BELGIAN WATERWAYS.

CONTENTS.

NOTE.—This volume supplements the previous volume entitled "North-Eastern French and Belgian Waterways."

Department of the Quarter-Master-General, War Office.

July, 1915.
Revised May, 1916.

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INDEX.

WATERWAYS.

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Beverloo Branch Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
From commencement of canal at Pierre-Bleue basin on the Meuse-Scheldt Junction Canal to Beverloo Basin, N. of Bourg-Léopold	0·000	14·800	14·800	8·600	6·200	16·30	10·00	2·10 minimum	41·96	The normal level of water may be considered to be 42·06, which is the level between locks 19 and 18 of the Maastricht Bois-le-Duc Canal, and also the level of the 1st reach of the Meuse–Scheldt Junction Canal, with which the Beverloo Branch Canal is in communication. In reality the water level in the latter canal varies between 41·76 and 42·06. The tow-paths are on both banks and are 2·5 m. wide. At Beverloo there is a basin, 9,210 sq. yards in area, terminating the canal. This is N. of the Bourg-Léopold station.

WEIRS.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Weir at Bridge No. 1 ...	0·040	1 of 10·0	Baulk	2·40	...	...	...	...	The weirs at the bridges are only used under exceptional circumstances, as in case of accident or when it is necessary to lower the water level over the whole or part length without bringing the level down to that of the Meuse-Scheldt Canal, with which this canal is in communication.
Weir at Bridge No. 4 ...	9·960	Do.	Do.	Do.	...	...	...	...	
Spillway on right bank corresponding to the Nèthe siphon	10·620	...	...	...	1·80	Baulks in grooves	...	2·72	Very seldom used, and is usually tightly closed.
Weir at Bridge No. 5 ...	11·380	1 of 10·0	Baulk	2·40	...	...	...	...	

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width	Construction.	
Stevensven Basin	4·000	...	...	962	2·50	...	Area of 2,200 sq. metres. This basin is totally isolated and not adapted for loading or unloading boats. It can only usefully serve as a siding.
Camp de Beverloo Harbour	14·800	1·15	Earth embankment...	110	9·00	Earth with paved and gravel roads	
Camp de Beverloo Basin	14·800	...	...	360	...	...	Area of 9.210 sq. metres.

Bergues—Furnes (or Basse Colme) Canal (Belgian Section).

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Frontier to Houthem Lock ...	...	4·104	4·104	3·113	0·991	8·00	3·00	1·25	1·938	The canal has been excavated to give a depth of 1·60 m., but at certain points this is not maintained owing to the bad nature of the ground. Boats frequenting this canal have a capacity of about 30 tons. and are generally 12 m. long and 3·50 m. beam.
Houthem Lock to Furnes at junction with Nieuport–Dunkirk Canal	4·104	11·148	7·044	3·285	3·759	7·00	3·00	1·25	2·378	

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Houthem	4·104 from Frontier	+0·838 The sill is 1·54 below low water in the Furnes-Ambacht Canal	+0·838 The sill is 1·10 below low water in the Basse Colme	0·44 generally, but varies according to weather	3·90 Chamber 8·90	26·50	Min. Sec. 10 0	Min. Sec. 15 0	Brick and wrought stone copings. Walls of brick	Sluices	...	...	

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level in metres.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width. in metres	Construction.	
Pont de la Briqueterie Wharf...	2·052	1·60	Earth embankment	...	8·00	Earth	On the right bank.
Houthem (Schippery) Wharf	2·672	1·30	Do.	...	10·00	Do.	On the left bank.
Zwaentje (Wulveringhem village) Wharf ...	5·615	1·70	Do.	...	7·00	Do.	On the right bank
Nieupoortjebrug Wharf	7·556	1·50	Do.	...	Do.	Do.	Do.

Blankenberghe Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Speye Lock to Blankenberghe Port	0·000	12·132	12·132	10·332	1·800	7·00 to 4·00	5·00 to 2·50	1·80 to 0·65	+1·82	This canal can accommodate flat bottom boats of 8 to 10 tons capacity, and serves largely to drain off flood water from the district through which it passes.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Speye	Beginning of canal	2·09	0·593	2·067 summer 1·807 winter	3·30	30·00	Min. Sec. 5 0	Min. Sec. 15 0	Brick	Sluices in each leaf	3·25 m. masonry	3·25 m. masonry	

Blaton—Ath Canal. [*See Plate* 28.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Junction with the Pommerœul–Antoing Canal	0·000	0·013	0·013	0·013	...	...	...	...	32·405	*Water supply.*—At Ladeuze there is a steam pumping plant which draws water from the 15th Reach and pumps into the Summit Reach.
No. 1 at Blaton	0·069	0·378	0·309	...	...	15·25	10·00	2·11	35·253	
No. 2 Do.	0·433	0·779	0·346	0·232	0·114	Do.	Do.	Do.	38·073	
No. 3 Do.	0·837	1·089	0·252	0·182	0·070	Do.	Do.	Do.	40·863	The 15th Reach itself is supplied by: (1) the Hunelle; (2) by pumps at Maffle taking water from the Dendre.
No. 4 Do.	1·147	1·376	0·229	0·192	0·037	Do.	Do.	Do.	43·653	
No. 5 Do.	1·434	1·635	0·201	0·201	...	Do.	Do.	Do.	46·443	
No. 6 Blaton to Grandglise ...	1·693	1·903	0·210	0·210	...	Do.	Do.	Do.	49·233	
No. 7 at Grandglise	1·961	2·226	0·265	0·265	...	Do.	Do.	Do.	52·023	
No. 8 Do.	2·284	2·826	0·542	0·542	...	Do.	Do.	Do.	54·813	
No. 9 Grandglise to Stambruges	2·884	3·818	0·934	0·737	0·197	Do.	Do.	Do.	57·603	
No. 10, at Stambruges	3·876	9·870	5·994	3·922	2·072	11·30	Do.	Do.	60·393	Summit Reach.
No. 11 Stambruges to Ladeuze	9·928	10·270	0·342	0·222	0·120	15·25	Do.	Do.	57·493	
No. 12 at Ladeuze	10·328	10·909	0·581	0·418	0·163	Do.	Do.	Do.	54·593	
No. 13 Do.	10·967	11·428	0·461	0·461	...	Do.	Do.	Do.	51·693	
No. 14 Do.	11·486	12·559	1·073	0·745	0·328	Do.	Do.	Do.	48·793	
No. 15 Ladeuze to Maffle ...	12·617	18·125	5·508	2·991	2·517	Do.	Do.	Do.	45·893	
No. 16 at Maffle	18·183	18·753	0·570	0·315	0·219	Do.	Do.	Do.	42·993	
No. 17 Maffle to Ath	18·811	19·308	0·497	0·297	0·200	Do.	Do.	Do.	40·093	
No. 18 at Ath	19·366	19·611	0·245	0·245	...	Do.	Do.	Do.	37·193	
No. 19 Do.	19·669	20·773	1·104	0·805	0·299	Do.	Do.	Do.	34·293	From the Carré bascule bridge this reach forms part of the canal joining the Blaton–Ath Canal with the canalised Dendre.
No. 20 Do.	20·831	21·593	0·762	0·490	0·272	16·00 to 29·00	...	Do	31·393.	This reach forms part of the junction canal mentioned above.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills: Upstream. Depth below water level upstream in metres.	Mitre Sills: Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
							Min. Sec.	Min. Sec.					
No. 1 at Blaton ...	0·070	2·90	2·40	2·84	5·20	41·20	10 0	31 0	Pointed rubble	1 Penstock, 2 sluices	...	10 m.	Each lock up to Lock 15 has 2 side ponds.
No. 2 Do. ...	0·400	Do.	2·10	2·82	Do.	Do.	Do.	Do.	Do.	Do.	...	Masonry pitching	
No. 3 Do. ...	0·800	Do.	Do.	2·79	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 4 Do. ...	1·100	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 5 Do. ...	1·400	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 6 Do. ...	1·700	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 7 at Grandglise	2·000	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 8 Do. ...	2·300	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 9 Do. ...	2·900	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 10 at Stambruges	3·900	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Stambruges stone	Do.	...	Do.	
No. 11 at Belœil	9·900	Do.	Do.	2·90	Do.	Do.	Do.	Do.	Pointed rubble	Do.	...	Do.	
No. 12 at Ladeuze	10·300	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 13 Do. ...	10·900	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 14 Do. ...	11·400	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Brick and rubble	Do.	...	Do.	
No. 15 Do. ...	12·600	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Pointed rubble	Do.	...	Do.	
No. 16 at Maffle	18·100	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 17 Do. ...	18·700	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
No. 18 at Ath ...	19·300	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Rubble and brick	Do.	...	Do.	
No. 19 Do. ...	19·600	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do	Do.	...	Do.	
No. 20 Do. ...	20·800	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Pointed rubble	Do.	...	Do.	
No. 21 Do. ...	21·600	Do.	Do.	2·93	Do.	42·00	Do.	21 0	Dressed stone	2 Penstocks 10 Sluices	...	12·00 m. pitching	

Blaton—Ath Canal.—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Duchateau Wharf at Blaton	0·400	0·50	Masonry wall	45	4	Macadam	There are many industrial works along the canal, between Ladeuze and Ath, which are provided with quays.
Charles Duchateau Wharf at Grandglise ...	2·400	Do.	Do.	Do.	Do.	Do.	
Maffle Quay	18·900	0·60	Do.	140	15	Do.	
Ath Quay	20·400	0·90	Do.	240	30	Do.	

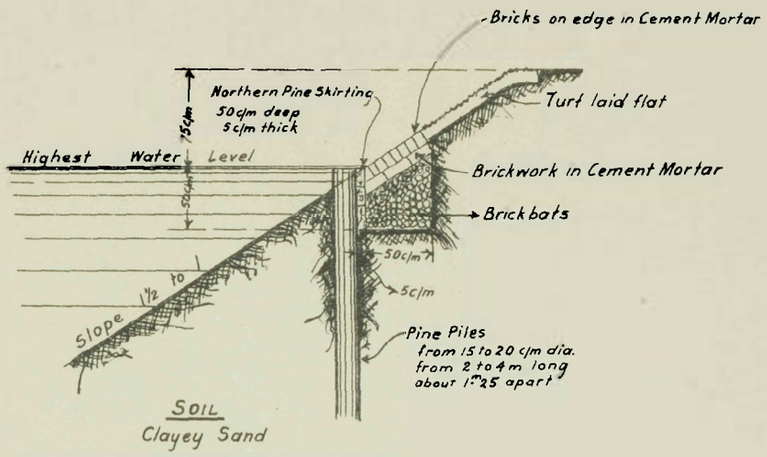
Bossuyt—Courtrai Canal. [*See Plate* 1.]

REACHES.

Name of Reach	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
No. 1 of the Scheldt	0·000	0·140	0·140	0·140	...	21·00	15·00	2·00 to 2·50	11·260	Depth of water variable, depending upon the Scheldt.
No. 2, Bossuyt to Genscheweg										
No 3, Genscheweg to Cabaret au Voyageur	0·140	0·866	0·726	0·657	0·069	17·50	10·00	2·50	17·040	
	0·866	1·275	0·409	0·315	0·094	16·60	Do.	2·20	19·633	
Ne. 4, Cabaret au Voyageur ...	1·275	1·690	0·415	0·415	...	16·60	Do.	Do.	22·710	
No. 5, Summit Reach—Cabaret au Voyageur to Esscherstraat	1·690	8·840	7·150	6·282	0·868	16·45* 12·45	10·0 to 6·0	2·15	25·19	*10·0 m. for 5·550 kms.; 6·0 m. for 1·600 kms. The tunnel at Moen is 615 m. long and has a clear head room of 4·50 m.
No. 6, Esscherstraat	8·840	9·675	0·835	0·582	0·253	16·60	10·00	2·20	23·133	
No. 7, Esscherstraat to Stacegem	9·675	10·091	0·416	0·416	...	Do.	Do.	Do.	20·133	
No. 8, Stacegem to Courtrai ...	10·091	14·064	3·973	2·635	1·338	Do.	Do.	Do.	17·433	
No. 9 at Courtrai	14·064	14·778	0·714	0·662	0·052	Do.	Do.	Do.	14·950	
No. 10 Do.	14·778	15·253	0·475	0·475	...	Do	Do.	Do.	13·05	
No. 11, Courtrai to the Lys ..	15·253	15·387	0·134	0·013	0·121	22·50	15·00	2·50 to 2·80	10·433 to 10·124	Depth of water variable, depending on the Lys. *Water supply.*—The canal is supplied by a pumping station at Bossuyt, drawing water from the Scheldt.

Type of Bank Protection

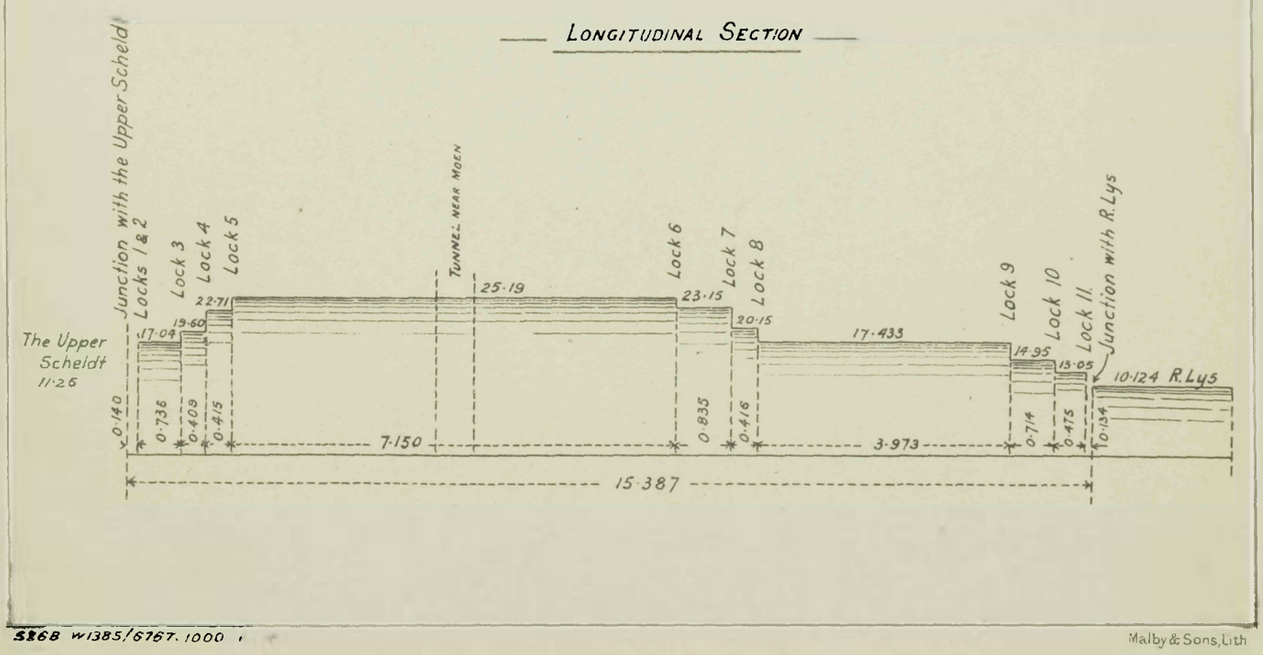
Canal from Bossuyt to Courtrai



Note: In certain places, especially at the summit level and wherever the soil is not firm, the slopes are covered with dry masonry from the bottom of the canal to above the water level: the metalling is supported against a framework footing.

Canal from Bossuyt to Courtrai

Longitudinal Section



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Bossuyt—Courtrai Canal—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Near St. Genois Bridge at Moen	2·500	...	...	...	...	...	
Knocke Wharf	6·500	...		...	...	...	
Sweveghem Wharf, left bank	8·688	0·79	Pitched	100	12	Cinder	Sweveghem sugar works.
Above Staceghem Bridge	11·800	...	...	...	...	...	
Groeninghe Quay	14·610	1·80	Pitched	84	11·6	Cinder	
Faubourg de Gand at Courtrai. Reach No. 10	15·000	...	...	...	...	...	

Bourgogne Provincial Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Bourgogne Canal	Bourgogne Bridge	Junction with the Moerdyk	1·620	...	...	8	4	1·40 to 1·66	3·62 to 3·88	The Bourgogne Canal is merely a stream, the lower part of which has been enlarged and excavated from the Bourgogne Bridge to the junction with the Moerdyk Canal.

Bruges—L'Écluse Canal.

REACHES.

Dammepoort Lock at Bruges to L'Écluse (Holland)	0·000	13·600	13·600	13·150	0·450	20·00 (6·0 m. at locks and bridges)	6·00	2·50 to 2·23	+3·947	This canal communicates with the Ghent–Ostend Canal by the new Dammepoort Lock. The Selzaete Canal and the Lys Diversion pass under this canal each through a siphon at Oostkerke

WEIRS.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Oostkerke Siphon	6·620	...	...	...	13·50 6 passes of 1·833 m., separated by 5 piers 0·50 m. thick.	...	6 sluices, provided with racks	...	This spillway allows of draining the water of the Bruges–Ecluse Canal into the sea at Heyst, without making use of the Ostend Canal.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
				Metres.	Metres.		
Dammepoort Bridge Wharf at Bruges ...	0·00	2·87	Earth slopes with brick revetments	50	6	Earth	
Damme Bridge Wharf	4·720	2·50	Earth	50	8	Do.	
Oostkerke Bridge Wharf	7·410	1·68	Earth slopes with brick revetments	50	10	Do.	
Houcke Wharf	10·040	1·81	Earth slopes	Timberwharf 8 m.	5	Do.	

Bruges—Zeebrugge Canal. [*See Plate* 2.]

