REPORTED COST OF A RESERVOIR

WATER COMMISSIONER WENT INTO MATTER

A Comprehensive Estimate Dealing With Various Phases of Subject—Practicability of Sites.

The report of the water commissioner on the cost and practicability of constructing a reservoir in connection with the waterworks system was read at the council meeting on Monday. The commissioner went beyond the resolution passed by the council requiring the report, and besides dealing with the reservoir gave a comprehensive review of the improvements necessary in the distribution system, in order to place the question of supply on a satisfactory basis. The report, together with a summary of the cost, is as follows:

City Hall, Nov. 3, 1904.

His Worship the Mayor and Board of Aldermen:

Dear Sirs:—In accordance with the instructions contained in your resolution, dated the 17th of October, I beg to make the following report "upon the matter of the feasibility of constructing a reservoir in the vicinity of Beaver lake for waterworks purposes."

In the vicinity of Beaver lake there are six sites suitable for a reservoir, viz.: Cedar Hill, 696 feet; Mount Tolmie, 345 feet; Bare Hill, 669 feet; Little Saanich mountain, 669 feet; Bald Hill, 457 feet; and Lake or Christmas Hill, 353 feet. Of these Cedar Hill and Mount Tolmie may be dismissed on account of the length of pipe required, and Bare Hill, situated at the head of Elk lake, is open to the same objection. Of the remaining three, Lake Hill is the most favorably situated, being directly on the line of our present 12-inch main. It is, however, in the shape of a pinnacle and the summit is so circumscribed as to make the construction of a reservoir of suitable size a very costly affair. This leaves only Little Saanich mountain and Bald Hill to pick from, and I am of the opinion that the latter, situated at the northeast corner of section 109, Lake district, near the northern boundary of Broadmead farm and back of Heals, is the most suitable.

It is not only nearer to town and the lake than Little Saanich mountain, but the top is suitable for a reservoir; there is a small valley about 25 feet deep, which, by blasting, can be converted into a reservoir, 300' x 300' x 22', and capable of containing 12,375,000 gallons, equal to about four days' supply in the summer, and a week's supply in the winter. The sides and bottom would be of solid rock, and the two ends constructed of durable masonry laid in cement, the walls being six feet thick at the top and twelve feet at the bottom, the surplus rock not required for the masonry being formed into an embankment to give additional strength. The whole of the inside to be coated with cement and asphalt. The bottom of this reservoir would have an elevation of 420 feet, and would deliver the water at the corner of Fort and Douglas streets at a head of 320 feet, or 75 feet above the top of Judge Martin's residence. This would give a uniform steady pressure, which, in the business part of the town, would be from 100 to 140 pounds to the square inch, and would be a most improvement upon the present system of pumping direct to the main; the ever-varying load is very hard on the pumps and a steady, constant pressure is almost impossible to maintain. The reservoir would be supplied by a pumping station situated at Beaver lake, drawing direct from the filter beds. By installing a sufficiently large pump, one capable of pumping, say five million gallons every twenty-four hours, the expenses of pumping should not exceed the present cost, which in 1902 was 1.984c. per thousand gallons, and in 1903 1.97c. per thousand.

Under the present system of pumping direct to the main, the pumps are working day and night, week in and week out, without any intermission, no matter what the draft may be; in pumping to a reservoir, the pumps only need to operate long enough to equal the consumption once the reservoir is full, and it is a question if they would require to be operated all the time; certainly not in the winter, and this would make the charges for wages less than at present, while the cost of fuel would probably not be any greater, the extra amount required for a larger pump being offset by the shorter time of operating. The elevation of Beaver lake being 180 feet, the water would require to be forced to an elevation of about 250 feet. The present pumping stations would be retained, so that in the event of an accident happening to the new pumping station or the reservoir, the city would not be entirely without water pending the making of repairs. The location of the pumping station, whether to draw from the filter beds or from deep water in Elk lake, is a matter that is open for discussion. The filter bed site is the cheapest, being nearest to the reservoir, but there is the question of the capacity of the filter beds and clear water reservoir, which is three million gallons, the capacity of the reservoir is governed by the height of the water in the lake, and in the summer time, when the consumption is the greatest, it holds the least water. I have, however, included in my estimate an amount of $10,000 for raising the surface of the lake; were this done, say six feet, the capacity of the Beaver lake reservoir would be largely increased. There is no doubt, however, that as the consumption increases the capacity of the filter beds and reservoir will have to be increased. Last winter sufficient water to have raised the level of the lakes thirty inches had to be allowed to run to waste, owing to the inability to store it.

