

Early Vancouver

Volume Five

By: Major J.S. Matthews, V.D.

2011 Edition (Originally Published 1945)

Narrative of Pioneers of Vancouver, BC Collected During 1936-1945.

Supplemental to volumes one, two, three and four collected in 1931, 1932 and 1934.

About the 2011 Edition

The 2011 edition is a transcription of the original work collected and published by Major Matthews. Handwritten marginalia and corrections Matthews made to his text over the years have been incorporated and some typographical errors have been corrected, but no other editorial work has been undertaken. The edition and its online presentation was produced by the City of Vancouver Archives to celebrate the 125th anniversary of the City's founding. The project was made possible by funding from the Vancouver Historical Society.

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**MEMO OF CONVERSATION WITH W.R. LORD, ESQ., PIONEER OF GASTOWN, 5 OCTOBER 1882,
AT CITY ARCHIVES, CITY HALL, VANCOUVER.**

(Note: United States S.S. *Shubrick*, W.R. Lord, and his brother, Harry C., are referred to in Lewis and Dryden's *Marine History of Pacific North West*, p. 84, 101, 193, 337, 407, 478.)

S.S. BEAVER.

Major Matthews: Good morning, Mr. Lord, just the man I am looking for. The *Beaver*, you know the *Beaver*, there's an article been written about her (in the *B.C. Historical Quarterly*, July 1938, p. 168, 182) which says she had a working pressure on her boilers of only two and a half pounds to the square inch. What do you think?

Mr. Lord: (deliberately) "Two and one half pounds could not be a working pressure; there is no power in two and a half pounds even although it is a low pressure cylinder."

Major Matthews: Maybe. I think it was Capt. Pamphlett who said twelve and a half.

Mr. Lord: "She was what was called a beam engine boat. The engine stood perpendicularly; you see, it says here in this letter that the second person says she could run when her gauge showed no pressure whatever. That would be impossible. How could they start? The engine has got to work a while before they get any vacuum at all. I doubt if she would move at two and a half pounds. How is she going to turn over her wheels in the water with two and a half pounds? How overcome the water resistance against the paddles?

"My brother was chief engineer on the United States ship *Shubrick*, a lighthouse tender, she's shown in Lewis and Dryden's book; so is my brother, and so am I; I went with him from Olympia to Astoria; I was just a passenger; she was running all the time at 40 pounds, but when we were landing, I noticed the gauge did not show any pressure; she was working on a vacuum while she was landing; that is, there was no pressure showing on the gauge, but then, she *had the vacuum* because she had been running, and in her running she had created the vacuum. If there was the least bit of a leak around the piston there would be no vacuum. If she was perfectly tight, she would *hold her vacuum when not running*.

"But, if she had no vacuum, what would she start on? Not on two and a half pounds.

"The steam exhausted into a condenser, a lot—hundreds—of little brass tubes inside a cast iron casing, and cooled off with circulating water pumped out of the sea, and circulating over the outside of the little brass tubes inside which the exhaust steam was flowing. The piston is pushed out to the end of the stroke by the steam direct from the boiler, and the opposite vacuum port opened when the piston was out to full stroke, the vacuum valve opened, and the vacuum sucked the piston back up, or down, whichever it was.

"Steam was working on one end of the piston, and the vacuum on the opposite end of the piston.

"Then, when the pump took the condensed water out of the brass tubes and delivered it back into the boiler, that created the vacuum. One inch of vacuum is equivalent to half pound pressure."

Major Matthews: How many inches could they get?

Mr. Lord: "It's a long time ago; I'm not sure; but the vacuum on the *Shubrick* was twenty-five or twenty-six inches, but everything would have to be perfectly tight to get that. I was told recently, by Mr. Anderson, who is now chief engineer of the *Princess Elizabeth*, that he has known of twenty-nine inches."

Major Matthews: What about 784 pounds of coal per hour?

Mr. Lord: "I shouldn't wonder. But I don't see how the *Beaver* could ever work on two and a half pounds. I was a marine engineer on two boats on the Columbia River, and three boats here—all before 1895." (See Lewis and Dryden.)

Mr. Lord: (continuing) "The way I claim they had no vacuum to start with, is because the air pump on these beam engines is worked off the main engine. I don't know what a 'D' valve is, but I'll tell you how they work.

“These engines are only singles engines, and the crank is on a paddle wheel, and you’ve got to overcome that pressure before you can turn her over at all. In starting the engine, they would work the valve with a bar; they watched the crank until it got into a certain position, then they opened the valve by hand with a bar until the boat is in motion, then they hook the valve onto the eccentric and after that, the eccentric automatically opens the valve. How could they start up if they had no pressure in the boiler, and two and a half pounds is not sufficient to start paddle wheels in the water.”

Major Matthews: How many times would you manhandle the valve with the bar?

Mr. Lord: “It all depends upon how long it took her to get speed up after she left the dock. If they were successful in getting her away from the dock it would not take long—it would depend upon the number of times she had to back and fill—getting away; if she got straight away it would be, well, all of twenty turns. You see, as soon as she gets out of dead water, the wheel is helping the crank over, and as soon as they get speed enough, then they hook onto the eccentric.”

Major Matthews: How do they hook?

Mr. Lord: “Just lower the eccentric strap onto the eccentric.”

Major Matthews: Tell me a bit about the engine.

Mr. Lord: “Well, she had a great big cylinder set perpendicular with the piston out of the top, and the exhaust out of the bottom. The steam was fed in through two ports, one top and one bottom, on one side of the cylinder, and opposite, on the other side of the cylinder were two vacuum ports, one top and one bottom. The exhaust steam was piped to the condenser tubes, cooled with flowing sea water, and the vacuum thus created was piped back to the vacuum ports on the cylinder, and sucked the piston back.