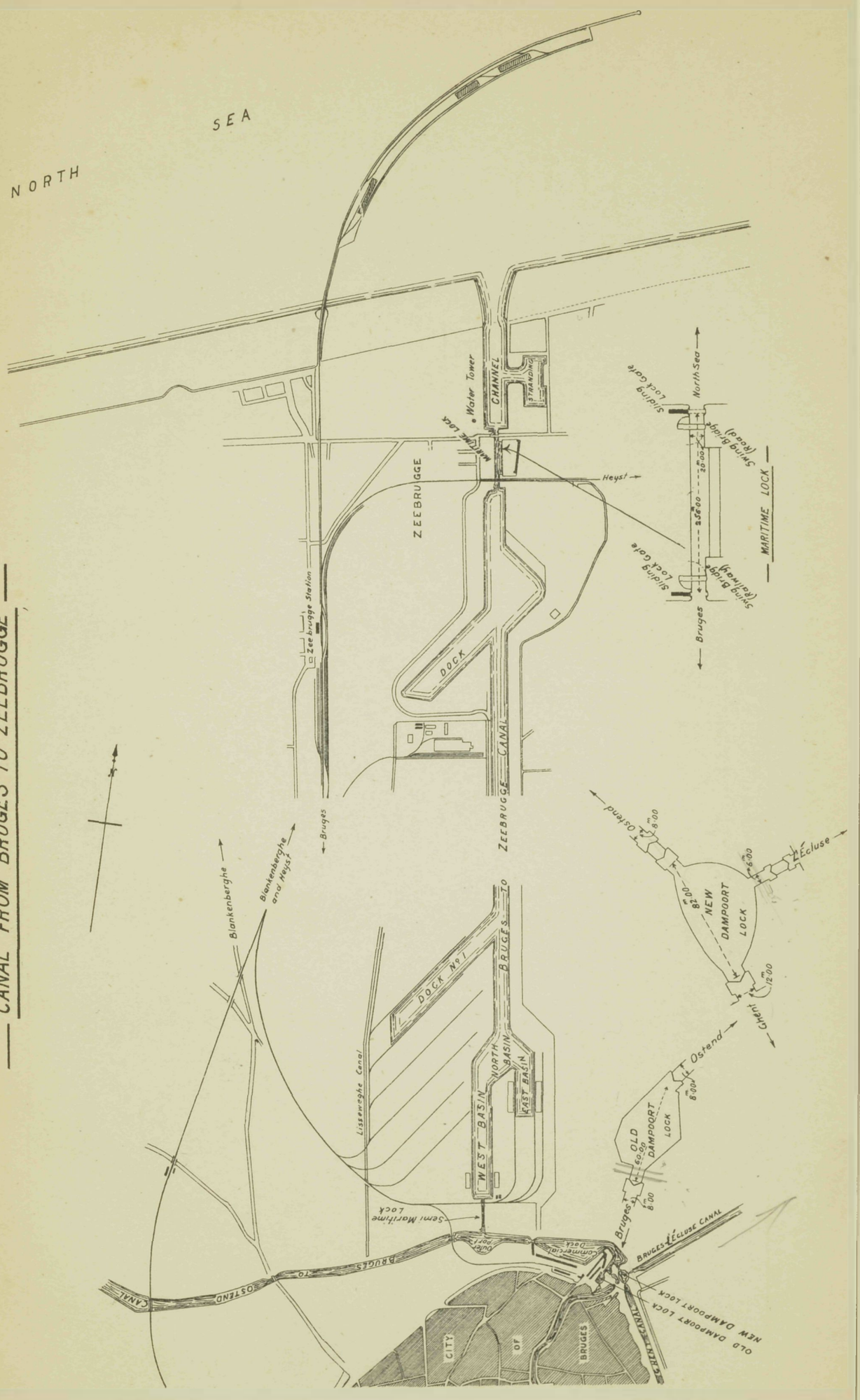
REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Bruges to Zeebrugge	0·000	11·000	11·000	11·000	...	70·0	22 0	8·0	+3·50	This is a maritime canal accommodating large steamers. At Dudzeele there is a bridge having one fixed span and a double-arm swing span. The clear opening given by the swing span is 22 m. At Zeebrugge there are two swing bridges over the sea lock, one for road and one for railway traffic.

LOCKS.

Name of Lock.	Distance in kiloms.	Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream Depth below water level down stream in metres.										
Semi - maritime lock at Bruges	0·000	4·95	4·75	0·120 to 0·380	12·00	97·40 Total length is 172·00	...	...	Masonry with granite copings	Sluices and penstocks	Concrete	Concrete	This lock connects the new docks at Bruges with the old docks and with the Bruges–Ostend Canal. For description, see "North-Eastern French and Belgian Waterways," pp. 69 to 71, Part I.
Zeebrugge sliding gates	11·000	9·00	9·00	Varies with the tide.	20·00	Chamber 158·00	...	...	Wrought stone	Sluices and penstocks	Concrete	Concrete	

CANAL FROM BRUGES TO ZEEBRUGGE



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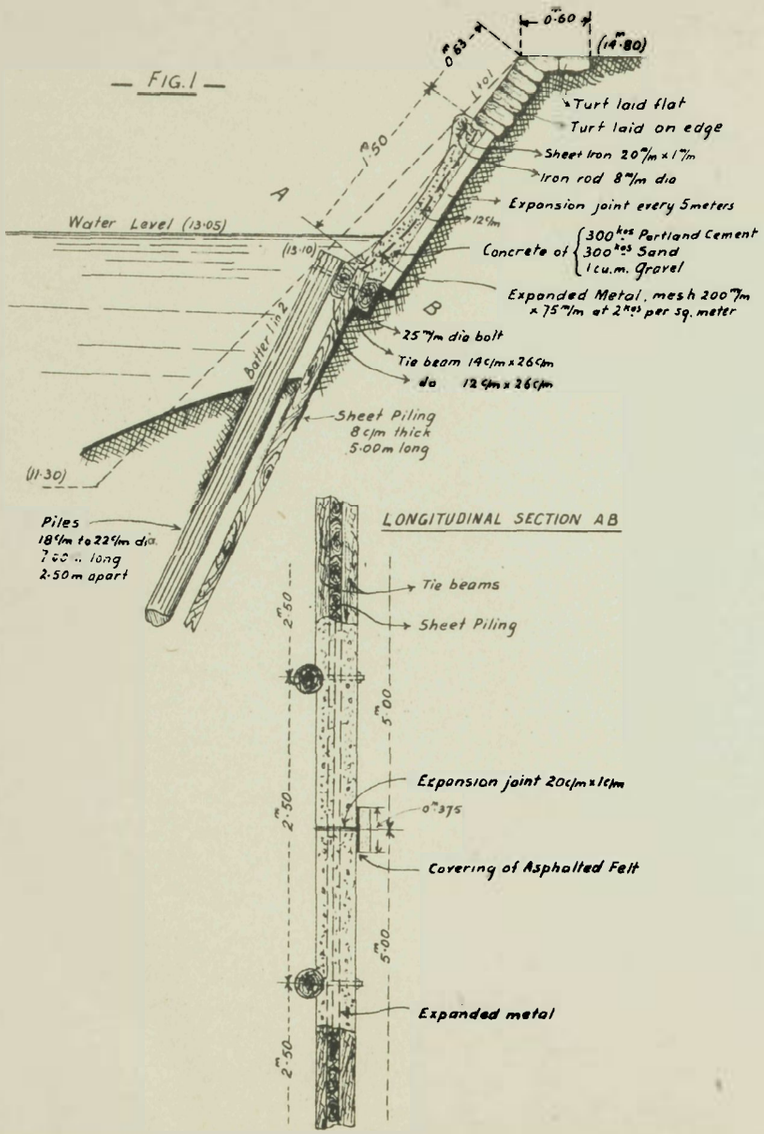
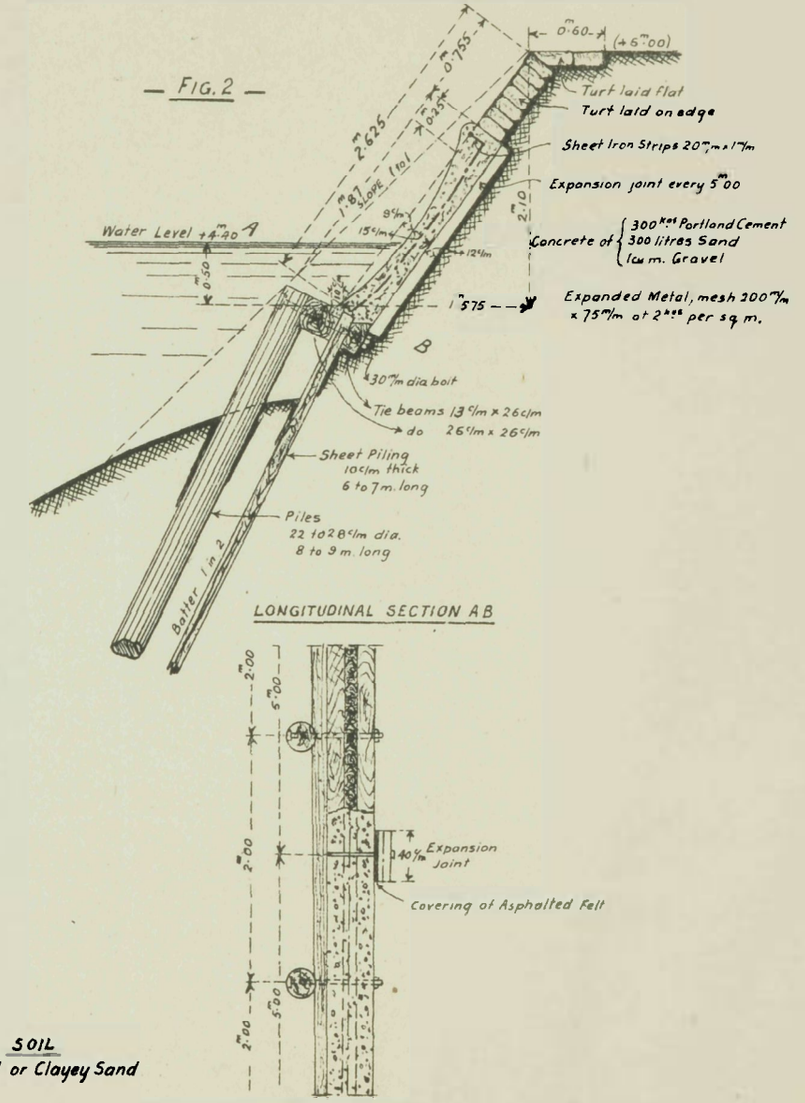
TYPE OF BANK PROTECTION — CANAL FROM BRUSSELS TO THE RUPEL

— FIG. 1 —



— FIG. 2 —



SOIL
Sand or Clayey Sand

Plate 8

TYPE OF BANK PROTECTION — CANAL FROM BRUSSELS TO THE RUPEL

FIG. 3

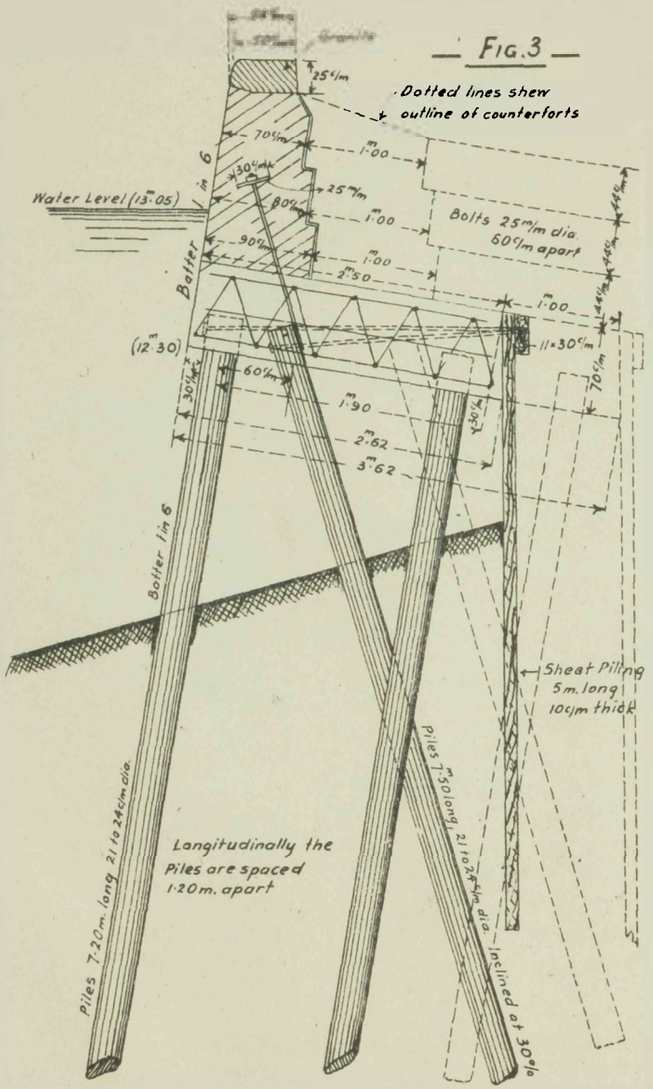


FIG. 4

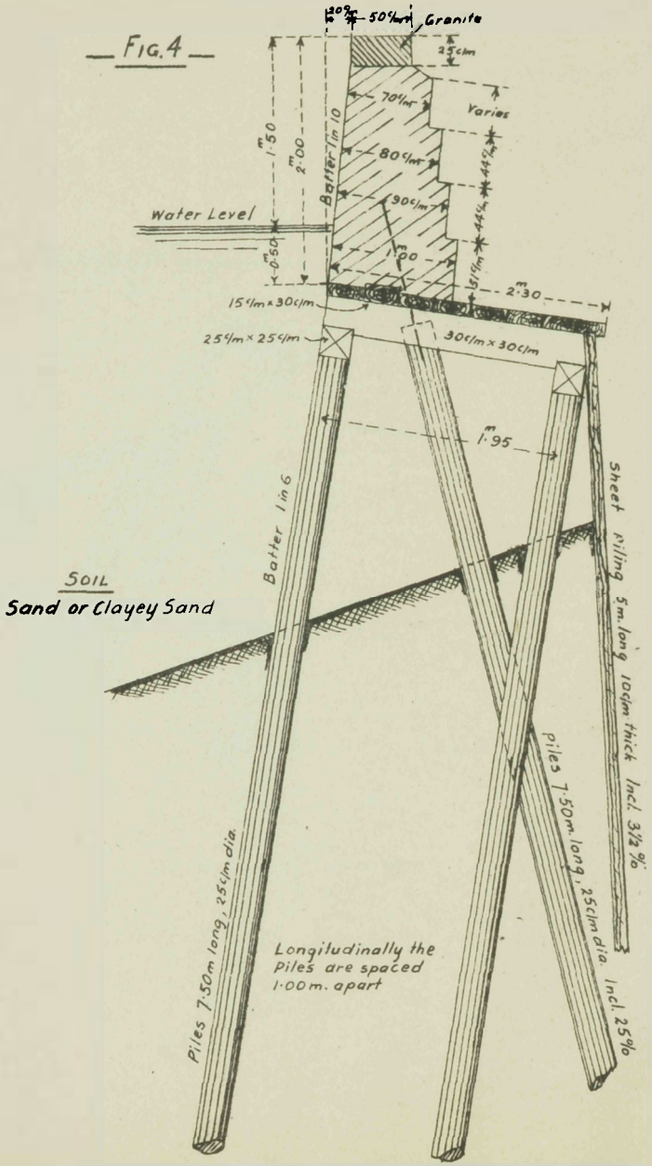


Plate 4.

Brussels—Rupel Canal. [*See Plates* 3 *and* 4.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
No. 1. Brussels sea basin to Cappelle-au-Bois Lock	0·000	17·360	17·360	...	...	40·00 to 57·00	24·00 average and 20·0 through villages	6·50	13·05	Between Kilom. 3 and 6, the width is 50 m. and between Kilom. 8 and 12 it is 55 m.
No. 2. Capelle-au-Bois Lock to Grand- illebroeck Lock	17·360	22·754	5·394	...	...	50·00 to 57·00	...	6·50	8·55	Passing sidings are provided near the locks, where the width is 70 m.
No. 3. Grand-Willebroeck Lock to Rupel	22·754	26·019	3·265	...	...	Do.	...	Do.	H.W. level in the Rupel 4·40	From Grand Willebroeck to the Rupel the old lock at Petit Willebroeck must be used as the diversion is not yet finished.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Cappelle-au-Bois	17·572	Large Lock. 6·50 below minimum water level small lock 3·00	Large Lock. 6·50 below minimum water level small lock 3·00	4·45	16·00 large lock	114·0	Min. ...	Min. ...	...	Sluices and penstocks	...	...	The section of the enlarged canal from above Petit Willebroeck Lock to Wintham was just being completed when war broke out.
				...	8·60 small lock	45·0 and 16·6	...	...	...	Do.	...	...	
Grand Willebroeck	22·754	Do.	Do.	Do.	Do.	Do.	...	...	...	Do.	...	...	
Petit Willebroeck	26·013	4·10	0·30 that is, 0·30 below low water level in Rupel	0·0	7·50 chamber 19·00	39·00 and 30·00	15 to 20	30 to 45 for steamboat or train of boats	Brick	Do.	...	...	

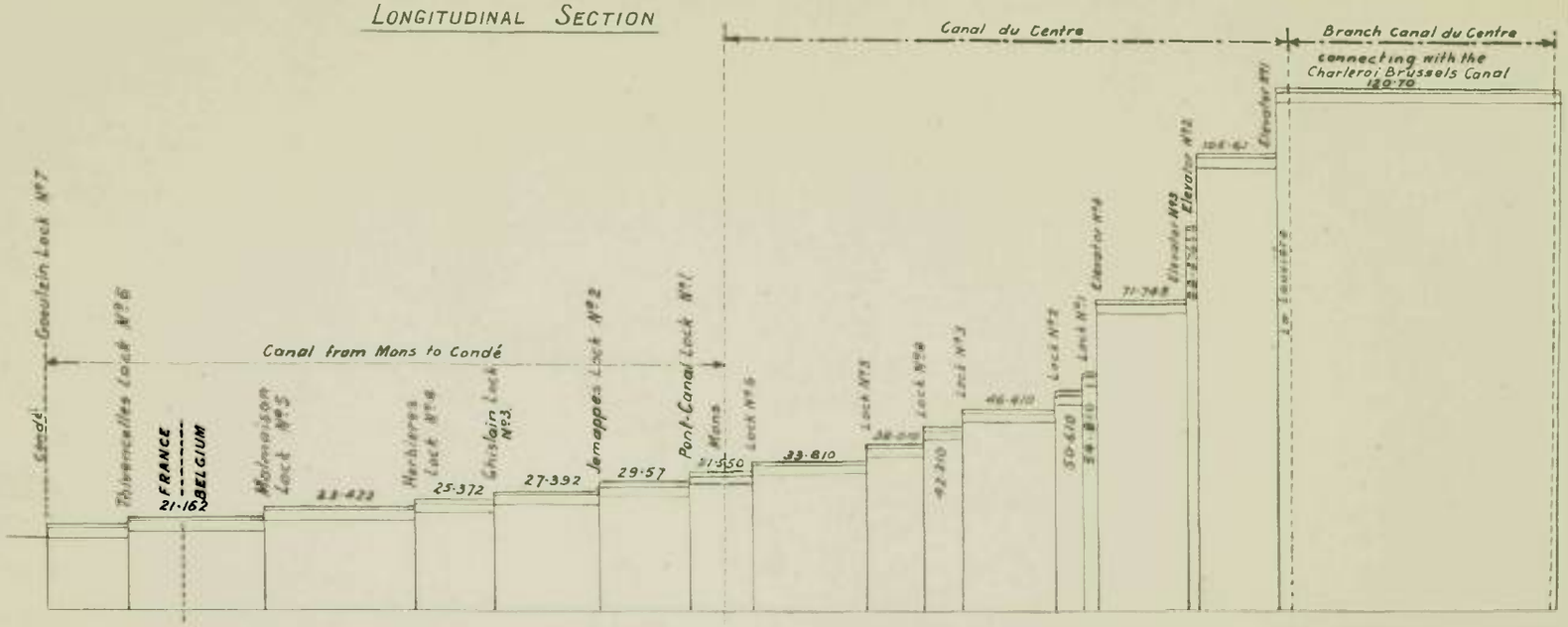
Centre Canal.—continued.

WHARVES AND QUAYS.