On the other hand a good deal is heard of the advisability of drawing water direct from Elk lake, and saving the expenses of filtering. No doubt, under ordinary circumstances, the water in Elk lake is purer than in Beaver lake, but in 1903, from January to June, two extra men had to be employed in cleaning the filter beds, which had to be cleaned every two days instead of once a week, the water in both lakes being in constant state of fermentation, and 1,800 yards of new sand were required to renew the filtering material. This year this condition, which generally occurs between the cold and warm weather, was not so marked, and only 400 yards of sand were required for the filters. As the strength of a chain is its weakest link, so it would appear to be doubtful policy, for the sake of saving filtering expenses for a portion of the year, to run the risk of getting impure water for the balance. I am afraid that no matter from what part of Beaver or Elk lake the water is taken from, it will have to be filtered.

Bald Hill is distant from the filter beds, 5,300 feet, and the reservoir would be supplied by a 18-inch pipe. The cost of the new pumping station is estimated at $50,000, and that of the pipe connecting it with the reservoir $15,600. Taking the cost of biasting at 80 cents per cubic yard, and the masonry at $5 per yard, the estimated cost of the reservoir, including cementing and asphalting the sides and bottom is $90,000.

To deliver the water in town would require a 30-inch riveted steel pipe, to be laid from the reservoir to the junction of the Saanich road and Carey road, a distance of 24,000 feet, intersecting the present 16-inch main at the Saanich road near Cedar Hill cross road. At Carey road it would join the present 24-inch, which is laid as far as Market street, thence to the corner of Humboldt and Douglas streets. The existing 12-inch, 11-inch, 10-inch, 9-inch and 7-inch pipes would be taken up, and a 24-inch laid in their place. This would give a 30-inch main suppling a 16-inch and a 24-inch, the former on Cook street, and the latter on Douglas.

There is still the question of distribution to be considered, and any remarks on this head apply with equal force from whatever source the water is obtained, whether Goldstream, Sooke lake or Beaver lake. It seems to me, too, that it would be a waste of money to spend a large sum in bringing water to town, and, owing to inefficient distribution pipes, be unable to reap the full benefit of the expenditure.

When the system was laid out in 1873 by Mr. Bulkeley, there were less than 5,000 people in Victoria, and great difficulty was experienced in obtaining the money required, so much so that it was necessary for the government of British Columbia to guarantee the debentures of the city, and even then they were sold at a discount. The works were accordingly laid out in accordance with the population and the financial situation, and in his report on the works, Mr. Bulkeley states that he only allowed for a daily consumption of 23 gallons per head; whereas at the present time, the daily consumption averages from 100 to 110 gallons per head. Nothing to the east of Cook street and north of Queen's avenue was intended to be supplied, and a large portion of James Bay was omitted. A number of streets which are now fully built up were in those days either not opened, or were only sparsely built on, on these 2-inch pipe, and in many cases assumed as 1½-inch and 1-inch, was considered sufficient, and a good deal of this small pipe has been laid in more recent times. We are taking this up as quickly as our means will permit, and the greater part of the pipe that we lay every year is to take the place of this small pipe, which has either become choked or unable to supply the demands upon it. I am therefore of opinion that if any money is to be spent on the waterworks, the distribution system should be put in proper condition, once for all, so that the only money needed for construction would be for new streets as they are opened up, or built upon. I have, therefore, ventured to go beyond the scope of your resolution, which only asked for a report on the feasibility of a reservoir near Beaver lake," and have included in the estimate the sum of $135,720 required for distribution purposes. This at the first glance seems a large sum, but it is absolutely necessary if the waterworks system is to be placed in a first-class footing.

The original scheme did not include any mains on streets running north and south, other than Douglas street, and consequently to this day there are no mains on Blanchard, Quadra or Vancouver streets. The want of these mains was clearly shown at the fire last August. There is a 4-inch pipe on Queen's avenue, between Douglas and Government streets, but there being no circulation from Blanchard street, as soon as the heavy draft came on from the low level, the Queen's avenue pipe was left dry, the pipe on Princess avenue being affected in like manner, and the same thing will happen again no matter how large a main is brought in, if the distribution is neglected. The 16-inch main has since been laid on Cook street, an 8-inch on Fernwood road, and it was not until the year 1901 that the 12-inch main was laid on Government street, to enable it to be paved.

