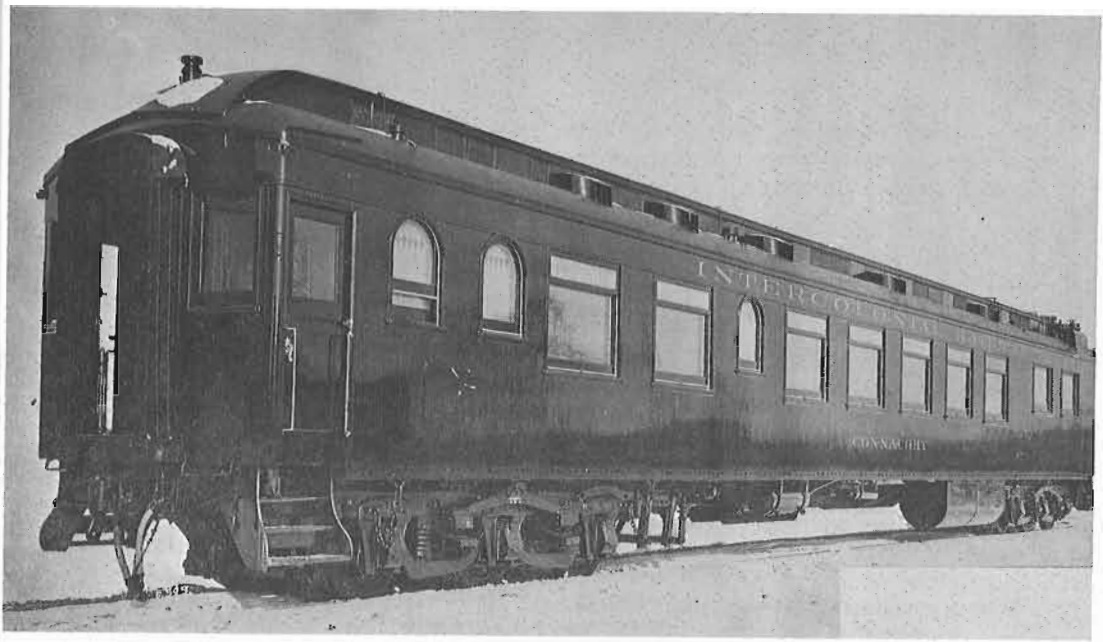
New England rail carrier,the Boston and Maine Railroad, continues to be plagued with a rash of wrecks in their freight-train operation. Most recent derailment on January 7,1970,occurred in the Deerfield Valley of western Massachusetts,between the communities of Charlemont and Zoar,Mass.,just east of the famous Hoosac Tunnel. 29 cars of a 91-car freight were derailed,- five of the former containing flammable liquids,such as propane. There was no fire subsequently and examination of the cars showed that they had not been cracked or perforated.

Nearer to Montréal,Canadian National's TEMPO Train 151,- 1710 from Toronto to Sarnia,Ont.,travelling at approximately 50 mph through the suburbs of Toronto,split the switch of an industrial siding,resulting in the derailment of the last cars of the train. It was fortunate that there were no fatalities. The diesel engine and the first car stayed on the main line,but the second passenger car led the remaining cars into the siding of the Dominion Cellulose Company,overturning a propane gas tank in the process. There were 125 passengers on Train 151. The derailment occurred about three miles east of the point where,on April 20,1969,Sarnia-bound TEMPO ran through an open switch to an industrial siding and derailed , with 30 injuries and 2 fatalities. Mr. John Noel of CN's Public Relations Department said that the cause of the derailment was not immediately known,but it could have been that the switch was split by the wheels of the leading truck of the second passenger car.

Good Old 1969 was in the final expiration process when things started happening on the railways around Montréal. Northbound Delaware & Hudson's New York-Montréal night sleeping car train was derailed at Willsboro,N.Y.,on the morning of December 26 and passengers were bussed northward to Plattsburgh and thence by train to Montréal. Contrary to Montréal newspaper reports, the derailment of the front truck of the lead PA-1 on Train 9 did not result in the loss of the engine's wheels!

In the middle of January and in the face of passenger train power shortage, D. & H. leased 4 EMD E-8's from Erie- Lackawanna Railroad,since the cold,snowy conditions required operation of both the PA-1's and E-8's in pairs,in order to maintain schedules and keep the trains heated. Although D. & H. has 4-4000-series RS-2's equipped with steam generators,their use on regular New York-Montréal passenger trains would have left these same trains without motive power protection at Whitehall and Rouses Point and an engine failure would have subjected passengers to a luke-warm if not cold ride either way. The E-L E-8's ran in pairs, numbers 815 & 822 and 814 & 816 twinning for the service.

Intercolonial Railway Company's sleeping car "Connaught": Lot 169 from Canadian Car & Foundry's Turcot Works,February 5,1913.



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