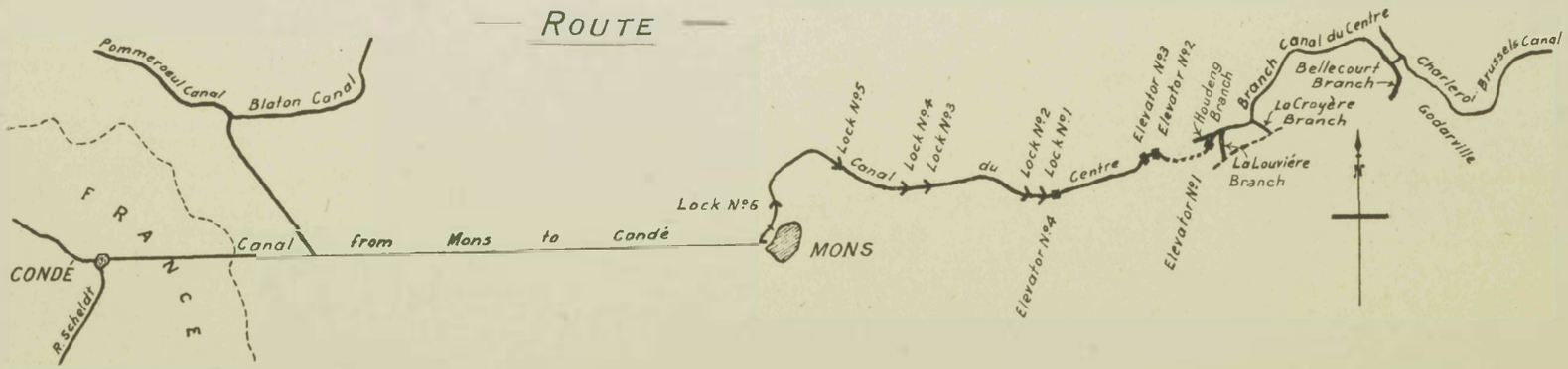
Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
Bellecourt or Eastern Branch :—		Metres		Metres.	Metres.		
Quay wall on right bank of dock, Seneffe...	1·658	...	...	188·40	...	...	There are railways along the quay.
Quay wall on left bank of dock (abandoned), Seneffe	1·650	...	...	172·80	...	...	
La Croyère Branch :—							
Pierart & Co.'s rolling mills, La Croyère, right bank	8·51	0·60	Timber unloading quay, 15·80 m. × 2·80 m.	50·00	11·50	1·20 m. cinders and 9·80 in earth	
Public Wharf, left bank	8·64	0·50	...	133·50	19·80	Earth	
Haine–St. Pierre Colliery Quay, on right bank of dock	8·69	...	...	124·00	...	...	
Houssu Colliery Quay wall on left bank of dock	8·83	...	...	91·50	...	...	
La Louvière Branch :—							
Boël Dock, right bank	9·89	2·90	Masonry	20·00	Inside the works	Earth	
Cambier's Quay, near Hocquet Bridge, left bank	10·013	...	...	23·30	...	...	
Transhipment track of Manage–Mons Railway, right bank	10·178	0·75	...	About 200m. wide gauge rails	6·50 to 12·50	Earth	
Public Wharf, left bank	10·35	0·65	Earth, protected by piles and planking	113·00	13·50	Earth	
Daubresse's Wharf, left bank	10·42	0·55	Do.	25·00	Do.	Do.	
Van Praet's Quay, right bank of dock ...	10·43	...		35·00	...	...	
Roch's Wharf, left bank	10·45	0·55	Do.	25·00	13·50	Earth	
Sart–Longchamps Colliery Quay, right bank of basin	10·55	0·47	...	194·00	...	...	
La Louvière Colliery Quay, left bank of basin	10·57	0·52	...	146·40	...	...	
Houdeng Branch :—							
Unloading quay of Houdeng rolling mills...	9·32	...	...	18·00	...	...	
Public Wharf, right bank	9·61	0·80	Earth	140·00 (about)	13·50	Earth	
Bois du Luc Colliery Quay, left bank of dock	9·70	...	...	258·00	...	...	
Bricourt's Wharf	9·71	0·80	Earth	25·00	13·50	Earth	
Haumont Coal Company's Wharf	9·77	Do.	Do.	90·00	Do.	Do.	

CANAL DU CENTRE & MONS-CONDÉ CANAL

LONGITUDINAL SECTION

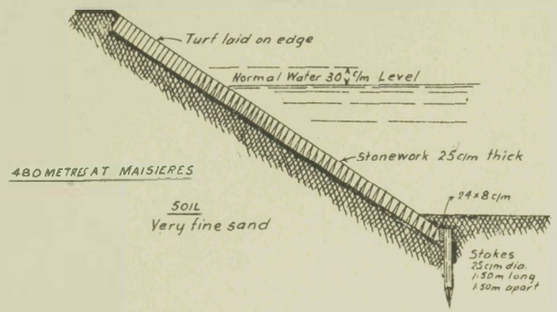


ROUTE



TYPE OF BANK PROTECTION — CANAL DU CENTRE

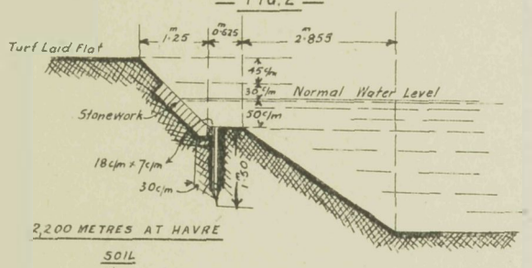
— FIG 1 —



480 METRES AT MAISIERES

SOIL
Very fine sand

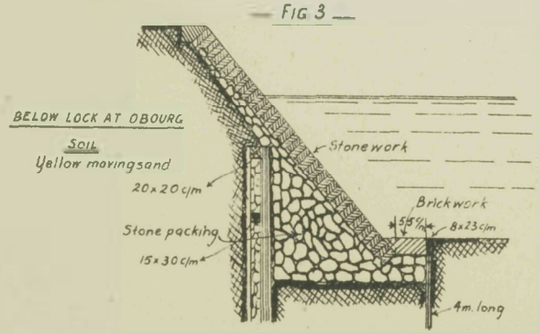
— FIG. 2 —



2,200 METRES AT HAVRE

SOIL
Clay

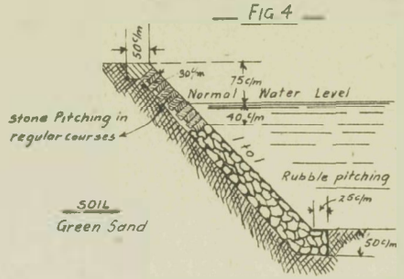
— FIG 3 —



BELOW LOCK AT OBOURG

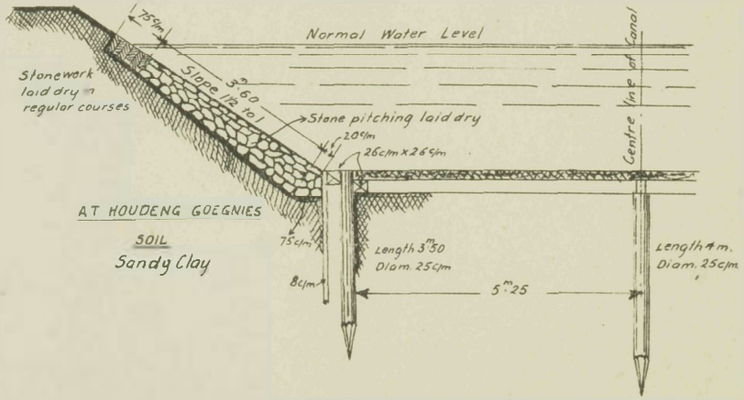
SOIL
Yellow movingsand

— FIG 4 —



SOIL
Green Sand

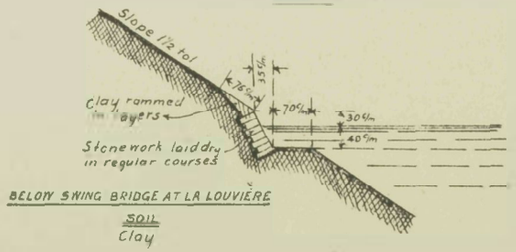
— FIG 5 —



AT HOUDENG GOEGNIES

SOIL
Sandy Clay

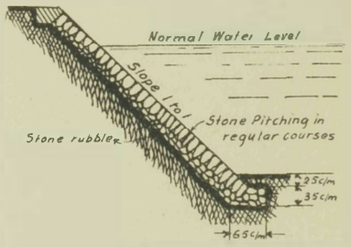
— FIG 6 —



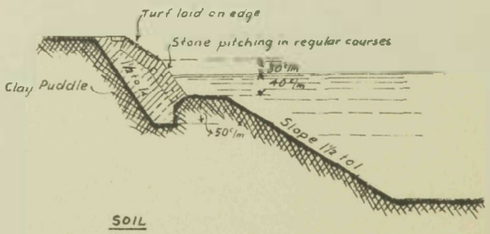
BELOW SWING BRIDGE AT LA LOUVIÈRE

SOIL
Clay

— FIG 7 —



— FIG 8 —

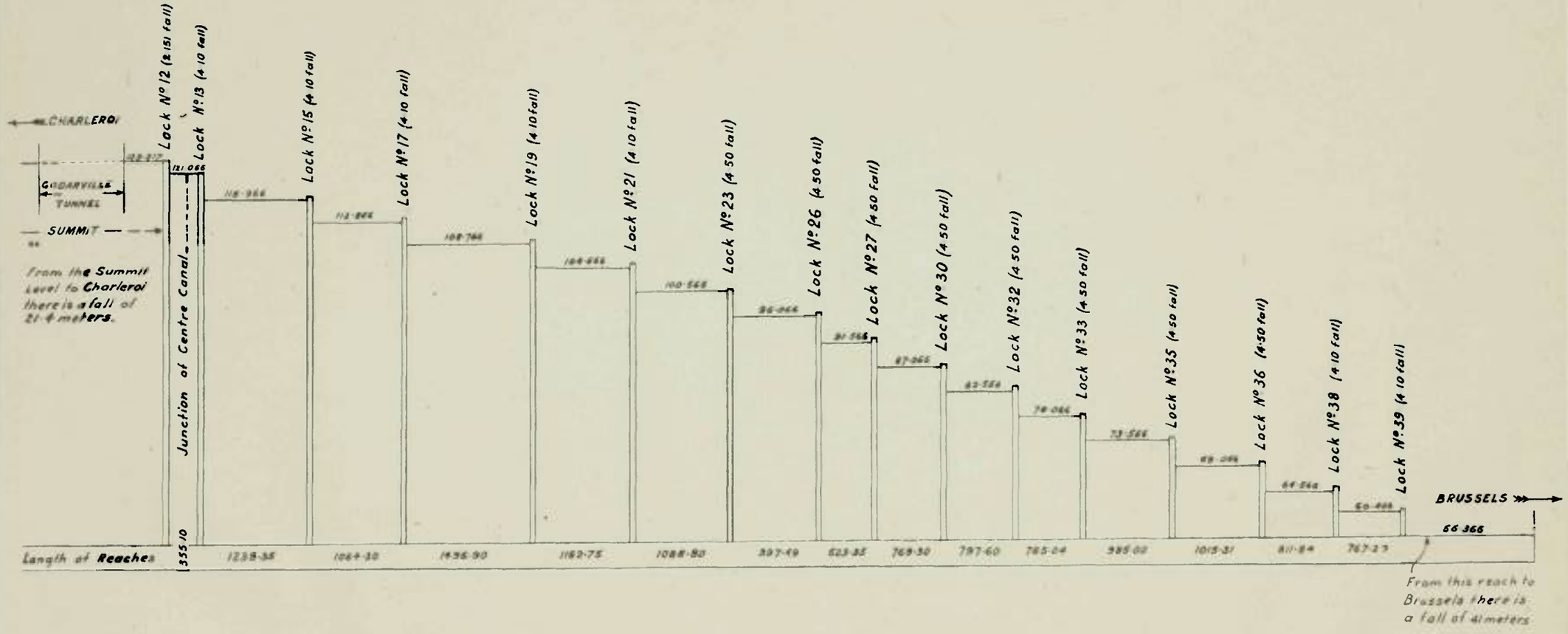


SOIL
Clay

Plate 6.

Canal from Charleroi to Brussels

Longitudinal Section of Reconstructed Portion of Canal from Godarville Tunnel to Ronquières

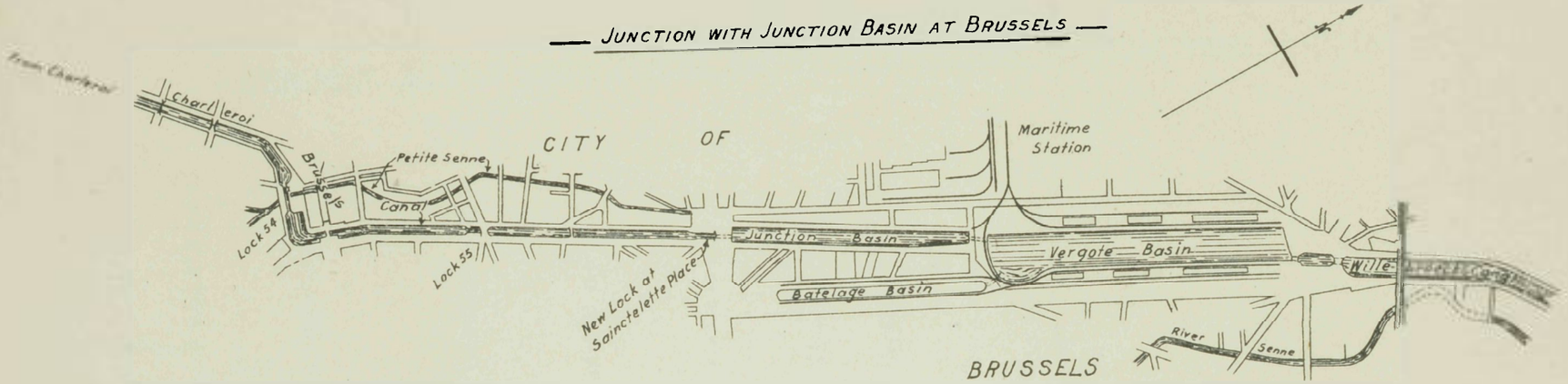


Note—The reconstruction of this canal has to date progressed as far as Lock N° 44.
The section from Lock 44 to Brussels has not yet been enlarged.

Plate 7.

CHARLEROI-BRUSSELS CANAL

JUNCTION WITH JUNCTION BASIN AT BRUSSELS



JUNCTION WITH RIVER SAMBRE AT CHARLEROI

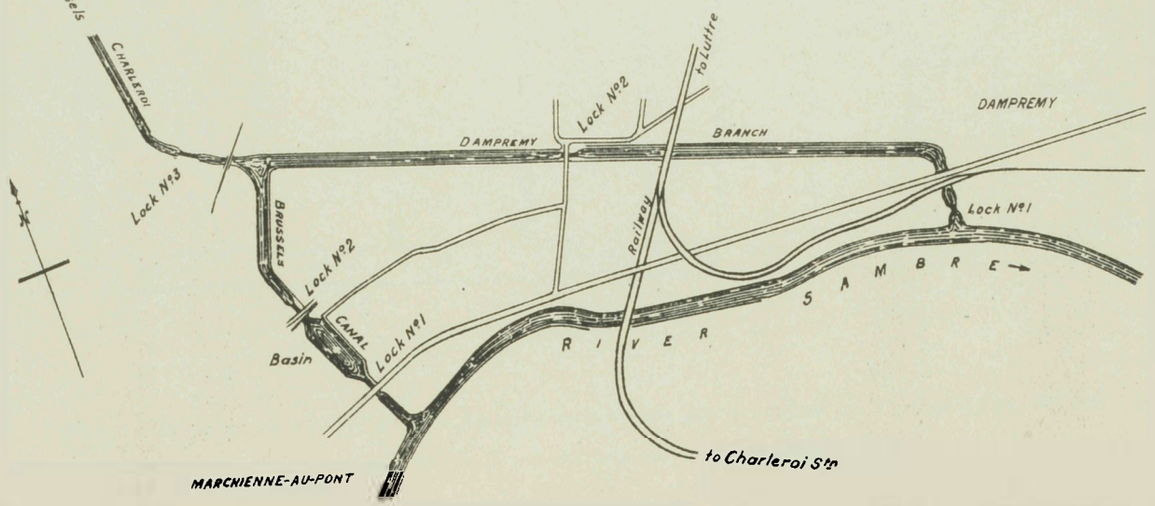


Plate 8.

TYPE OF BANK PROTECTION

CANAL FROM CHARLEROI TO BRUSSELS

FIG. 1

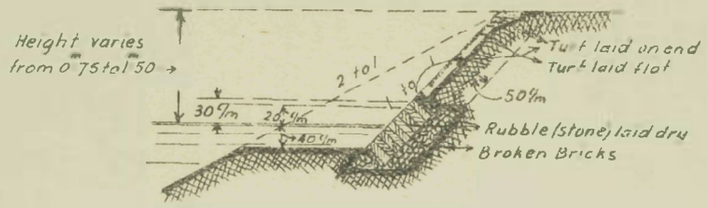
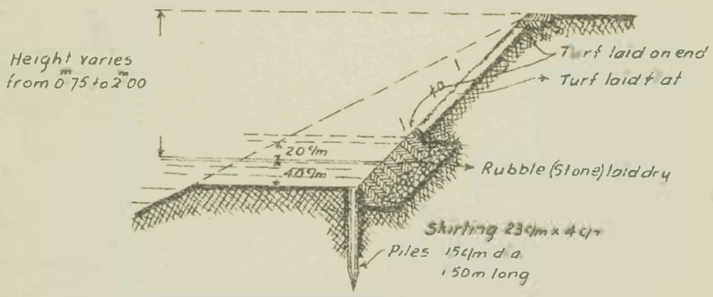
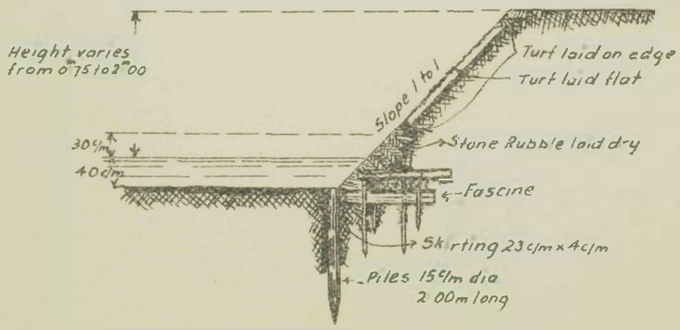


FIG 2



SOIL
Clay

FIG 3



Charleroi—Brussels Canal. [*See Plates* 7, 8 *and* 9.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
No. 1. Old. Dampremy ...	0·041	1·202	0·161	...	...	19·0	10·5	2·40	102·809	This canal is in course of re-construction. The section already enlarged is from Lock No. 1 to Lock No. 44, and accessible to 280-ton boats. From Lock No. 44 to Lock No. 53 the canal can only accommodate 70-ton boats.
No. 2. Old. Marchienne-au-Pont	1·202	2·297	1·095	...	...	Do.	Do.	Do.	104·770	
No. 1. New. Marchienne-au-Pont	0·187	0·470	0·283	...	...	Do.	Do.	Do.	103·349	
No. 2. New. Marchienne-au-Pont	0·470	1·054	0·584	...	...	Do.	Do.	Do.	104·770	At the summit level there is the Godarville tunnel, 1·046 m. long, 7·90 m. wide, 8·80 m. high, and provided on one side with a tow-path, 1·65 m. wide.
No. 3. Marchienne-au-Pont to Roux	1·054	2·929	1·875	...	..	Do.	Do.	Do.	106·875	
No. 4. Roux	2·929	4·843	1·914	...	...	Do.	Do.	Do.	108·935	The summit reach is fed by two adjacent impounding reservoirs and by the Piéton River. In dry periods water is pumped up from the Rampe River. At Ronquières there is a large reservoir. For further description, *see* page 155 and Plate 34.
No. 5. Roux to Gosselies ...	4·843	5·764	0·921	...	...	Do.	Do.	Do.	110·925	
No. 6. Gosselies	5·764	6·768	1·004	...	...	Do.	Do.	Do.	113·010	
No. 7. Gosselies to Courcelles	6·768	8·286	1·518	...	...	Do.	Do.	Do.	114·785	
No. 8. Courcelles to Viesville	8·286	10·126	1·840	...	...	Do.	Do.	Do.	116·860	
No. 9. Viesville to Luttre ...	10·126	12·045	1·919	...	...	Do.	Do.	Do.	118·885	
No. 10. Luttre...	12·045	12·893	0·848	...	...	Do.	Do.	Do.	120·917	
No. 11. Luttre to Seneffe ...	12·893	24·105	11·212	...	...	Do.	Do.	Do.	123·217	
							(7.90 tunl.)	Do.	123·217	
No. 12. Seneffe	24·105	24·459	0·354	...	...	Do.	Do.	Do.	121·066	
No. 13. Seneffe	24·459	25·800	1·341	...	...	Do.	Do.	Do.	116·966	
No. 14. Seneffe	25·80	27·10	1·300	...	...	Do.	Do.	Do.	112·866	
No. 15. Seneffe	27·10	28·60	1·500	...	...	Do.	Do.	Do.	108·766	
No. 16. Seneffe to Arquennes	28·60	29·74	1·140	...	...	Do.	Do.	Do.	104·666	
No. 17. Arquennes	29·74	30·90	1·160	...	...	Do.	Do.	Do.	100·566	
No. 18. Arquennes to Feluy ...	30·90	32·00	1·100	...	...	Do.	Do.	Do.	96·066	
No. 19. Feluy	32·00	32·70	0·700	...	...	Do.	Do.	Do.	91·566	
No. 20. Feluy	32·70	33·50	0·800	...	...	Do.	Do.	Do.	87·066	
No. 21. Feluy	33·50	34·40	0·900	...	...	Do.	Do.	Do.	82·566	
No. 22. Feluy	34·40	35·20	0·800	...	...	Do.	Do.	Do.	78·066	
No. 23. Feluy	35·20	36·30	1·100	...	...	Do.	Do.	Do.	73·566	
No. 24. Feluy to Ronquières...	36·30	37·50	1·200	...	...	Do.	Do.	Do.	69·066	
No. 25 Ronquières	37·50	38·25	0·750	...	...	Do.	Do.	Do.	64·566	
No. 26. Ronquières	38·25	39·10	0·850	...	...	Do.	Do.	2·60	60·466	

Charleroi—Brussels Canal.—continued.