I enclose a statement showing the proposed distribution of pipes, the principal items in which are the laying of a 12-inch main from the corner of Queen's avenue and Douglas street to Richmond road, via Edmonton road, thence to Oak Bay avenue and to be eventually extended to Fairfield road. This 12-inch pipe is to be carried from the corner of Cadboro Bay road and Richmond avenue to the junction of Cadboro Bay road and Yates street; the 12-inch main on Government street is to be extended across the causeway, along Belleville street to Menzies, thence to the corner of Dallas road and Menzies street. An 8-inch pipe is required on Blanchard and Quadra streets, between Queen's avenue and Burdette avenue. As Vancouver street does not extend beyond Pandora, a 6-inch pipe will be sufficient on this street. The statement also shows details of 6-inch and 4-inch pipes to be laid on various streets. This scheme of distribution will be practically the same if the water is brought from Goldstream or Sooke lake, except that in the latter case the main supply would run east and west instead of north and south.

There is no doubt as to the feasibility of a reservoir in the neighborhood of Beaver lake, and that it would give a steady pressure by gravity all over the town, varying according to the elevation, and also enable the meters to be removed from residences. And if the distribution system be put in order, there need be no fear of a repetition of the trouble that occurred at the fire last August. This question of increased fire protection is of equal, if not more, importance than the domestic supply. It only remains for the council and the ratepayers to decide how a supply from a reservoir will compare with a direct gravity supply either from Sooke lake or Goldstream, taking into consideration both the cost and the value of the results obtained. I enclose statements showing the estimated cost of these improvements, pipes to be laid, and the distribution of mains, also plan showing the various hills mentioned and the pipe lines into town; also sketch of the proposed reservoir and plan showing approximate depth of water in Elk and Beaver lakes, all of which I trust will enable much information to be obtained on the important subject of a "better water supply."

JAS. L. RAYMUR,
Water Commissioner.

Following is a summary of the cost:

ESTIMATE OF COST.

Pumping Station		$ 50,000 00
Pumping station to reservoir, 5,300 feet 18-inch steel rivetted pipe 10 B. W. G., at $2 per foot	$ 10,600 00	
Laying	5,000 00	
		$ 15,600 00
Reservoir.		
Blasting 60,000 cubic yards rock, at 80c. per yard	$ 48,000 00	
Rubble masonry set in cement, 6,000 cubic yards, at $5	30,000 00	
Sundries	12,000 00	
		$ 90,000 00
Main Pipe Line.		
Reservoir to the junction of Carey road and Saanich road, 24,000 feet 30-inch rivetted steel pipe, 7 B. W. G., at $4.75 per foot	$114,000 00	
Laying	40,000 00	
		$154,000 00
Corner of Douglas and Market streets, to the corner of Douglas and Humboldt streets, 6,000 feet 24-inch rivetted steel pipe, 8 B. W. G., at $3.50 per foot	$ 21,000 00	
Laying	7,500 00	
		$ 28,500 00
Distribution.	Feet.	
Douglas and Queen's avenue, to Richmond avenue, via Edmonton road	8,500	
Richmond and Edmonton roads, to the corner of Richmond road and Oak Bay avenue	2,600	
Richmond road and Cadboro Bay road, to the junction of Cadboro Bay road and Yates street	3,500	
Government and Humboldt, to the corner of Dallas road and Menzies street, via Causeway and Belleville St.	5,000	
	19,600	
Less to be taken up on Douglas street	4,000	
	15,600	
15,600 feet 12-inch C. I. pipe at $1.95 per foot	$ 30,420 00	
Laying 19,600 feet	18,000 00	
		$ 48,420 00
	Feet.	
Blanchard street, from Queen's avenue to Burdette Ave...	5,000	
Quadra street, from Queen's avenue to Burdette avenue	5,000	
	10,000	
10,000 feet 8-inch C. I. pipe, at $1.05	$ 10,500 00	
Laying	5,000 00	
		$ 15,500 00
	Feet.	
6-inch pipe to be laid, as per statement	37,500	
Less pipe on hand	2,000	
	35,500	
35,500 feet 6-inch C. I. pipe, at 75c. per foot	$24,850 00	
Laying 37,500 feet	15,000 00	
		$ 39,850 00
Taking up 1,500 feet 5-inch pipe on Edmonton road, and relaying on Moss street, which is already partly laid with 5-inch pipe		1,250 00
	Feet.	
4-inch pipe to be laid as per statement	62,000	
Less pipe ordered	12,000	
Less pipe to be dug up and relaid	2,200	
	34,000	
	28,000	
28,000 feet 4-inch C. I. pipe, at 40c. per foot	$ 11,200 00	
Laying 62,000 feet, including digging up and cleaning 22,000 feet	17,500 00	
		$ 28,700 00
Digging up from Douglas street and cleaning 4,000 feet 12-inch, 500 feet 11-inch, 650 feet 10-inch, 950 feet 9-inch, 700 feet 7-inch		2,000 00
		$135,720 00
Raising level of Elk and Beaver lakes		$ 10,000 00
Right-of-way, surveying, incidentals, etc.		$ 16,180 00