“The piston was attached to one end of the rocking arm by a crosshead, and short connecting rod to the arm, or walking beam, and the walking beam oscillated on a shaft, and the other end of the walking beam was attached by a connecting rod to the crank on the main shaft, and the wheels were on the outboard ends of the main shaft.

“The eccentric strap dropped down on the eccentric on its shaft. When working with the bar, the eccentric strap was raised off the eccentric; when in motion, it was lowered. There was a groove in the strap, and a tongue on the circumference of the eccentric (to prevent lateral motion) and the eccentric strap fell on the eccentric of its own weight—it had weights added to the end—and when in motion, open both steam and vacuum valves.”

Major Matthew: How about oil? What did you swab the rod with?

Mr. Lord: “Tallow, set around, and packed up against the rod, and dogfish oil on the shafting, or lard oil, but lard oil was so expensive. Never used lard oil or dogfish on the rod.

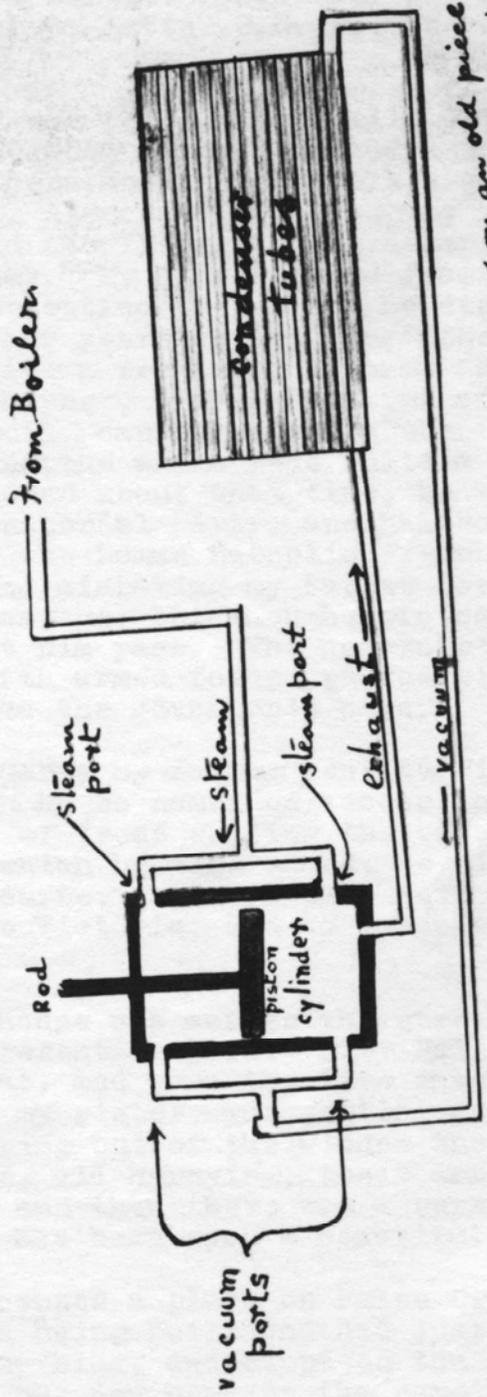
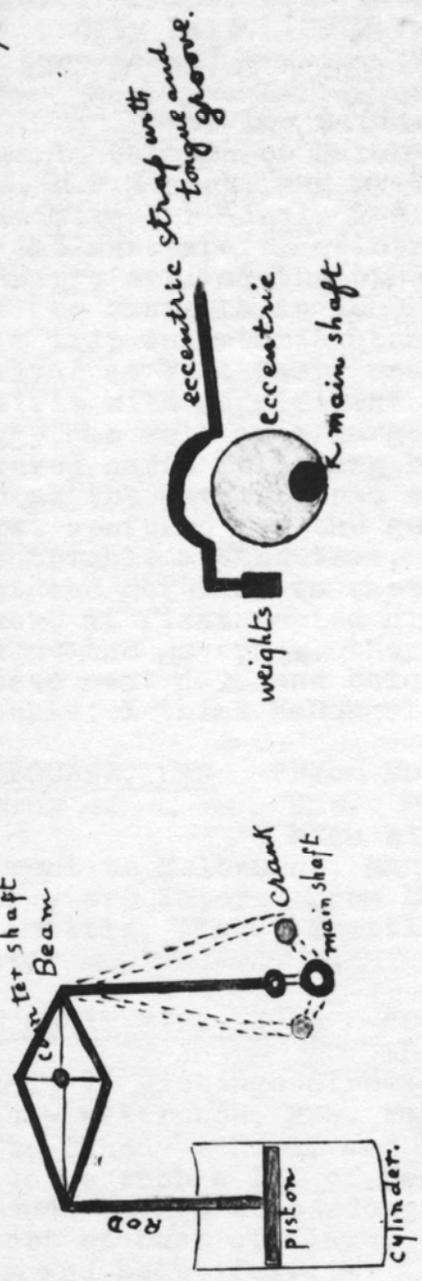
“One thing I do know, the *Shubrick* carried forty pounds of steam, but she would actually run on ten pounds, with the assistance of the vacuum.”

As narrated to me, 5 October 1938.

J.S. Matthews.

W. R. Lord
Page 40A

Tracing over a crude pencil drawing by W. R. Lord, of beam engine.



From scratchings on an old piece
of paper by W. R. Lord, pioneer engineer
J. S. Matthews
5th Oct - 1938

Conversation re S.S. "Beaver"
To go at page 40, conversation W. R. Lord, 5 Oct. 1938

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