REACHES.—continued.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordinance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
No. 27. Ronquières to Pied d'Eau village	39·10	43·45	4·350	...	...	19·0	10·5	2·40	56·366	
No. 28. Virginal–Samme ...	43·45	44·67	1·220	...	...	Do.	Do.	Do.	54·266	
No. 29. Oisquercq	44·67	46·49	1·820	...	...	Do.	Do.	Do.	48·166	
No. 30. Ittre	46·497	49·443	2·946	...	...	13·1	6·1	2·13	45·27	
No. 31. Ittre to Clabecq ...	49·443	50·408	0·965	...	...	Do.	Do.	2·11	42·54	
No. 32. Clabecq to Lembecq	50·408	53·251	2·843	...	...	Do.	Do.	2·17	39·87	
No. 33. Lembecq	53·251	54·462	1·211	...	...	Do.	Do.	2·19	37·13	
No. 34. Lembecq to Leeuw St. Pierre	54·462	57·933	3·471	...	...	Do.	Do.	2·17	34·41	
No. 35. Leeuw St. Pierre ...	57·933	59·703	1·770	...	...	Do.	Do.	2·06	31·61	
No. 36. Leeuw St. Pierre ...	59·703	61·186	1·483	...	...	Do.	Do.	2·15	28·97	
No. 37. Leeuw St. Pierre to Ruysbroeck	61·186	64·197	3·011	...	...	Do.	Do.	2·19	26·21	
No. 38. Ruysbroeck to Anderlecht	64·197	67·750	3·553	...	...	Do.	Do	2·13	23·43	
No. 39. Anderlecht to Molenbeek St. Jean	67·750	71·719	3·969	...	...	Do.	Do.	2·25	21·01	
No. 40. Molenbeek to Porte de Flandre at Brussels	71·719	73·289	1·570	...	...	Do.	Do.	2·27	18·06	
No. 41. Lock No. 55 (old) to New Lock at Place Sainctelette	73·289	74·050	0·761	...	...	Do.	Do.	2·52	15·30	The lock at Place Sainctelette separates the canal from the Junction Basin, the level of which is 13·05.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
							Min.	Min.					
No. 1. Old lock at Dampremy	0·041	2·4	3·8	...	...	...	...	...	...	...	...	...	
No. 2. Old lock at Marchienne-au-Pont	1·202	...	...	...	...	...	...	...	...	...	...	...	
No. 1 (new) at Marchienne-au-Pont	0·187	...	...	1·509	5·17	39·62	4 to 6	29 to 30 for ascending loaded; 17·0 for descending loaded. 12 to 30 for ascending empty; 11·0 for descending empty	Brick and wrought stone	2 sluices upstream 1·14 m. × 0·42 m. 2 sluices down stream 1·52 m. × 0·63 m.	...	10·00 m. masonry pitching	
No. 2 (new) St. Pierre at Marchienne - au - Pont	0·470	2·00	2·58	1·42	5·17	39·62	3 to 4	*Up:* loaded, 25 m., empty 10 m. 30 s. *Down:* loaded 18 m., empty 10 m. 30 s.	Brick and wrought stone	Sluices, for 2 siphon valves 0·80 m. × 0·80 m. Down stream, 2 sluices, 1·52 m. × 0·63 m.	...	14·00 m. masonry pitching	
No. 3 at Marchienne-au-Pont	1·054	2·31	2·19	2·10	5·18	38·67	6 m. to 3 m. 50 s.	Do.	...	Do.	..	10 m. masonry pitching	This lock has an intermediate gate with sluices. 1·52 m × 0·63m
No. 4 at Roux ...	2·929	2·09	2·03	2·06	5·20	39·59	Do.	Do.	...	Do.	...	Do	
No. 5 Do. ...	4·843	2·12	2·13	1·99	Do.	39·56	Do.	Do.	...	Do.	...	Do	
No. 6 at Gosselies	5·764	2·17	2·08	2·085	Do.	39·59	Do.	Do.	...	Do	...	Do.	

Charleroi—Brussels Canal—continued

LOCKS—continued.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
No. 7 at Gosselies	6·786	2·07	2·30	1·775	5·2)	39·62	6 m. to 3 m. 50 s.	*Up:* loaded 25 m., empty 10 m. 30 s. *Down:* loaded 18 m., empty 10 m. 30 s.	...	Sluices, for 2 siphon valves 0·80 m. × 0·80 m. Down stream, 2 sluices, 1·52 m. × 0·63 m.	...	10 m. masonry pitching	
No. 8 at Courcelles	8·286	2·30	2·24	2·07	Do.	Do.	Do.	Do.	...	Do.	...	Do.	
No. 9 at Viesville	10·126	2·13	2·14	2·02	Do.	Do.	Do.	Do.	...	Do.	...	Do.	
No. 10 at Luttre	12·045	2·23	2·20	2·03	Do.	Do.	Do.	Do.	...	Do.	...	Do.	
No. 11 Do. ...	12·893	2·96	2·34	2·30	Do.	Do.	Do.	Do.	...	Do.	...	Do.	
No. 12 at Seneffe	24·105	2·60	2·03	2·15	5·20	40·80	Do.	Do.	Brick with stone copings	Do.	...	Do.	
No. 13 Do.	24·459	3·40	2·90	4·10	Do.	Do.	...	...	Do.	Penstocks	...	...	Locks Nos. 13 to 43 are new locks of which some are provided with regulating side ponds.
No. 15 Do.	25·80	Do.	Do.	Do.	Do.	Do.	...	...	Do.	Do.	...	...	
No. 17 Do.	27·10	Do.	Do.	Do.	Do.	Do.	...	...	Do	Do.	...	...	
No. 19 Do.	28·60	Do.	Do.	Do	Do.	Do.	...	...	Do.	Do.	...	...	
No. 21 Do.	29·74	...	Do.	Do.	Do.	Do.	...	...	Do.	Do.	...	...	
No. 23 at Arquennes	30·90	Do.	...	4·50	Do.	Do	...	...	Do.	Do.	...	...	
No. 26 Do.	32·00	Do.	Do.	Do.	Do.	Do.	...	..	Do.	Do.	...	...	
No. 27 at Feluy	32·70	Do.	Do.	Do.	Do.	Do.	...	...	Do.	Do.	...	...	
No. 30 Do.	33·50	Do.	Do.	Do.	Do	Do.	...	...	Do.	Do.	...	...	
No. 32 Do.	34·40	Do.	Do.	Do.	Do.	Do.	...	...	Do.	Do.	...	...	
No. 33 Do.	35·20	Do.	Do.	Do.	Do.	Do.	...	...	Do.	Do.	...	...	
No. 35 Do.	36·30	Do.	Do.	Do.	Do.	Do.	...	...	Do.	Do.	...	...	
No. 36 at Ronquières	37·50	Do	Do.	Do.	Do.	Do.	...	...	Do.	Do.	...	...	
No. 38 Do.	38·25	Do.	Do.	4·10	Do.	Do.	...	...	Do.	Do.	...	...	
No. 39 Do.	39·10	Do.	Do.	Do.	Do.	Do.	...	...	Do.	Do.	...	...	

No. 42 at Pied d'Eau (village)	43·45	Do.	Do.	Do.	Do.	Do.	...	...	Do.	Do.	...	...
No. 43 at Virginal-Samme	44·67	Do.	Do.	Do.	Do.	Do.	...	...	Do.	Do.	...	...
No. 44 at Oisquercq	46·497	...	...	2·70	Do.	Do.	...	...	Do.	Do.	...	...
No. 45 at Ittre ...	19·443	2·13	2·14	2·73	2·70	19·08	3 m. 30 s. to 5 m.	*Up:* loaded 19 m., empty 8 m. *Down:* 11 m. to 7 m.	Brick and wrought stone	1 siphon sluice 0·80 m. × 0·80 m. 2 upstream sluices 0·90 m. × 0·42 m. 2 down stream sluices 0·90 m. × 0·63 m.	...	10 m. masonry pitching
No. 46 at Clabecq	50·408	2·11	2·19	2·67	Do.	19·05	Do.	Do.	Do.	Do.	...	Do.
No. 47 at Lembecq	53·251	2·18	2·19	2·74	Do.	19·09	Do.	Do.	Do.	Do.	...	Do.
No. 48 Do.	54·462	2·22	2·21	2·72	2·73	19·07	Do.	Do.	Do.	Do.	...	Do.
No. 49 at Leeuw St. Pierre	54·933	2·18	2·10	2·80	2·70	19·17	Do.	Do.	Do.	Do.	...	Do.
No. 50 Do.	59·703	2·06	2·15	2·64	2·72	19·14	Do.	Do.	Do.	Do.	...	Do.
No. 51 Do	61·186	2·19	2·20	2·76	2·75	19·23	Do.	Do.	Do.	Do.	...	Do.
No. 52 at Ruysbroeck	64·197	2·19	2 17	2·78	2·70	19·17	Do.	Do.	Do	Do.	...	Do.
No. 53 at Anderlecht	67·750	2·13	2·25	2·65	2·72	19·08	Do.	Do.	Do.	Do.	...	Do.
No. 54 at Molenbeek St. Jean	71·719	...	...	...	6·00	40·80	...	...	...	...	...	...
No. 55 at Brussels	73·289	...	...	...	6·00	Do.	...	...	...	...	...	...
New Lock at head of Bassin de la Jonction (Place Sainctelette)	74 054	..	...	2·25	6·00	Do.	...	...	...	...	...	...

Charleroi—Brussels Canal.—continued

WHARVES AND QUAYS.

This canal is in course of re-construction and no detailed information as to the wharves and quays is available, for the re-constructed portion from Lock No. 12 to Lock No. 44.

For the whole length of the canal, however, adequate wharf and quay accommodation is provided. The wharves range from 25 to 100 m. in length and 5 to 60 m. in breadth. The copings are generally 0·55 to 1·45 m. above normal water level.

There are also a certain number of harbours and sidings varying from 115 to 200 m. in length and 20 to 40 m. in width, with depths between 1·70 and 2·58 m.

A large number of quay walls belonging to the various industrial and coal companies exist along the canal banks varying from 15 to 200 m. in length and with copings 0·70 to 1 m. above normal water level.

The following table gives particulars of the wharves and quays as far as they are available, that is from Lock No. 1 to Lock No. 12, and from Lock No. 44 to Lock No. 55 at Brussels.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Messrs. Dubois' Wharf	0·081	0·90	Embankment	25	10	...	
Messrs. Donnée's Wharf, above Dampremy Bridge	0·183	1·40	Do.	18	6	...	
Wharf above Dampremy Bridge, right bank	0·247	0·90	Do.	25	5·30	Paved	
Messrs. Rouard–Beghin's Wharf	1·059	1·05	Do.	75	6·30	...	
Do. above old Lock No. 2	1·210	0·50	Do.	30	6·25	Paved	
Associated owners old wharf	1·723	0·75	Do.	75	11·5	...	
Bonehill Bros. Wharf, below Lock No. 1, new	0·074	2·90	Do.	35	7	Paved	Reach No. 1 (new).
Do. above Lock No. 1	0·223	0·70	Do.	50	9·35	Do.	
Parent Bros. Wharf	0·261	Do.	Do.	25	Do.	Do.	
Brison-Bouillard Wharf	0·328	1·10	Do.	Do.	Do.	Do.	
Decrolière Wharf	0·334	0·75	Do.	Do.	8	Do.	
Bailieux Company's Wharf	0·668	1·20	Do.	Do.	10	Do.	
Brison-Bouillard Wharf	0·758	1·0	Do.	45	Do.	...	Reach No. 2 (new).
Bayemont Quay	2·362	...	...	160	...	...	
Monceau-Fontaine Quay	2·819	...	...	50	...	...	
Chauw-à-Roc Wharf	2·899	0·55	Embankment	75	7·25	...	
Martinet Quay	3·793	...	...	90	...	...	Served by railway.
Charleroi Nord Coal Company's Quay ...	4·337	...	...	170	...	...	Do.
Caillette Coal Company's Quay	4·597	...	...	85	...	...	
Rochelle Coal Company's Wharf ...	4·638	0·60	Dry pitching	110	8·75	Paved	
Messrs. Henri Lepage's Wharf	4·652	Do.	Embankment	25	9·0	...	
Roux Saw-mill Wharf	4·753	0·80	Do.	Do.	6·75	Paved	
Roux Glass Works Wharf	4·849	0·70	Do.	Do.	8·60	...	
Messrs. Brogneaux Wharf	4·854	1·00	Do.	Do.	6·60	Paved	
Messrs. Leclerq's Wharf	4·863	1·05	Do.	Do.	Do.	Do.	
Messrs. Mailen's Wharf	5·000	0·60	Do	Do.	5·50	Do.	
Jumet Coal Company's Quay	5·513	0·70	...	90	...	...	

Grand-Bordia Coal Company's Wharf ...	6·462	0·80	Embankment	100	6·0	...	
Maseaux Quay	7·549	0·76	...	29	...	...	
Marouse Wharf	7·571	0·55	Embankment	120	9·5	Paved	
Falnuée Coal Company's Quay	7·746	0·62	...	72	...	...	
Grand-Conty et Spinois Wharf	7·776.	0·60	Embankment	50	8·60	Paved	
Falnuée Wharf	7·971	0·80	Dry rubble	65	7·5	...	
Grand-Conty et Spinois Quay	8·125	0·70	...	80	...	...	Provided with cranes and railway track.
Wartonlieu Briquette Company's Quay ...	8·218	0·77	...	131	...	...	
Courcelles Glass Company's Quay	8·457	0·43	...	46	...	...	
Courcelles Nord Coal Company's Quay ...	11·065	0·62	...	148	...	...	
Prelle Wharf	11·494	0·55	Dry rubble	25	9·20	Paved	
Van Moorsel Quay	12·065	1·49	...	22	...	...	
Messrs. Greer's Wharf	13·076	1·30	Dry rubble	25	7·30	Paved	
Messrs. Colson's Wharf	13·934	0·60	Do.	Do.	6·00	...	
Messrs. Depasse's Wharf	13·959	Do.	Do.	Do.	Do.	...	
Messrs. Geysein's Wharf	13·984	0·65	Do.	Do.	Do.	...	
Luttre Sugar Company's Wharf	14·207	0·90	Do.	Do.	Do.	Paved	
... ...	...	...	...	...	...	...	Reconstructed section of the canal of which no detailed particulars are available.
Massart's Wharf	48·701	0·65	Earth embankment	20·00	Width of embankment	Earth	
Beck's Wharf	50·567	0·70	Do.	Do.	Do.	Do.	
Gabriel's Wharf	50·647	Do.	Do.	45·00	Do.	Do.	
Delouvain's Quay	50·747	...	...	20·00	...	...	
Public Wharf	51·361	0·70	Earth embankment	45·00	Width of embankment	Earth	
Goffin's Wharf	51·561	0·60	Do.	20·00	Do.	Do.	
Marquis de Souve's Quay	51·591	...	...	20·00	...	...	
Quenast Quarry Quay	52·731	...	...	105·00	...	...	Connected by rail with Tubize Station.
Claes de Lembecq Quay	54·196	...	...	60·00	...	...	
Van Hemelryck's Wharf	56·027	0·65	Earth embankment	20·00	Width of embankment	Earth	
Van Volxem's Quay, Hal.	57·191	...	...	40·00	...	...	
Malbeck's Wharf	57·329	0·65	Earth embankment	20·00	Width of embankment	Earth	
Van Lier's Wharf	57·389	Do.	Do.	Do.	Do.	Do.	
De Vis Wharf	57·409	Do.	Do.	Do.	Do.	Do.	
Public Wharf	57·429	Do.	Do.	40·00	Do.	Do.	
Dethier's Wharf	58·306	Do.	Do.	20·00	Do.	Do.	
Gregoire's Quay, Buysinghen	58·827	...	...	Do.	...	...	
Huysinghen Spinning Mill Quay	59·855	...	...	Do.	...	...	
Dumortier's Wharf	60·047	0·75	Earth embankment	Do.	Width of embankment	Earth	
Loth Company's Wharf	62 224	0·60	Do.	Do.	Do.	Do.	

Charleroi—Brussels Canal.—continued.