SUMMARY.

Pumping station	$ 50,000 00
Pumping station to reservoir	15,600 00
Reservoir	90,000 00
Main pipe line	182,500 00
Distribution	135,720 00
Raising level of lake	10,000 00
Right-of-way, surveying, etc.	16,180 00
Total estimate	$500,000 00

If wooden pipe is used between the reservoir and junction of Carey and Saanich roads, a reduction of $50,000 may be made in the above estimate.

BUSINESS BEFORE THE CIVIC SOLONS

CONTRACTOR SNIDER GETS AN EXTENSION

Will Have Six Months More Time in Which to Complete Carnegie Library Building.

As forecasted in the Times, the most important business before the city council on Monday was the report of the water commissioner on waterworks improvements, which is published in full in another column. The report was referred to the streets committee for the earnest consideration the importance of the subject requires.

W. E. Briggs wrote regarding city debentures. Received and filed.

Janet Bailes inquired the council's intention regarding a road leading to her place on the Indian reserve. Received and filed.

G. Rushbrook offered to pull down the old shacks on Humboldt street for 75 per cent. of what they will bring on sale by auction. Referred to the Mayor.

Applications for the vacant clerkship in the waterworks department and the positions of poundkeeper and electric light cleaner were read. It was decided to table the applications.

The city clerk reported a number of communications that had been referred to the city engineer during the week. Received and filed.

Residents on block G, Victoria West, petitioned for a box drain. The same petitioners objected to the street lines drawn by the city engineer, as represented in a sidewalk on Frederick street, Victoria West. Referred to the streets, bridges and sewers committee.

James A. Douglas and other residents of South Ward complained of the defective sewerage at the junction of Cook street and Fairfield road, and on Moss street, between Snowden street and Dallas road. Referred to the city engineer for report.

The finance committee recommended the appropriation of $1,144.98 for the usual purpose. Adopted.

The electric committee recommended that applications be invited for the position of electric light cleaner. The matter was left in the hands of the city electrician and electric light committee.

The streets, bridges and sewers committee recommended that Contractor G. Snider's request for a six months' extension of time for the Carnegie library work be granted.

Ald. Fell did not believe in waiving any claims the city might have against the contractor for penalty at the present time. He thought the contractor should be permitted to finish his contract under existing conditions, and then the council would consider the question of an extension. It was impossible to know now what there might be against the city in this connection.

Ald. Stewart said there was little more to be done. It was not intended that the library should be equipped with books until next year.

The report was adopted.

The same committee reported as follows:

Gentlemen:—Your streets, bridges and sewers committee having considered the undermentioned subjects, beg to recommend the following resolutions for adoption by the council, namely:

Resolved, That the application of the Taylor Mill Company for further foreshore rights from the Dominion government and the approval of said application by the council, be referred to the city solicitor and city engineer for report.

Resolved, That the matter of the tenders received for removing wooden buildings on lots 210 and 211, Humboldt street, be left in the hands of His Worship the Mayor with power to accept the lowest tender, providing the C. P. R. Company is willing to bear its proportion of the cost of removal.

Resolved, That the question of the disposal of garbage be referred to a special committee to report to the council, the committee to consist of Ald. Elford, Vincent and Kinsman.

The report was adopted.

The Birdeage Walk local improvement by-law was reconsidered, adopted and finally passed. The waterworks amendment by-law went through the same course. The council then adjourned.

Liao Yang After the Battle

Field Headquarters, Second Corps, Japanese Army, Liao Yang, Sept. 17.—Now that the battle of Liao Yang is an item of history, headquarters, corps and general assure us that we shall be permitted to get into the thick of other engagements. Soon we shall know whether that is mere politeness of talk, or whether it is what a western promise, direct from the lips of a general like Fukishima, should be—downright, charged to the muzzle with straight meaning. For there is a great action ahead, which you will know of before this reaches home. Two consolidated armies in a pitched clash—this is what it will be if the enemy does not fall back upon Harbin.

So far, the spade has been his chief army. He has been digging shelter trenches to fly to, the whole length of our garrison could retire with its machine guns—it is worse than a Coney Island maze—such an earthwork need not be given up until flanked or surrounded. To enter it when empty the Japanese cut wires and made a path.

When I entered after the retreat there were nine immense heaps of empty Maxim (?) cartridges, and Chinese coolies were still gathering them from where the guns had been stationed.

Russian Boom Towns.

What Russia has done in this country impresses one when the strain of trying to see a far-off battle through high-power glasses is intermitted for a few days. The railway cannot go through walled Chinese cities, so it passes just outside, and about the stations are rectangular, dark, vitrified brick settlements in a sort of engineering style of architecture. The houses remind one of American school houses. All are about alike; they differ chiefly in size—station, administration building, freight office, dwellings of officers and employees and somewhere a little park with a bandstand. Here is Russian Liao Yang, where the Chinese city wall is broken at the base of a crumbling Buddhist pagoda—looking like no other pagoda, being of a strange corrugated, cartridge shape—there is the wreck of a beer garden such as you have on Manhattan near Fort George. Each yard is fenced. At street corners there are American street lamps. Streets are merely indicated, not made.

Under moonlight the silhouette with the telegraph and telephone poles sticking high, is precisely that of a Western boom town. The difference is that this and all others were erected in permanent fashion. As I have before remarked, the water-tower, with heating apparatus inside so the winter will not render it useless to locomotives, is always about three-quarters built, scantling still up, as if there had been a sudden strike. Work was stopped when Japan unexpectedly sent its fleet to Port Arthur.

In addition to the strange sound of Christian chimes from the walled town on Sunday, we hear the continuous snapping of whips over the ponies taking supplies forward, the shouts to the floundering horses drawing caissons full of ammunition; but chiefly the sound of the hammer, nailing up shelters for horses and supplies for the Japanese army, as if this were to be its winter base. There is not shelter enough for the army itself, if it is allowed by the Russians to go into winter quarters and wait till spring; hence the concentrated attempt to take Mukden. We are curious as to what the tactics will be then. Reports from Port Arthur in Japanese newspapers intimate that there is at last a growing realization that the sacrifice of many lives has the consequence of weakening the effective force of an army whose resources in refilling vacancies do not appear comparable to those of the enemy. Night before last, when ammunition trains were fast in the mud here an officer told me that the Japanese idea was to take the enemy's position no matter at what cost of men.

"I hear Europe calls that barbarious," he commented.

"European officers," he was reminded, "try not to waste their men. It is one of their duties as officers. You have heard of Pyhrric victories? And why the charge at Balaklava was called 'magnificent,' but not war'?"

A Joyous Story.

The final economy of spending strength, instead of husbanding it, still looked better to him, nevertheless. About the barbarousness of spending lives as lives, European criticism was not convincing. His religion does not teach the same view of death as the highest in the army, when calling upon ours. Thus, this very day, an officer among us, told us this: "I went out there upon the battlefield to see some of my old comrades and congratulate them." He said this smilingly, and one waited for a funny story. "It was my old regiment, the Thirty-fourth—they gave me a dinner on January 3rd, when I left for my present detail. When I got out there on the battlefield I found that" (here he began to laugh, and one prepared to enjoy the point of the joke), "I found that all but three of the officers had been killed!"

"All but three killed!"

"Yes, all but three killed; and of my own company, out of 246 men only 19 remained alive!"