WHARVES AND QUAYS.—continued.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf. or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Wauters Wharf...	62·264	0·65	Earth embankment	20·00	Width of embankment	Earth	
De Ridder's Wharf	62·284	Do.	Do.	Do.	Do.	Do.	
Rey's Quay	64·368	...	...	25·00	...	...	
Devis Quay, Ruysbroeck	65·145	...	...	20·00	...	...	
Chemical Works Quay, Droogenbosch ...	66·056	...	...	40·00	...	...	
Walkier's Wharf	68·696	0·70	Earth embankment	20·00	Width of embankment	Earth	
De Vleeschouwer's Quay, Anderlecht ...	68·717	...	...	Do.	...	...	
Goris' Wharf	70·528	0·60	Earth embankment	Do.	Width of embankment	Earth	
Van Grimbergen's Wharf	70·743	Do.	Do.	Do.	Do.	Do.	
De Doncker's Wharf	70·763	Do.	Do.	Do.	Do.	Do.	
Demet's Wharf	70·783	Do.	Do.	Do.	Do.	Do.	
Camusel's Wharf	70·783	Do.	Do.	Do.	Do.	Do.	
Public Wharf	70·803	Do.	Do.	Do.	Do.	Do.	
Delcoigne's Wharf	70·803	Do.	Do.	Do.	Do.	Do.	
Van Imschot's Wharf	70·870	Do.	Do.	Do.	Do.	Do.	
Bavaro-Belge Brewery Wharf...	71·670	Do.	Do.	Do.	Do.	Do.	
Quay in 54th Reach, Brussels...	72·931	...	...	556·00	...	...	
Quay in 55th Reach, Brussels...	73·428	...	...	819·00	...	...	

Démer River—(Navigable Section).

REACHES.

Name of Reach	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Diest to Sichem	0·00	5·912	5·912	The course is irregular.		13·20	10·50	1·90 variable	17·889	Boats frequenting this waterway are generally 26 m. long, 4·75 m. beam, and have a capacity of about 140 tons.
Sichem to Testelt	5·912	8·612	2·700	...	...	11·85	11·00 to 11·50	2·00	16·61	
Testelt to Aerschot	8·612	21·856	13·244	...	...	14·00	11·50	1·80	13·59	
Aerschot to Werchter	21·856	33·151	11·295	...	...	14·60	Do.	Do.	9·41	This reach comprises 162 m. of the Dyle, upon which the Werchter weir is situated.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Aerschot ...	21·860	1·82	Extremely variable (sill at +9·95 m. ordnance level)	3·06 variable with discharge of river	5·20 chamber 10·00	123·00	Min. 25	Varies according to the number of boats	Lockheads of masonry. Lock-walls of stone pitching	2 penstocks, 1·23 m. × 0·80 m. 2 sluices 0·70 m. × 0·50 m.	...	Brick pitching: 5·50 m. down stream of top head and 10·00 m. down stream of bottom head	

Démer River—continued.

WEIRS.

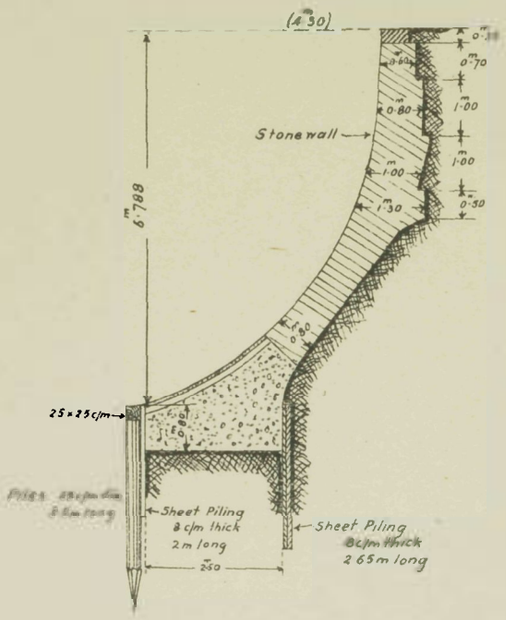
Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.				Remarks
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Sichem	5·912	1 of 4·97	Wooden shutters	2·53	1·35	...	Shutters	1·29	
					1·33	...	Sluices	Do.	
					1·33	...	...	1·15	
					3·26 (Sichem small mill weir)	...	Shutters	2·71	
Testelt...	8·612	1 of 4·87	Do.	3·065	4·49	...	Sluices	2·94	
					1·51	...	Do.	1·24	
					4·35	...	Shutters	Do.	
Aerschot	21·856	1 lock chamber	Mitre gates	1·82	3·00	...	Sluices	1·42	For mill on the right bank.
					4·83	...	Do.	3·15	Old passage.
					3·83	...	Do.	Do.	For mill on the left bank.
Werchter (on the Dyle, 162 m. down stream of the Junction)	33·426	1 of 5·10	Baulk	2·70	9·305	...	Do.	2·70	There are 13 baulks, 200 m. × 200 m., and 4 discharge sluices.

WHARVES AND QUAYS.

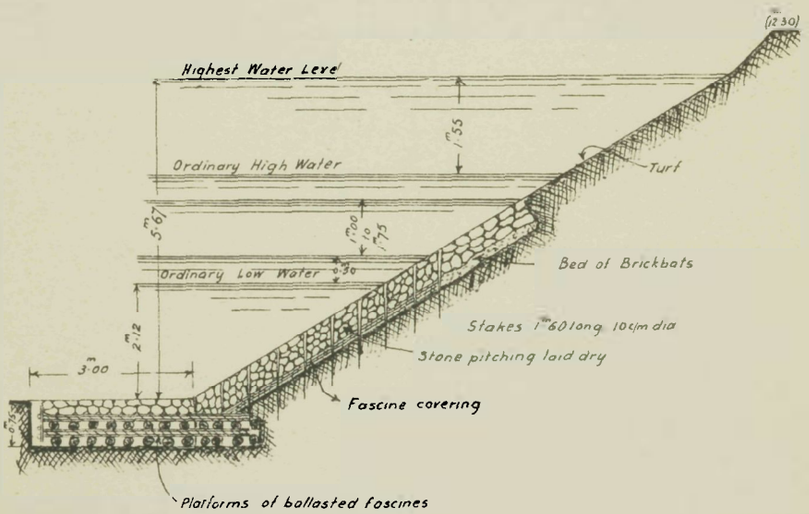
Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks
					Width.	Construction.	
Diest, at origin of the navigable Démer	0·000	...	Natural earth	...	...	...	
Sichem	5·617	...	Do.	...	...	...	
Testelt	8·702	...	Do.	...	...	...	
Messelbroeck	13·190	...	Do.	...	...	...	
Rommelaer	15·386	...	Do	...	...	...	

Type of Bank Protection

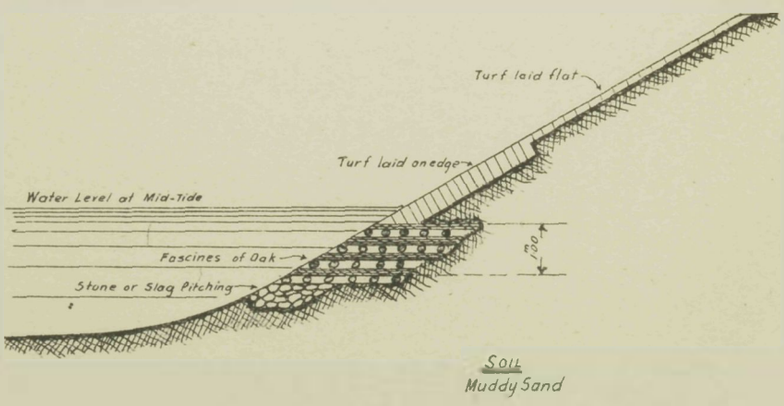
River Dyle



This protection is used through the town of Malines



Soil
Muddy Sand



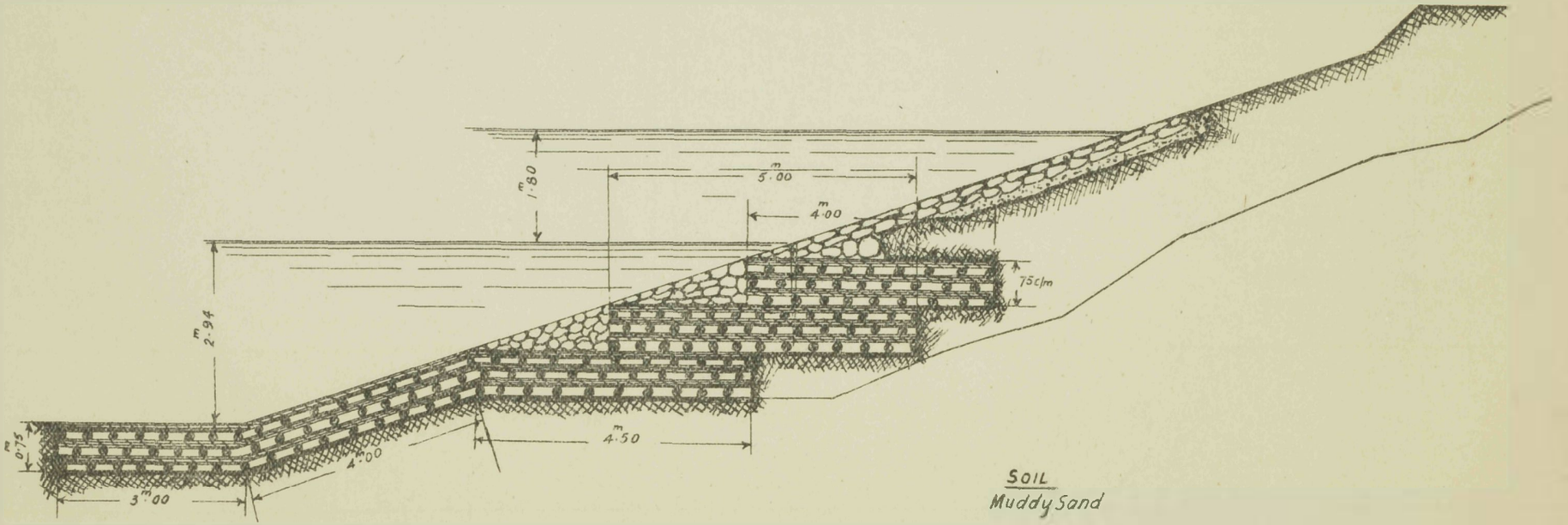
Soil
Muddy Sand

Protection on the Upper Dyle

Maltby & Sons Lith

TYPE OF BANK PROTECTION

RIVER DYLE



Protection made on a section where the dyke has had to be constructed into river bed

Plate II

Langdorp	17·820	...	Do.	...	...	...		
Aerschot	20·847	...	Do.	...	...	...		
Aerschot	21·574	...	Do.	...	...	...		
Aerschot	21·983	...	Do.	...	...	...		
Rivieren	25·963	...	Do.	...	...	...		
Werchter...	33·213	...	Do.	...	...	...		

Dyle River (Navigable Section). [*See Plates* 10 *and* 11.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Dyle	Junction with the Démer	Junction with the Rupel	28·850	...	...	20 m. at junction with the Démer and 40m. to 50 m. at junction with theSenne	...	2 m. to 5·80 m.	...	High tides carry about 13 kms. up the river, that is to just above Muysen. In ordinary times the rise at the Senne is 3 m. From the point of view of navigation the Dyle may be divided into four sections :— (1) Werchter to Muysen : Towage upstream by men and horses, downstream by men ; 80-ton boats. (2) Muysen to Malines Weir : Towage both ways by men ; 80-ton boats. (3) Malines to Sennegat : Towage by men only ; 250-ton boats. (4) Sennegat to the Rupel : Traction with sails or with the tide ; 250-ton boats.

Dyle River—continued.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
New Diversion following the E. boundary of Malines	Junction with the Dyle above Malines	Junction with the Dyle below Malines	2·400	The course is irregular.		...	...	...	...	Width and depth of Diversion not known. It is, however, large enough to accommodate 250-ton boats. The Diversion is well provided with quays. Boats plying above Malines are limited to 80-ton capacity. Below Malines, on the right bank, there is a tributary of the Dyle known as De Vrouwevliet. It is 3 to 4 m. wide and 0·80 to 1 m. deep.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Malines Upper Lock on the Main Arm	0·120 below the origin of the diversion	...	...	Variable	5·20	41	...	...	...	...	...	...	Provided with ebb and flood gates.
Malines Lower Lock on the Main Arm	22·166 from junction with the Démer	...	...	Variable	10·50 Chamber 24·5 to 37·6	90	...	...	...	...	...	...	Do.

Dyle River—continued.

WEIRS.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Old Moulins Weir, at entrance to Malines	20 100 from Werchter Weir	1 of 5·20	Sluice	3·30 (height of the sluice)	...	...	...	...	*This weir is stated to have been dismantled.*
New weir on the New Diversion	Near the upstream Junction with the Dyle	1 of 6·36	Baulk		...	...		...	This weir is provided with a gate, which opens under the action of the tide, and has two adjacent baulk weirs 10·95 m. wide.

Dendre River—(Canalised Section).

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Bilhée	0·000	1·362	1·362	0·887	0·475	21·30 16·60	15·00 10·30	2·10	28·463	The usual dimensions of boats plying upon this waterway are: Length 15 to 41 m., beam 2·85 to 5 m., draught 1·9 m. maximum, tonnage 335 tons maximum.
Rebaix	1·419	3·803	2·384	1·044	1·340	Do.	Do.	Do.	26·463	
Papignies	3·745	7·538	3·793	1·859	1·934	Do.	Do.	Do.	23·633	
Lessines	7·480	11·928	4·448	2·403	2·045	9·10	9·10	Do.	21·173	
Deux Acren	11·870	14·834	2·964	1·570	1·394	16·60	10·30	Do.	19·173	

Dendre River—continued.

REACHES—continued.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Deux Acren to Grammont ...	14·834 Acren Lock	20·686	2·287	1·395	0·892	17·60	10·00	2·10	16·953	
	17·121 boundary of East Flanders		Hainaut 3·565 in East Flanders	1·769	1·796					
Grammont to Idegem	20·686	26·884	6·198	3 080	3·118	16·30	Do.	Do.	15·233	
Idegem to Pollaere	26·884	34·897	8·013	3·342	4·671	16·45	Do.	2·10 to 2·25	12·883 to 13·033	
Pollaere to Denderleeuw ...	34·897	42·859	7·962	5·070	2·892	16·00	Do.	2·10	10·373	
Denderleeuw to Teralphene ...	42·859	45·581	2·722	1·678	1·044	Do.	Do.	2·24	8·173	
Teralphene to Alost	45·581	51·672	6·091	3·669	2·422	Do.	Do.	2·43 to 2·58	7·463 to 7·613	
Alost to Wieze	51·672	57·914	6·242	5·478	0·764	Do.	Do.	2·30	5·833	
Wieze to Termonde	57·914	64·351	6·437	3·227	3·210	22·20	14·00	Do.	4·033	
Termonde	64·351	65·268	0·917	...	0 917	15·50	15·00	Do.	3 23	
Section of the Dendre between the Termonde Lock and weir and the junction with the Scheldt	65·268	65·381	0·113	...	0·113	40·00	10·00	Do.	1·25 minimum at low-water sea level. 4.32 minimum at high water sea level	

LOCKS

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
							Min. Sec.	Min. Sec.					
Bilhée	1·362	3·10	2·31	2·00	5·20	41·85	7 0	17 0	Vertical in brick and wrought stone	2 pen-stocks, 7 sluices	...	12·00 m. pitching	2 sluices in upstream gates, two in down stream gates, and 3 in the pier to the spillway.
Rebaix	3·803	3·10	2·31	2·83	Do.	Do.	10 0	21 0	Do.	2 penstocks, 4 sluices	...	Do.	Sluices in gates.
Papignies ...	7·583	3·10	2·31	2·46	Do.	Do	7 0	17 0	Do.	2 penstocks, 7 sluices	...	Do.	2 sluices in upstream gates, 2 in down stream gates and 3 in pier to spill-way.
Lessines	11·928	3·00	2·31	2·00	Do.	Do.	Do.	Do.	Do	Do.	...	Do.	Do.
Deux-Acren ...	14·834	3·10	2·10	2·22	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	Do.
Grammont ...	20·686	3·57	2·10	1·72	...	41·87	Do.	15 0	Do.	Sluices in gates	...	20 m. of fascine covered by pitch-ing	This lock has two pair of mitre gates and 1 sluicing gate. The weir is placed in a diversion.
Idegem	26·844	4·20	2·10 and 2·25	2·20 to 2·35	Do.	Do.	8 0	Do.	Do.	Do.	...	Do.	Do.
Pollaere	34·897	3·00 and 2·85	2·10	2·51 to 2·66	Do.	41·77	9 0	Do	Do.	Do.	...	Do.	This lock has 2 pairs of mitre gates and 1 sluicing gate. The weir is adja-cent to it.

Dendre River—continued.

LOCKS—continued.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
							Min. Sec.	Min. Sec.					
Denderleeuw ...	42·859	4·05	2·24	2·20	5·20	42·77	13 0	18 0	Vertical in brick and wrought stone	Sluices in gates	...	20 m. of fascine covered by pitching	This lock has two pairs of mitre gates and 1 sluicing gate. The weir is in a diversion.
Teralphene ...	45·851	2·99	2·28 and 2·43	0·56 and 0·71	5·25 upstream 5·35 down stream	42·65	7 0	12 0	Do.	Do.	...	Do.	Do. The weir is adjacent to lock
Alost	51·672	3·98 and 4·13	2·35	1·63 and 1·78	5·20 upstream 5·30 down stream	Do.	9 0	16 0	Do.	Do. Do.	...	15·00 m.	Do.
Wieze	57·914	4·45	2·65	1·80	6·15	53·25	15 0	30 0	Vertical walls, pitched copings	Do.	...	...	The weir is adjacent to the lock. The upstream gates are provided with 6 large sluices serving to discharge the water.
Termonde navigation lock	64·351	3·95	3·15	0 to 0·80	6·20	27·25	10 0	15 0	Do.	Do.	...	...	Large boats pass this lock at slackwater. The lock has 2 pairs of ebb gates and 1 pair of flood gates. The weir is adjacent to the lock.

Termonde lock-weir	65·268	2·90	1·26	0 to 1·64	8·50	No chamber	...	5 0 Largely depends on state of the tide	Do.	...	10 00 m. pitching and fascine	...	Boats pass at slack water. There are 1 pair of ebb gates and 1 pair of flood gates.

WEIRS.

Name of Weir.	Distance in kiloms.	Navigable passage. None.	Spillway. Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Remarks.
Bilhee	1·362	...	1 of 4·50	Baulk	2·00	Adjacent to lock.
		...	1 of 5 50	Sluice	Do.	
Vieux-Pont (Rebaix)... ...	3·803	...	1 of 5·50	Baulk	2·83	In diversion.
		...	1 of 4·80	Sluice	Do.	
		...	2 of 2·00 adjacent to the first	Do.	...	
Papignies	7·538	...	1 of 3 50	Baulk	2 46	Adjacent to lock.
		...	1 of 4·50	Do.	...	Adjacent to factory.
		...	1 gutter of 1·50	Sluice	...	Near the old weir.
Lessines	11·928	...	1 of 3·50	Baulk	2·00	Adjacent to the lock.
		...	1 of 5·20	Do.	...	Old weir built across the old channel.
		...	1 of 3 90	Do.	...	Adjacent to the factory.
		...	1 sluice, 0·90	Sluice	...	Do.
		...	1 sluice, 0·85	Do.	...	Do.
Deux-Acren	14·843	...	1 of 5 20	Baulk	2·22	Adjacent to lock.
		...	1 of 4 70	Do.	...	Old weir across old channel.
		...	1 of 2 20	Sluice	...	Adjacent to factory.
Grammont Weirs—						
Principal weir	20·730	...	1 of 4 45	Do.	1·72	Built in diversion.
Old mill weir	...	...	4 of 1·46	Do.	Do.	Do.
Idegem	26·884	...	1 of 3·95	Do.	2·40	Do.
	...	...	1 of 4·45	Do.	2·25	Do.