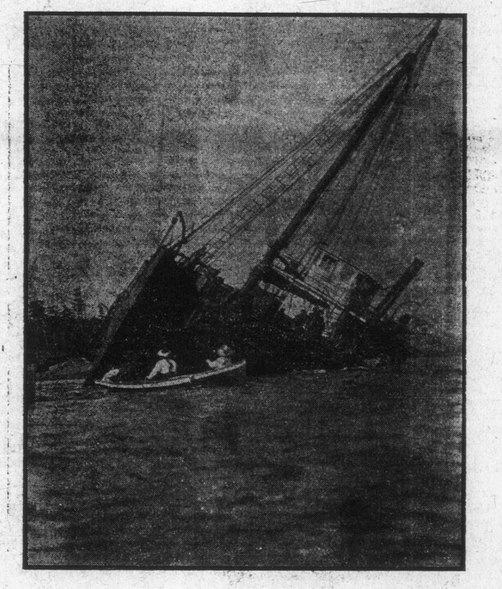
He did not mean to be unsympathetic. But East is East and West is West toward the mystery of death.

Past our windows wounded are being carried from the temporary battle shelters to the hospital base; in litters, on shoulders of blue-bloused Chinese coolies—the well Japanese being needed for different service. On each face there is that indifferent fixity, that careless, unblinking stare and setness of lips as from nervous exhaustion, which sickness or physical suffering brings on. Empty litters are returning for more burdens meanwhile. No passing soldier gives even a look of curiosity toward the comrades lying in red blankets. They do not look even to see if by chance they happen to know the unfortunate ones. They look rather at our windows, thinking at sight of Caucasian faces that we are perhaps captive Russians.

In the hospital there is a calm, matter-of-course manner toward the hurt men. Some have lain in the high fields of grain for days without having been discovered by the search details. There, it has been noticed, the details are more interested in turning out the contents of abandoned knapsacks than in finding the disabled owners. One is reminded of the impassive way in which the day after the fight for the Hills of the Five Outspread Fingers, regimental comrades filed past the contorted dead in the bloody trenches. Toward wounded or dead their feelings are unexcited. Except for the desire to observe Western practices, the field hospitals would not, I fear, be what they are. These are show places for foreigners.

Soldiers' days pass rather easily here in camp. The labor of cleaning and building, and digging drains and assorting the damaged from the undamaged in the debris of the fires, is done by Chinese coolies. The soldiers forage for chickens; they return with flapping strings of them across rifle barrels. If a stray Russian pig is caught sight of, all turn out with stakes and stones to catch it for their mess. Endless whinneyings of restless stallions, the amorous trumpetings of our donker, Van Bibber, contribute to the sounds by day. Blacksmiths are forging new breech blocks for the battery of Russian guns taken at Anshan, so as to use it in the next battle. At night there comes from the quarters of the guards the songs of Japan, weird, that moat a twenty-foot wide encircling band of barbed wire; and just outside that another encircling band of wire, with round, close-placed pitfalls between the posts, the distance between one pit and the next being a scant three inches at the top; and sticking from the bottom of each pit (which is in the form of an inverted cartridge), a pointed ash impaling stake. Then think of tall millet cut short within the range of machine guns, leaving stubble as sharp and strong almost as young bamboo, terrible for horse, and difficult for foot. The casual unmilitary observer wanders about such a fort without being able to see how the wistful, mournful. You wonder if some sadness is not forecast in this music. Then there is a graphophone, made in Germany, if you please, which the canteen boys brought along, hoping to sell it to us at a profit because it played "The Whistling Coon." It is used to serenade Prince Kanin, who is housed next door with cavalry sentries around him; and he listens to "El Capitan," bits from "The Mikado," the Jewel Song from "Faust," "Wacht am Rhine," "The Marseillaise," and then a long series of grave, wailing geisha echoes from some three-stringed samisen in Japan.

F. C.



THE BOSCOWITZ WRECK.

Picture of the stranded steamer, showing boat which went to the rescue of passengers and crew. Vessel lies on the rocky coast of Barbledown Island, and in this position, but in a much more battered and worse condition, the British Columbia Salvage Company last week attempted the work of removing machinery and valuable tackle.

THE LOST BOSCOWITZ.

The above picture, one of two excellent views kindly loaned the Times by Steward Dyson, of the steamer Tees, was taken the second day after the wreck occurred. It gives a good impression of the danger which confronted those who made their escape from the vessel.