Dendre River—continued.

WEIRS—continued.

Name of Weir.	Distance in kiloms.	Navigable passage. None.	Spillway. Number and width of openings in metres.	Spillway. Type of Weir.	Spillway. Difference between head and tail race in metres.	Remarks.
Pollaere Weirs—						
Lock weir	34·889	...	2 of 5·20	Baulk	2·61 and 2·46	Adjacent to lock.
Molendender	Do.	...	2 of 1·20	Sluice	Do.	The Molendender discharges immediately upstream of the Pollaere Lock, on the left bank. It passes through Ninove, where there is a mill. An arm of this watercourse branches off upstream of the mill, and is known as the Beverbeek, where there is also a mill. These mills are provided with discharge sluices, which serve to drain the river in time of flood.
Beverbeek	Do.		1 of 2·07	Do.	Do.	
Denderleeuw	42·859	...	2 of 5·20	Baulk	2·34	In diversion.
Teralphene	45·581	...	Do	Do.	0·70 and 0·55	Adjacent to lock.
Alost Weirs—						
Lock weir	51·672	...	1 of 6·00	Baulk	1·55 and 1·40	Adjacent to lock.
Weir on industrial branch	...	...	1 of 1·40 1 of 1·17	Sluice	Do.	
Vieille-Dendre	...	...	4 of 1·50	Do.	Do.	
Wieze	57·914	...	2 of 6·15	Baulk	1·80	Adjacent to lock.
Termonde Navigation Lock...	64·351	...	4 of 1·55 4 of 1·05	Sluice	0·0 to 0·80	Adjacent to lock.
Termonde lock-weir	65·268	...	1 of 5·20 4 of 1·07	Baulk Sluice	0·0 to 1·64	Adjacent to lock.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Pilette Wharf	0·6	1·00	Earth embankment	50·00	20·00	Earth	
Cailleux-Hubin Wharf, Lessines	10·2	Do.	Do.	850·00	20·00 to 30·00	Macadam	
Leblon Wharf	11·3	0·66	Do.	45·00	25·00	Do.	
Lessines Town Wharf	11·4	1·20	Wall	280·00	Do.	Do.	
Tacquenier Wharf	11·7	0·90	Do.	200·00	20·00	Do.	Railway connecting quay with the quarry.
Vandevelde Wharf	14·2	1·00	Earth embankment	110·00	40·00	Do.	
Overboulaere Wharf	19·004	1·08	Do.	72·00	8·00	Earth	Left bank.
Grammont Harbour	21·011	1·90	Wall	100·00	12·00	Paving, 3·00 m. wide	Left bank } 36·00 sq. m. area.
Grammont Harbour	Do.	2·50	Do.	182·00	14·00	Do.	Right bank }
Onkerzeele Wharf	22·160	2·00	Earth embankment	10·00	8·00	Earth	Right bank.
Schendelbeke Wharf	24·513	0·70	Do.	50·00	25·00	Do.	Left bank.
Idegem Wharf	26·881	Do.	Timber and earth embankment	45·00	8·00	Do.	Do.
Santbergen Wharf	29·874	1·95	Earth embankment	26·00	15·00	Do.	
Pollaere Wharf	32·984	0·75	Do.	80·00	Do.	Do.	Right bank.
Appelterre Wharf	Do.	Do.	Do.	64·00	20·00	Do.	Left bank.
Wharf above Ninove	35·862	1·76	Do.	150·00	15·00 (average)	Earth, part paved	Right bank.
Wharf below Ninove	36·244	1·72	Do.	Do.	12·00	Earth	Left bank.
Pamele Wharf	39·405	1·03	Do.	80·00	25·00 (average)	Earth, part paved	Right bank.
Okegem Wharf	40·053	0·56	Do.	55·00	11·00 (average)	Earth	Left bank.
Denderleeuw Wharf	42·859	3·22	Do.	314·00	35·00 (average)	Earth, part paved	Do.
		3·67	Do.	35·00	5·00	Earth	Do.
Teralphene Wharf	45·139	1·99	Do.	135·00	15·00	Do.	Right bank.
Teralphene Wharf (lock)	45·581	2·09	Do.	67·00	45·00 (average)	Do.	Left bank.
Erembodegem Wharf	49·377	1·70	Do.	48·00	14·00	Do.	Do.
Alost Lock Wharf	51·672	4·56	Do.	200·00	12·00	Do.	Do.
		2·90	Do.	135·00	16·00	Do.	Left bank, above lock.

Dendre River—continued.

WHARVES AND QUAYS—continued.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Quay above St. Anne Bridge, Alost	51·980	...	...	16·00 51·00 105·00	...	...	The 51·00 m. portion is of timber; the 16·00 m. is masonry joining this quay with earth embankment of river.
Quay below St. Anne Bridge, Alost	52·015	...	...	61·00	...	...	Right bank.
				102·00	...	...	Left bank.
Canal Quay, Alost	52·110	1·65	Wall	150·00	17·00	Paving	Right bank.
Quay opposite above	Do.	2·15	Do.	500·00	3·70	Earth	Left bank.
Communal Quay, Hofstade	54·306	1·45	Earth embankment	24·00	27·00	Do.	Do.
Communal Quay, Herdersem	55·572	1·05	Do.	45·00	8·00	Do.	Right bank.
Communal Quay, Gysegem	57·122	0·95	Do.	75·00	10·00	Do.	Left bank.
Communal Quay, Wieze	57·476	1·70	Do.	Do.	17·00	3·00 m. paving; 14·00 m. earth	Right bank.
Communal Quay, Mespelaere	58·756	1·50	Do.	50·00	8·00	Earth	Left bank.
Communal Quay, Denderbelle	59·496	Do.	Do.	67·00	14·00	Do.	Right bank.
Communal Quay, Audegem	60·496	1·35	Do.	36·00	17·00	Do.	Left bank.
Private landing stage, Audegem	60·526	1·15	Timber	2·00	5·00	Do.	Do.
At Termonde:—							
Landing stage above lock	64·328	1·00	Do.	2·55	9·00	5.00 m. paving; 4·00 m. earth	Do.
Landing stage below lock	64·400	2·10	Do.	2·50	17·00	Paving	Do.
Quay called "Escaut Street"	64·850	1·63	Wall	110·00	15·00	Do.	Left bank. Vischgracht Harbour at Termonde, 1,800 sq. m. area.
Quay called "Chantier"	Do.	2·13	Do.	235·00	17·00	Paving and earth	Right bank.
Landing stage, rue de Château	65·100	2·23	Timber	3·30	8·00	Paving	Left bank. Vestje Diversion Harbour at Termonde, 6,800 sq. m. area.
Entrepot Quay	65·200	2·60	Wall	24·75	14·00	Paving and earth	Do. Do.

Durme River.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordinance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Junction with the Moervaart to the Scheldt	0·000	25·860	25·860	The course of the Durme is very irregular		15·00	...	1·70 at low-water minimum 4·30 at high-water minimum	1·50 4·10	At Spletterspuit this river is in free communication with the Moervaart and the Zuidleede. The course of the river is very sinuous and its sharp curves render it extremely difficult for navigation. Boats frequenting this river range from 15 m. to 30 m. long, 3 to 4·50 m. beam, and 1·45 m. to 1·70 m. draught.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
				Metres.	Metres.		
Dacknam Bridge Wharf	0·625	Tidal river	Earth embankment	25·00	12·00	Earth	Right bank.
Dacknam Communal Wharf	1·100	...	Do.	40·00	7·00	Do.	Left bank.
Heirbrug Wharf, Lokeren	3·524	...	Do.	30·00	25·00	Do.	Right bank.
Communal Quays, Lokeren	4·729	...	Masonry	262·00	15·00	Partly paved	Both banks.
Houtenbrug Wharf, Lokeren	6·150	...	Timber revetment	25 00	10·00	Earth	Right bank.
Communal Quay (Oude Brug), Lokeren ...	6·174	...	Timber revetment and earth embankment	185·00	14·00	Macadam	Right bank.
Communal Quay, Waesmunster	15·461	...	Wall and earth slope	74·00 50·00	20·00	Paving and macadam	Left bank.
Communal Quay, Hamme	21·451	...	Wall and projecting landing stage in timber and iron	85·00 12·00	14·00 3·75	Paving	Right bank. Provided with railway track.
Private quay, Houtebrug, Hamme	22·676	...	Timber revetment and earth embankment	54·00	15·00	Macadam	Left bank.

Eecloo Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Junction with Lys Diversion Canal to end	0 000	1·713	1·713	0·783	0·930	19·60	6·00 and 12·00 140 m. from the end	3·00 summer 3·30 winter	5·447 5·747	

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Eecloo Dock, left bank	1·573	2·36	Earth embankment	140·00	20·00	Paved over 125·00 × 5·00 m.	
Eecloo Dock, right bank	0·938	Do.	Do.	775·00	6·00 to 10·00 m.	Paved over 165·00 × 10·00 m.	

Eecloosch Leiken Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Junction with the Eecloo Town Canal to end	0·000	2·063	2·063	1·600	0·463	7·30	4·00	1·00 summer 1·30 winter	5·477 5·747	

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
Cocquytbrug Wharf	1·063	Metres. 2·30 summer 2·00 winter	Earth embankment	Metres. 72	Metres. 6·00	Earth	Area of 2,500 sq. m.
Eecloo Harbour	At end	...	...	57	...	...	

Espierres Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
French frontier to Leers-Nord Lock	0·000	0·217	0·217	0·174	0·043	16·00	10·00	2·00	20·575	This canal is fed by the Roubaix Canal at the one end and by the Scheldt at the other, the water being raised from reach to reach by three steam-driven centrifugal pumps.
Leers-Nord Lock to Estaimpuis Lock	0·217	2·061	1·844	0·194 and 1·550	0·100	Do.	Do.	Do.	18·375	
Estaimpuis Lock to Warcoing Lock	2·061	6·335	4·274	3·659	0·615	Do.	Do.	Do.	15·755	NOTE.—No similar particulars of the Roubaix Canal, which forms a continuation of this one to the junction with the Deule, are available.
Warcoing Lock to the Scheldt...	6·335	8·403	2·068	1·722	0·346	Do.	Do.	Do.	13·215	

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Leers-Nord ...	0·217	2·20	2·00	2·20	5·20	37·80	Min. Sec. 10 0	Min. Sec. 30 0	Brick	Sluices	...	6 m. pitching	Each lock is provided with a side pond supplying part of the water for each locking.
Estaimpuis ...	2·061	2·11	2·00	2·62	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
Warcoing ...	6·335	2·31	2·00	2·54	Do.	Do.	Do.	Do.	Do.	Do.	...	4 m. pitching	

Espierres ...	8·318	2·40	2·40	0·00	Do.	Do.	Do.	Do	Do.	Do	...	6 m. pitching	Locking is rarely carried out at this lock. It was built chiefly to form a reserve reach to supply the canal with water when the water is low in the Scheldt, that is, for 4 days after flooding.

(B 12086)

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WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
North Leers Wharf	0·143	0·80	Earth slope	40·00	4·00	Earth	
Estaimpuis Basin	2·010	...	...	150	...	...	Area of 1185 sq. m.
St. Leger Wharf (upstream)	4·303	Do.	Earth slope	40·00	4·00	Earth	
St. Leger Wharf (downstream)	5·020	Do.	Do. ...	Do.	Do.	Do.	
Warcoing Basin	6·263	...	...	220	...	...	Area of 1325 sq. m.
Espierres Basin	7·891	...	...	150	...	...	Area of 1185 sq. m.

Furnes—Ambacht Canals.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to. Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
1. Beverdykvaart	Fintelle	The Ostvaart	20·160	...	...	6 m. at ordinary water level	...	1·0 m. upstream and 1·70 m. down stream	...	The canals falling under this category are all more or less irrigation canals, upon which navigation is tolerated. The largest boats are from 14 to 14·5 m. long, 2·80 to 3·15 m. beam, and 1·5 to 1·30 m. draught.
2. Bommelaersvaart	Proostdykvaart	Koolhofvaart	4·400	...	...	13·00	...	1 to 1·30		
3. Koolhofvaart	Proosthofvaart near Vyf-Huizen	Furnes Lock at Nieuport	6·300	...	...	13·00	...	1·35 to 1·80	...	Passes through a syphon below the Furnes–Nieuport Canal.
4. Krommegracht	Bergues–Furnes Canal near Het Zwaentje	Proostdykvaart above Molenbrug	10·680	...	...	7·00	...	1·00 to 1·30	...	Passes through a siphon under the Loo Canal.
5. Leizevaart	Right bank of the Loo canal at Oeren	Oostkerkevaart near Lampernisse mill	4·400	...	...	6·00	...	1·00	...	
6. Oostkerkevaart	Continuaof the Leirzevaart	Beverdykvaart	2·500	...	...	6·00	...	1·20	...	
7. Oostvaart	Continuaof Beverdykvaart	Junction with the Furnes-Nieuport Canal near Nieuport	5·640	...	...	10·00	...	1·70	...	Flows into the Furnes-Nieuport Canal through a small lock situated 800 m. above Furnes Lock.
8. Oude Aa Vaart	Branches off the Oostkerkevaart between Oostkerke and Lampernisse	Proostdykvaart at Vyf-Huizen	5·620	...	...	8·50 to 13·00	...	1·20 to 1·40	...	

9. Proostdykvaart or Venepe-vaart	Near Furnes	Junction with the Beverdyk-vaart	10·500	...	...	5 to 10	...	1·20 to 1·40	...	
10. Slopgatvaart	Branches off the Loo Canal above Loo	Junction with the Beverdyk-vaart a little below Groegne	4·710	...	...	8·00	...	1·80	...	There is a small lock at its junction with the Loo Canal.
11. Slykvaart	Koolhof-vaart	Beverdyk-vaart near Nieuport	0·400	...	...	12·00	...	1·75	...	Forms a junction between the Koolhofvaart and the Beverdykvaart.
12. Steengracht	Junction with the Bergues–Furnes Canal above Bulscamp	Junction with the Proostdyk-vaart below the Waas-brug Canal	6·240	...	...	8·00	...	1·00	...	It is in free communication with the Bergues–Furnes Canal. It passes under the Loo Canal by a siphon and communicates with it by means of a small lock at Kortewilde.
13. Vlaavaart or Bertegat-vaart	Left bank of the Yser near Haut-Pont at Dixmude	Beversvaart	3·740	...	...	7·00	...	0·70	...	Passes under the Baeskerke stream.

NOTE.—The Furnes–Ambacht system of canals is in communication with the larger canals by means of three locks 32·50 m. long and 3·30 m. wide. The first of these is at the end of the Slopgatvaart, in the right bank of the Loo Canal, at about 1,300 m. below Loo. The second is on the Steengracht, on the same bank, at about 2,700 m. above Furnes. The third is situated on the downstream end of the Oostvaart, in the right bank of the Nieuport–Furnes Canal, to the right of Nieuport.

Ghent Junction Canal. [*See Plates* 12 *and* 14.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Section comprised between the Ghent–Bruges Canal and the return wall of the Tolhuis Weir	0·000	1·859	1·859	1·669	0·190	26·00 summer 27·00 winter	18·00	3·20 summer 3·50 winter	5·447 5·747	The Tolhuis Lock at Ghent gives access from this canal to the outer harbour.

Ghent Municipal Canals. [*See Plate* 12.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
1. Canal du Quai aux Bois ...	0·000	1·043	1·043	0·918	0·125	9·00	5·00	1·80 summer 2·10 winter	5·44 5·74	This canal serves only for small craft. It begins at the Lys, where this river is joined by the Scheldt at the Rempart des Chaudronniers and ends at the Lieve Canal. Boats are usually 15 to 22 m. long and 3·30 m. beam.
2. La Lieve Canal	...	1·970	1·970	1·710	0·260	7·00	Do.	1·80 summer 2·10 winter	Do.	This canal begins at the Lys and ends at the Ghent Junction Canal, and is in free communication with them. It serves only for small craft, 15 to 22 m. long and 3·30 m. beam.
3. Canal du Marais (or Meerhem Canal)	...	1·220	1·220	0·880	0·340	9·00	Do.	1·60 summer 1·90 winter	Do.	This canal begins at the Lys. It serves only for small craft, 15 to 35 m. long and 3 m. beam.

PORT OF GHENT & GHENT WATERWAYS

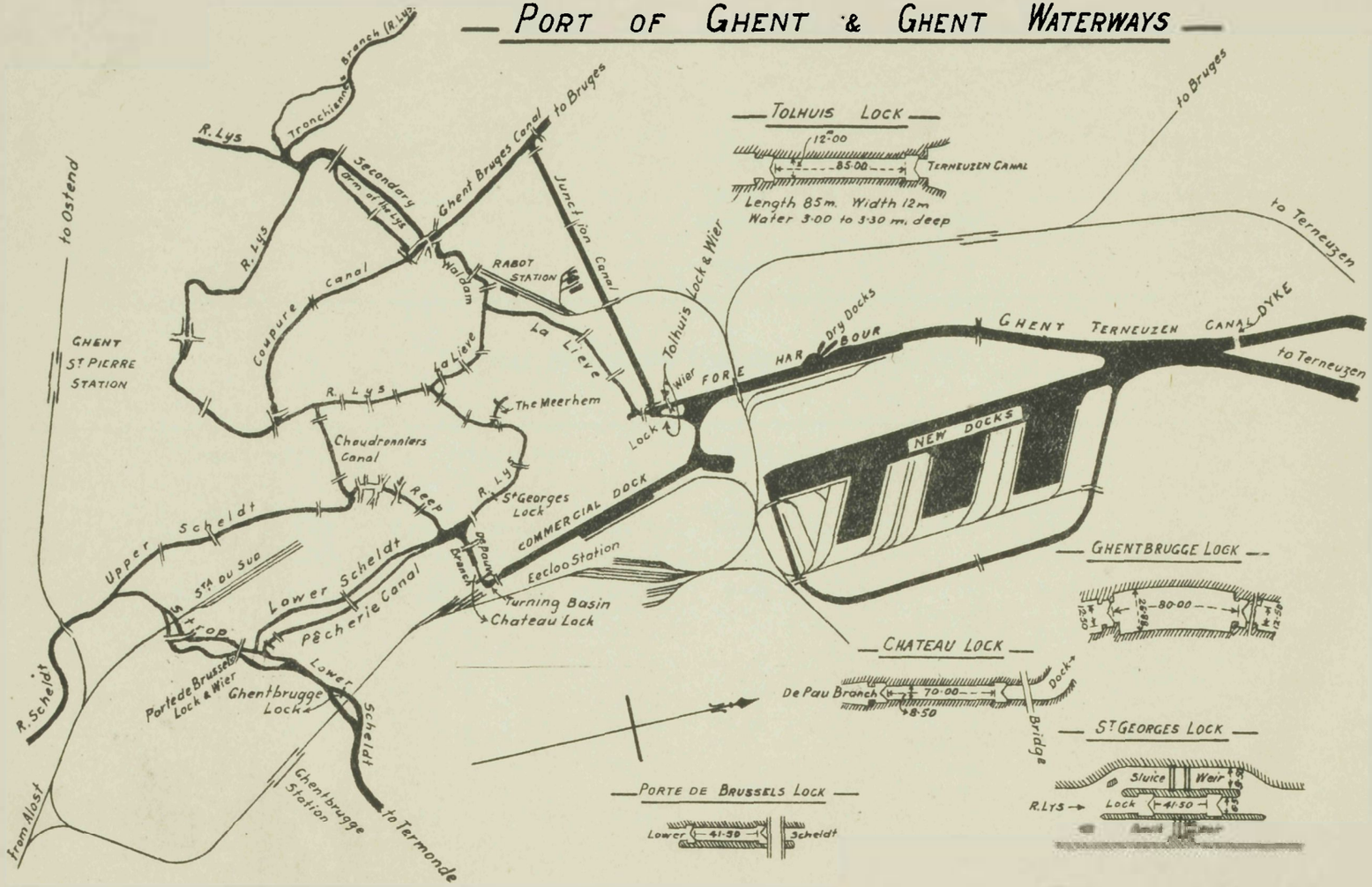


Plate 1

Type of Bank Protection

Canal from Ghent to Ostend

Bruges to Ostend Section

Fig. 1

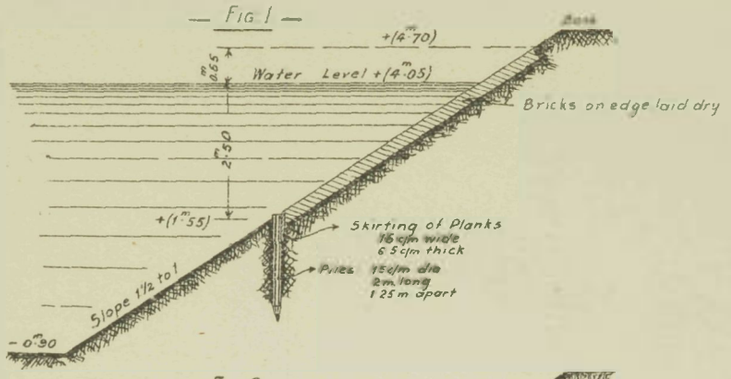


Fig. 2

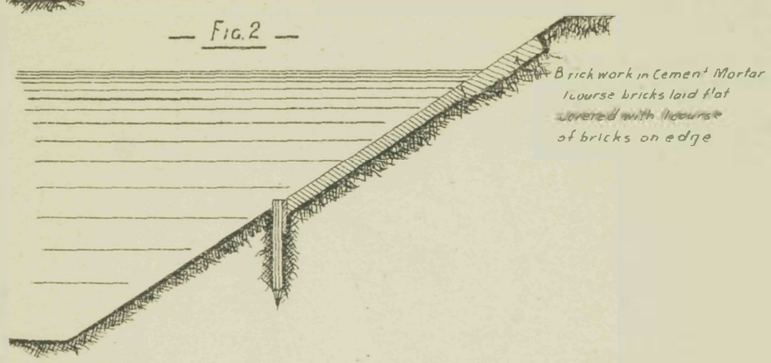


Fig. 3

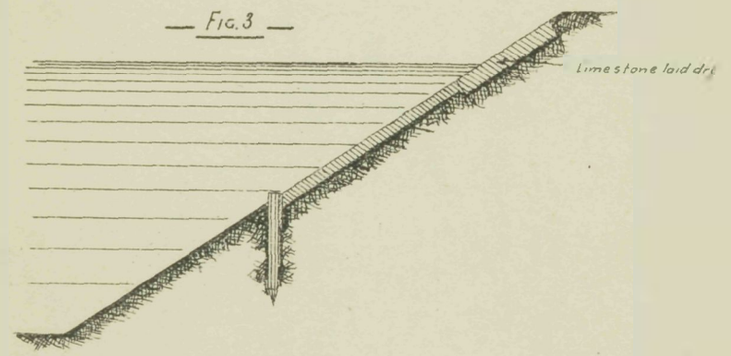


Fig. 4

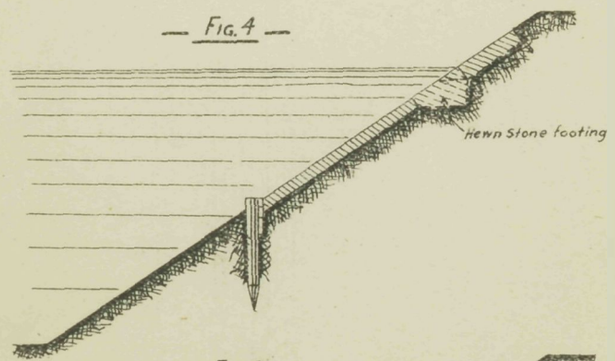
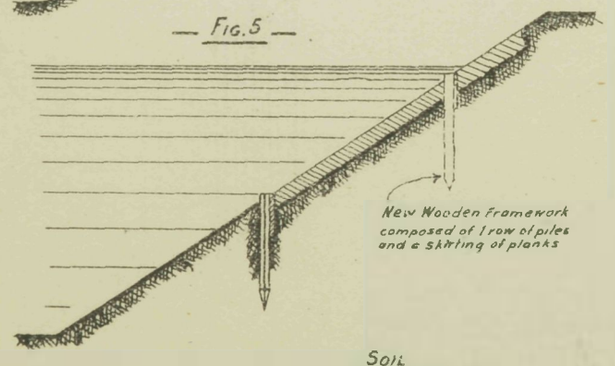


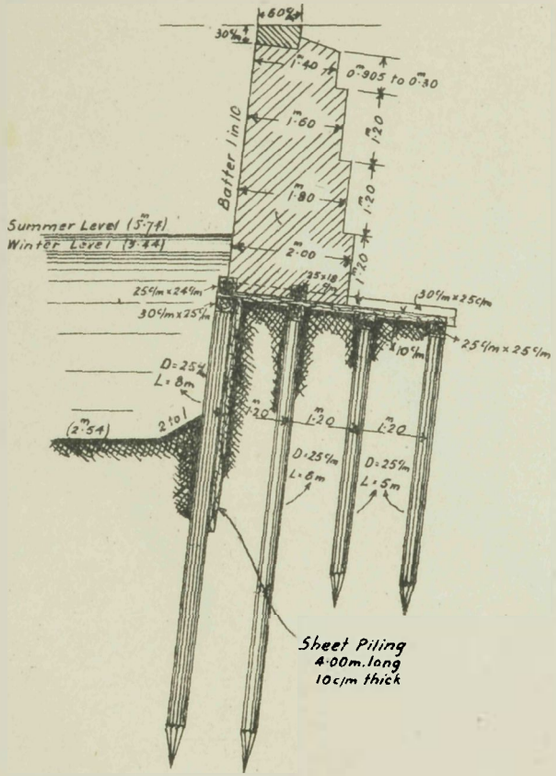
Fig. 5



Soil
Clayey Sand

Type of Bank Protection — Canal from Ghent to Ostend — Ghent to Bruges Section.

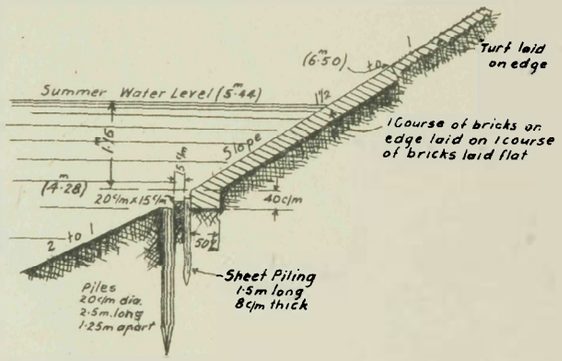
Junction Canal at Ghent.



5011
Sandy

For a length of 26 Kilo^{ms} where the improvements are not yet started the slopes are protected as shewn by Fig 1; Plate 13.

In Cuttings



Scale 1:100

"Villa" System; on Banks

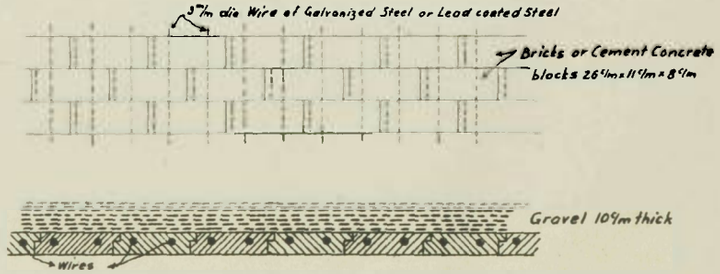


Plate 14.

BRUGES

PLAN SHEWING CANALS

Scale 1:14000.

Metres 100 50 0 100 200 300 400 500 600 700 Meters

Malby & Sons, Lith

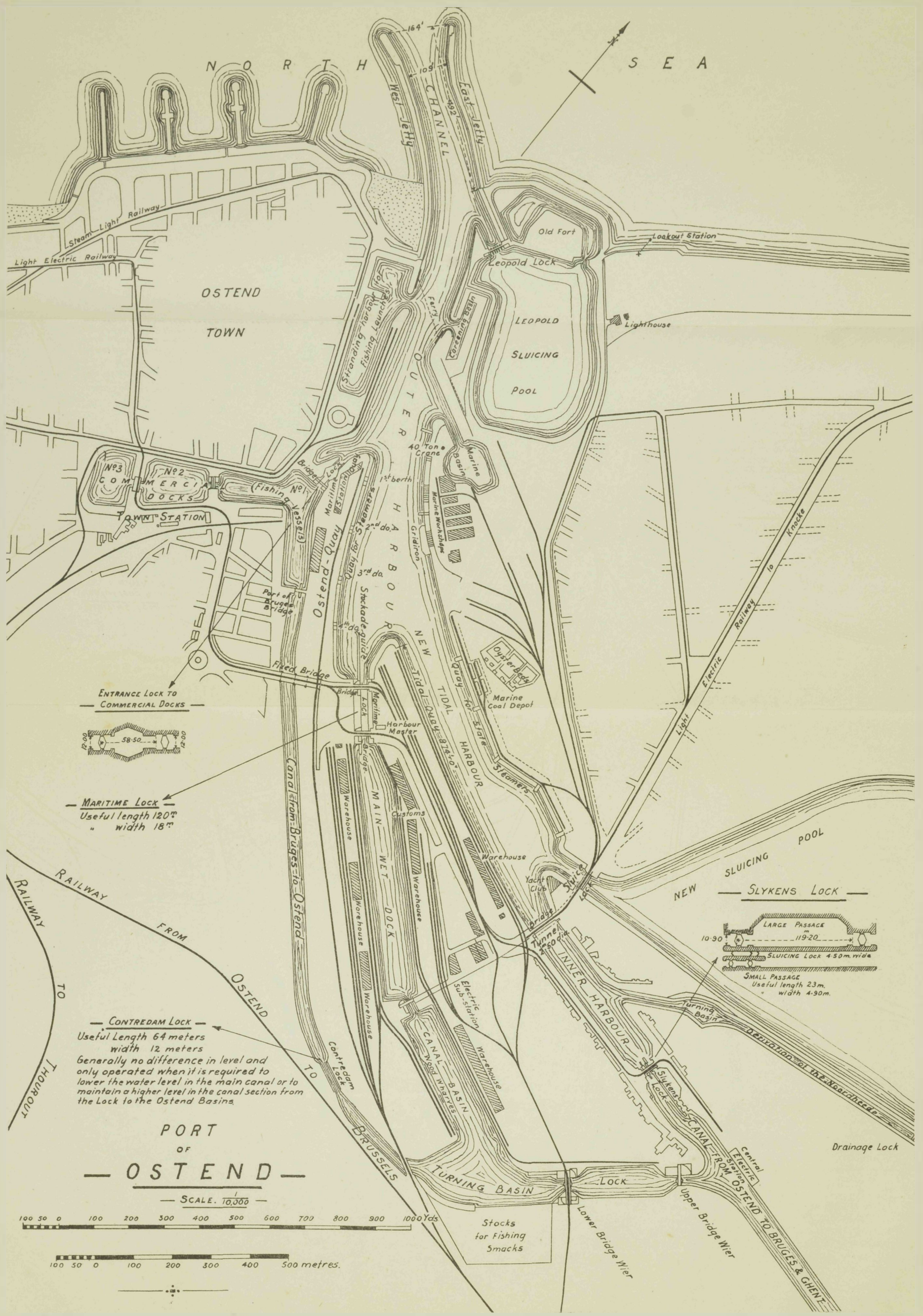


Plate 16.

Malby & Sons, Lith

4. Canal joining Lys with the Ghent–Terneuzen Canal (De Pauw Branch and Commercial Dock)	On the Lys at the bridge called Pont de la Tour Rouge	2·176	2·176	1·766	0·410	19·00 to 55·00	19·00 to 40·00	2·50 summer 2·80 winter	4·50	For inland navigation section.
								4·45 summer 4·75 winter	4·45	For sea navigation section. This canal consists of two sections: the first between the Lys and the Ghent Commercial Dock (De Pauw Branch), serving for the inland navigation; and the second the Commercial Dock itself, serving for maritime traffic. It begins at the Lys, near Pont de la Tour Rouge, and ends at the Ghent Dock.
5. Pêcherie Canal	0·000	1·656	1·656	...	...	19·00	19·00	3·94	5·44	

Ghent—Ostend Canal, via Bruges. [*See Plates* 12, 13, 14, 15 *and* 16.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
From the Lys at Ghent to the New Porte de Damme Lock at Bruges	0·000	47·703	47·703	32·012	15·691	23·25 to 20·00	10·00 to 8·00	2.50 to 2.20 summer 2·80 to 2·50 winter	5·477 5·747	For a length of 15 kms. from Ghent the width at bed level is 18 to 26 m. at passing points. The water supply for this canal is mainly from the Lys and Scheldt at Ghent. A section of the canal at Ghent is known as the Coupure. Numerous small streams feed the canal. At Moerbrugge it receives the Riviertje, which springs up in the plateau of Thourout.
Reach through Bruges ...	Coupure Lock at Bruges	Old Porte de Damme Lock at Bruges	1·698	1·290	0·408	9·30	8·00 to 25·00	3·83	4·73	
New Porte de Damme Lock to Slykens Lock	47·703	68·545	20·842	16·380	4·462	31·00	12·00	4·50 summer 4·30 winter	3·88 3·62	The Canal du Sud passes under the Ghent–Bruges Canal by a siphon at Lappersfort, near Bruges. Near the upstream head of the new Porte de Damme Lock there is another siphon serving to discharge the waters of the Canal du Sud into the Ostend Canal in times of flood.
Branch at Ostend	0·000	2·520	2·520	...	...	30·00	12·00	4·00 summer	3·88 summer 3·62 winter	

Ghent—Ostend Canal—continued.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
Coupure at Bruges	46·132	3·797 winter 3·497 summer	3·83	1·017 winter 0·717 summer	entrance 8·20 21·83 chamber	70·00	10·0 m.	1 h. 30 m.	Vertical copings in wrought stone	1 sluice to each leaf	7·00 m. wood	17·0 m. wood	
Old Porte de Damme Lock at Bruges	47·830	3·83	4·10 winter 4·36 summer	1·11 winter 0·85 summer	18·00 m. chamber 60 m. long.	62·00	6 m.	Do.	Do.	Sluices and penstocks	14 m. wood	14 m. wood	See sketch on Plate 2.
New Porte de Damme Lock	47·703	5·33 winter 5·03 summer	4·703 winter 4·963 summer	2·127 winter 1·567 summer	Entrance from Ghent: 12 m. Exit to Ostend: 8 m. To L'Écluse: 6 m. Chamber is of irregular shape and about 82 m. long.	82·00	20 m.	2 h.	Do.	4 penstocks communicating with Bruges–Ecluse Canal, 2 sluices to each leaf	10·0 m. fascine rubble	10·0 m. fascine rubble. The sill towards the Bruges-Ecluse Canal is 25 m. long	See sketch on Plate 2.
Slykens	68·545	4·49 summer 4·75 winter	4·49 summer 4·75 winter	Varies according to tide 4·05 l.w.s.t.	Large passage. 10·90 Small passage. 4·90	119·20 23·00	Varies according to tide	Varies according to tide	Vertical copings of wrought stone, chamber of brick and stone	Sluices	15 m. wood	63·50 m. wood	* See below.

* Each of the locks has 4 pairs of gates, the larger chamber being hexagonal in shape, with a maximum width of 34·25 m. Besides the navigable passages there is a drainage lock which has 2 pairs of mitre gates and 1 intermediate swing gate. See sketch on Plate 16.

Contredam Lock	1·062 from origin of diversion	0·72 below Datum	0·72 belowDatum	...	12·00	64·00	...	...	Brick	Sluice to each leaf	...	...	The gates are only operated when it is desired to lower the water level in the main canal or to maintain a higher level in the section extending from the lock to the Ostend basin.

(B 12086)

NOTE.—For Maritime Lock and Entrance Lock to the Old Commercial Docks in Ostend *see* particulars on Plate 16 and descriptions in "North Eastern French and Belgian Waterways," Part I., pp. 57 and 59.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
South Quay Wall, Ghent	1·742	...	...	20·00	...	...	
North Quay Wall, Ghent	Do.	...	...	Do.	...	...	
South Quay, Ghent, left bank	1·848	3·30	Earth embankment	445·00	20·00	Paving 3 to 7·00 m.	
North Quay, Ghent, right bank...	Do.	3·40	Do.	450·00	9 to 10·00	Paving 3·00 m.	
Fire-brick Works, left bank	2·317	Do.	Timber landing stage	6·00	20·00	Do.	
Palinghuizen Wharf, right bank...	2·677	3·12	Earth embankment	200·00	21·00	Do.	
Artificial Stone Works, left bank	3·550	3·20	Do.	50·00	14·00	Earth	
Mariakerke Wharf, left bank	4 677	2·63	Do.	23·00	Do.	Do.	
Mariakerke Wharf, left bank	5·000	2·50	Do.	100·00	12·00	Paving 100·00 × 3·50	
Mariakerke Wharf, right bank	5·010	Do.	Do.	Do.	16·00	First-class road	
Mariakerke Wharf, right bank	5·292	Do.	Do.	60·00	20·00	Do.	
Rabot Wharf, Evergem	6·927	1·46	Do.	75·00	Do.	Do.	
Bierstal, left bank	7·515	1·95	Do.	297·00	12·00	Earth	
Bierstal, right bank	7·702	1·75	Do.	270·00	9·00	Paving 90·00 × 3·50	
Lovendegem, left bank	9·567	4·00	Do.	50·00	12·00	Do. 110·0 × 3·50	
Lovendegem, left bank	9·807	3·10	Do.	Do.	13·00	Do. 85·00 × 3·50	
Lovendegem, left bank	9·807	2·80	Do.	250·00	11·00	Do. 219·00 × 3·50	
Durmen, left bank...	12·602	2·40	Do.	91·00	13·00	Do. 91·00 × 3·50	
Durmen, left bank...	12·842	2·10	Do.	93·00	12·00	Do. 93·00 × 3·50	
Durmen, right bank	12·432	Do.	Do.	430·00	Do.	Do. 430·00 × 4·00	

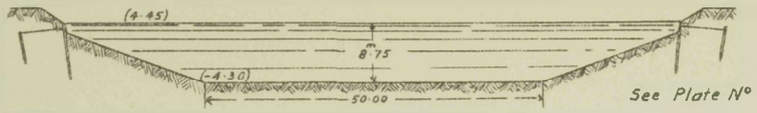
Ghent—Ostend Canal—continued,

WHARVES AND QUAYS—continued.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Soenen's Stores, Durme	12·977	2·10	Earth embankment	200·00	8·00	Earth	
Schipdonck Ferry	14·315	2·28	Do.	84·00	10·00	Do.	
Hansbeke, left bank	15·900	2·65	Do.	150·00	12·00	Paving 148·00 × 3·50	
Hansbeke, left bank	16·140	2·30	Do.	170·00	10·00	Do. 98·00 × 3·50	
Bellem, left bank	18·015	3·43	Do.	156·00	10·00	Do. 156·00 × 3·50	
Bellem, left bank	18·251	3·20	Do.	200·00	Do.	Do. 170·00 × 3·50	
Bellem, right bank	18·020	3·30	Do.	150·00	Do.	Do. 123·00 × 3·50	
Bellem, right bank	18·251	Do.	Do.	135·00	11·00	Do. 135·00 × 3·50	
Oostmeulen, Aeltre, left bank	20·763	4·90	Do.	120·00	12·00	Earth	
Oostmeulen, Aeltre, right bank	20·691	5·20	Do.	350·00	Do.	Do.	
Aeltre Bridge, left bank	22·877	5·90	Do.	502·00	10·00	Paving 365·00 × 3·00	
Aeltre Bridge, right bank	23·017	5·80	Do.	655·00	12·00	Do. 206·00 × 3·00	
Nieuwendam, left bank	24·692	7·56	Do.	180·00	Do.	Earth	
Langedreef, right bank	25·042	6·45	Do.	25·00	Do.	Do.	
Krommen Elleboog, left bank	25·927	5·90	Do.	150·00	13·00	Do.	
Hoekstraat, Aeltre, left bank	26·278	7·80	Do.	474·00	15·00	Do.	
Hoekstraat, Knesselaere, left bank	26·752	6·20	Do.	150·00	10·00	Do.	
Hoekstraat, Knesselaere, right bank	27·261	7·90	Do.	276·00	Do.	Paving 268·00 × 3·00	
Leopold Bridge, St. George	29·123	4·15 (tow-path level)	Do. (with landing stage)	150·00 and 85·00 landing stage	5·00	Earth	Both banks.
Miseric Hamlet Wharf, left bank	30·931	4·47	Do.	75·00	4·00	Do.	
Louise Bridge, Bloemendael, left bank ...	33·010	4·23	Do. (with landing stage)	50·00 and 4·00 landing stage	6·00	Do.	
Gevaerts Hamlet Wharf, left bank	35·480	2·00	Do.	60·00	Do.	Do.	
Moerbrugge Bridge Wharf, left bank	38·685	1·61	Do.	50·00	5·00	Do.	
Steenbrugge Bridge Wharf, left bank	41·630	1·38	Do. (with landing stage)	60·00 and 5·00 landing stage	4·00	Paving	
Bruges Harbour	44·066	1·50 at commencement, 0·50 to 2·20 in passage through town	Masonry walls	3·930	4·00 to 20·00	Paving and earth	

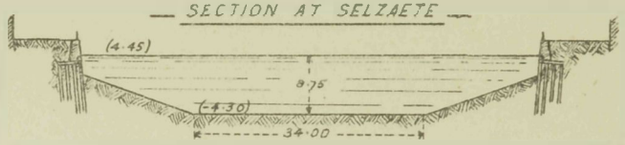
GHENT–TERNEUZEN CANAL AND PORT OF GHENT

TYPICAL SECTION IN BELGIUM

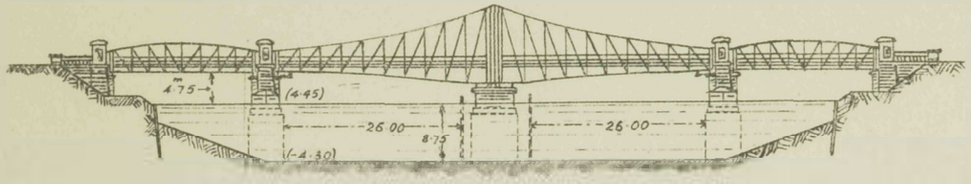


See Plate N°

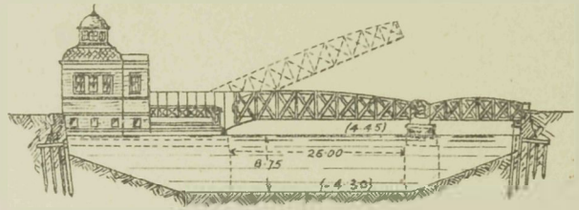
SECTION AT SELZAETE



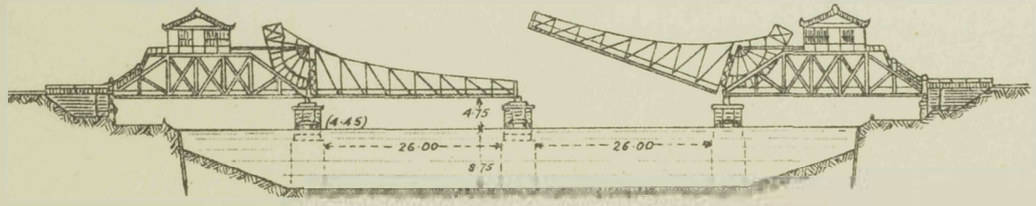
BRIDGES AT LANGERBRUGGE AND TERDONCK



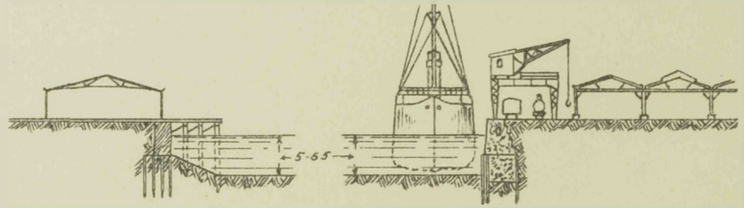
ROAD BRIDGE AT SELZAETE



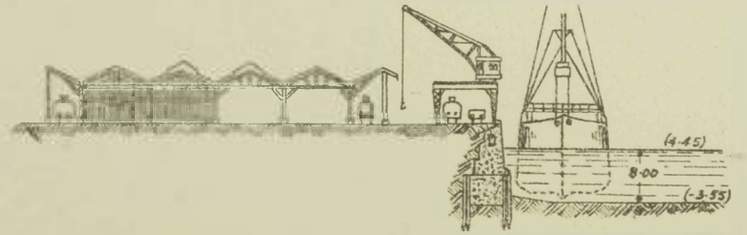
RAILWAY BRIDGE AT SELZAETE



COMMERCIAL DOCK



NEW DOCKS



FORE HARBOUR

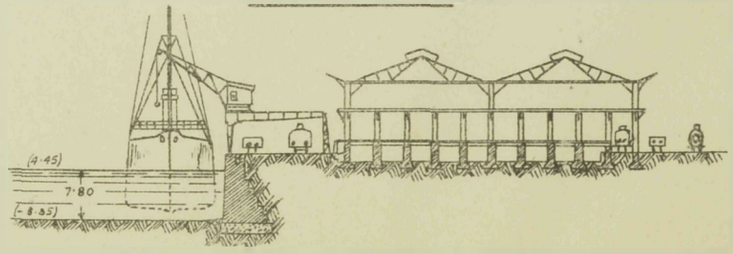
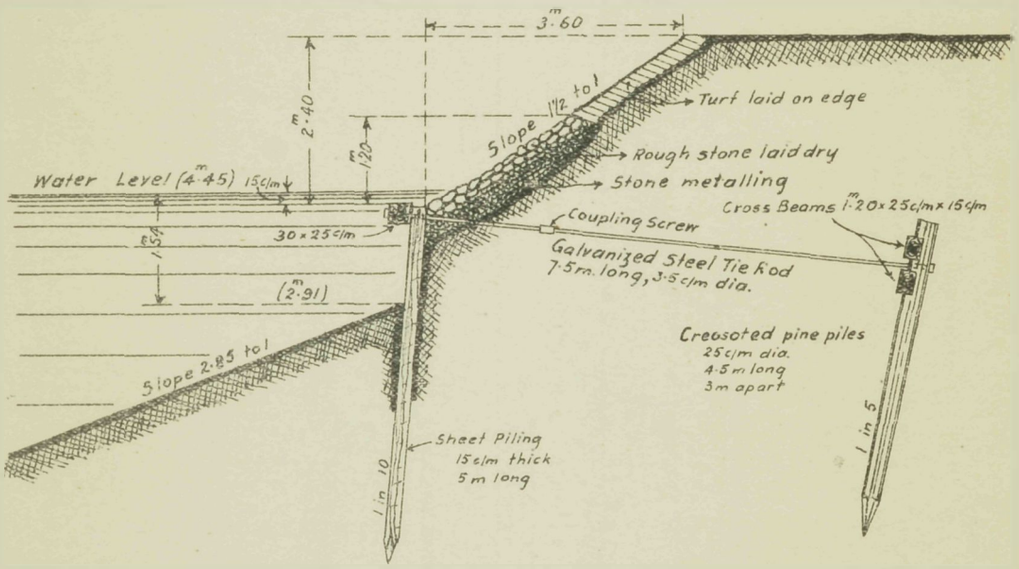


Plate 17.

Type of Bank Protection

Canal from Ghent to Terneuzen



Soil

Muddy Sand

St. Catharine Bridge, right bank	44·955	1·36	Earth embankment	200·00	4·00	Earth
Dominicains Bridge, Bruges, right bank ...	46·382	1·28	Brick wall	25·00	5·00	Paving
Ste.-Croix Bridge, right bank	46·675	1·73	Earth embankment with landing stage	60·00 and 4·00 landing stage	Do.	Earth
Scheepsdaele Bridge, left bank	49·530	2·26	Quay wall with stone facing	75·00	Do.	Paving
Stalhille Bridge, left bank	58·607	1·62	Earth embankment with brick revetment	200·00	3·00	Earth
Plasschendaele Bridge, left bank	64·475	1·93	Do.	50·00	4·00	Do.
Ry. Creosote Works, Ostend, left bank... ...	1·300 from beginning of diversion	0·95	Earth embankment	440·00	100·00 (average)	Do.
Above Port of Bruges Bridge, Ostend, left bank	2·00	1·30 (average)	Do.	400·00	40·00 to 80·00	Do
Below Port of Bruges Bridge, Ostend, left bank	2·400	2·30 (average)	Earth embankment with landing stage	250·00 and 5·60 landing stage	17·00 to 35·00	Do

(B 1308) (C 2)

Ghent—Terneuzen Canal. [*See Plates* 12, 17 *and* 18.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
From Ghent to the Dutch Frontier	0·00	19·613	19·613	12·945	6·668	97·0	24·0	8·75	4·45	At Langerbrugge and for 800 m. below the Terdonck and Hoek Bridges (Terneuzen) the width at bed level is 50 m. forming thus large basins where large ships may pass each other. All the bridges have navigable passages 26 m. wide. The Langerbrugge, Terdonck and Hoek Bridges have each four navigable passages, two of which are for sea traffic and two for inland traffic. These latter are 14 m. wide, with 3·50 to 4·50 m. depth of water.
*Langerbrugge Arm	3·675	5·111	...	...	...	...	...	...	...	
Roodenhuyze Arm	7·624	10·517	...	...	...	30·00	15·00 and 8·00	3·00 and 4·40	...	
Selzaete Arm	15·529	16·610	...	...	...	22·0 to 30·0	8·00	4·40	...	

The water supply for this canal, other than from its own watershed, is from the Scheldt and the Lys at Ghent. In times of heavy floods it serves to drain off the waters of these rivers through the Tolhuis weir.

*Closed by a dam at the end nearest Ghent.

Ghent—Terneuzen Canal—continued.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
Tolhuis Lock at Ghent	0·000	...	...	1·00 summer 1·55 winter	12·00	85·00	Min. Sec. 3 15	Min. Sec. 25 0 to 30 0	Brick	Sluices and Penstocks.		...	See sketch on Plate 12.
oodenhuyze Lock at Wijnkel, on the Roodenhuyze Arm	10·034	2·83	Variable according to tide, minimum 1·60	1·18 summer 0·78 winter	18·0 to 20·0 m. at normal water level. The useful width depends upon the draught	55·00	4 30 to 5 30	10 0 to 15 0	Slopes turfed and supported by fascines and pitching	Sluice upstream, penstocks down stream	6 0 m. fascines and pitching	6·0 m. fascines and pitching	

Steamboats up to 9·0 m. beam and 54 m. length are admitted. The lock-weir at Sas-de-Gand in Holland is generally open and only closed in times of flood or when the waters of the Lys or the Scheldt become polluted. At Sas-de-Gand there are 3 locks. The smallest is 12 m. wide and 4·20 m. deep over the sill. The two other locks are for sea traffic and are 200 m. × 26 m. × 9·5 deep, and 110 m. × 12 m. × 6·5 m. deep respectively. At Terneuzen there are also 3 locks, of which 1 can deal with steamers 176 m long.

WEIRS.

Name of Weir.	Distance in kiloms.	Navigable Passage. Number and width of openings in metres.	Navigable Passage. Type of Weir.	Navigable Passage. Difference between head and tail race in metres.	Spillway. Length in metres.	Spillway. System of closing. Fixed.	Spillway. System of closing. Adjustable.	Spillway. Difference between head and tail race in metres.	Remarks.
Tolhuis Weir at Ghent ...	0·000	...	...	...	2 of 5·0 m.	...	Baulk	0·74 summer 1·04 winter	
					3 of 1·50 m.	...	Sluice		

Handzaeme and Zarren Canals.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Handzaeme Canal from Handzaeme to the Yser	0·000	12·565 Dixmude	12·565	...	12·565	15·00	...	0·73 to 1·25	3·081	This canal can only accommodate 25-ton boats in normal times, or 40-ton boats during periods of high water.
Zarren Canal from Zarren to Eynsdyk	0·000	2·760 Eynsdyk	2·760	...	2·760	7·00	...	0·70 to 1·35	3·081	This canal can only accommodate 10-ton boats.

Hasselt Branch Canal.

REACHES.

Name of Reach	Distance in kiloms.		Length in kiloms			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Origin of canal on the 4th Reach of the Meuse–Scheldt Canal to Curange Lock	0·000	37·558	37·558	33·237	4·321	16·30	10·00	2·10	29·02	The water supply for this canal is: (1) Near Bridge No. 1 from the Maet; (2) at Hasselt, from the Démer for the 2nd reach
Curange Lock to the end of Hasselt Basin	37·558	39·150	1·592	1·312	0·280	16·30	10·00	2·10	31·62	At Hasselt there is a large basin served by railway lines connected with Hasselt Station.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Curange	37·558	2·10	2·10	2·60	7·00	56·35	Min. Sec. 5 0	Min. Sec. 20 0	Vertical walls. Coping of brick. Sills and quoins of stone	Sluices	...	34 m. brickwork	

WEIRS.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in Metres.	Length in Metres.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Weir at Bridge No. 1 ...	0·040	1 of 10·0	Baulk	2·40	...	...	...	...	These weirs are only used under exceptional circumstances, *i.e.*, in case of accident or when it is necessary to lower the water level over the whole or part length of the Hasselt Canal without lowering the level in the 4th reach of the Meuse–Scheldt Junction Canal, with which the Hasselt Canal communicates.
Weir at Bridge No. 4 ...	4·435	Do.	Do.	Do.	...	...	...	...	
(*a*) Baelen Spillway on righ bank, corresponding to the siphon of the northern branch of the Grand Nèthe	5·170	...	...	...	2·00	Baulks in grooves	...	1·64	
(*b*) Olmen Spillway, on right bank, corresponding to siphon of the eastern branch of the Grand Nèthe	9·325	..	...	...	Do.	Do.	...	1·60	
Weir at Bridge No. 7 ...	10·400	1 of 10·0	Baulk	2·40	...	...	...	...	
(*c*) Quaedmechelen Spillway on the right bank corresponding to the Scheyloop siphon	13·240	...	...	...	1·20	Baulks in grooves	...	2·23	
Weir at Bridge No. 9 ...	13·765	1 of 10·0	Baulk	2·40	...	...	...	...	
Weir at Bridge No. 17 ...	27·350	Do.	Do.	Do.	...	...	...	...	
(*d*) Genenbosch Spillway, on the right bank, corresponding to the Mangelbeek siphon	28·430	...	...	...	2·00	Baulk	...	2·31	
(*e*) Viversel Spillway, on the right bank, corresponding to the Laambeek siphon	29·670	...	...	...	Do.	Do.	...	2·33	
Weir at Bridge No. 19 ...	30·870	1 of 10·0	Baulk	2·40	...	...	...	...	
(*f*) Stockroye Spillway, on the right bank, corresponding to the Jonderixbeek siphon	34·400	...	...	...	2·00	Baulk	...	2·38	

Hasselt Branch Canal—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Baelen Harbour, Bridge No. 5	6·680	1·00	Earth embankment	92·00	24·00 R.bank 21·00 L.bank	Earth, with paved roads on each bank	Area of 800 sq. m.
Olmen Harbour, Bridge No. 7	10·305	Do.	Do.	Do.	20·00 R.bank 15·00 L.bank	Earth, with paved road on right bank only	Do.
Quaedmechelen Harbour, Bridge No. 10 ...	14·875	Do.	Do.	176·00	23·00 R.bank 13·00 L.bank	Earth with paved road on both banks	Area of 6,820 sq. m.
Tessenderloo Wharf, Bridge No. 12	18·345	Do.	Do.	100·00	20·00	Earth	
Beeringen Harbour, Bridge No. 14	23·155	1·65	Do.	117·00	23·00 R.bank 25·00 L.bank	Earth with paved roads on each bank	Area of 2,160 sq. m.
Genenbosch Harbour, Bridge No. 17 ...	27·510	1·00	Do.	92·00	9·00 R.bank 10·00 L.bank	Earth with gravel roads on each bank	Area of 2,600 sq. m.
Bolderberg Harbour, Bridge No. 19	30·770	Do.	Do.	100·00	8.00. both banks	Earth with gravel road on right bank	Area of 3,440 sq. m.
Stockroye Wharf, Bridge No. 20	32·770	Do.	Do.	20·00	50·00	Earth	Area of 800 sq. m.
Stockroye Harbour, Bridge No. 21	33·635	Do.	Do.	92·00	8·00 R.bank 22·00 L.bank	Earth with gravel road on right bank	
Curange Harbour, Bridge No. 22	36·450	Do.	Do.	97·00	10·00 L.bank	Earth	Area of 425 sq. m.
Hasselt Harbour	39·150 to end of harbour	0·67	Do.	233·00	20·00 R.bank 20·00 L.bank 32·00 S. side	Earth with paved roads. On south side the greater part is paved	Area of 10,360 sq. m.

Langeleede Canal.

REACHES.

Name of Reach	Distance in kiloms.		Length in kiloms			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
From Wachtebeke to Oudeburgschesluis	...	5·173	5·173	4·373	0·800	8·50	5·00	1·35 summer 1·70 winter	2·60 3·95	The downstream end is provided with a small lock for draining off the water. The upstream end is in free communication with the Moervaert. Boats frequenting this canal are generally 12 to 16 m. long, 3·30 m. beam, and 0·98 to 1·10 m. draught.

Lesse River.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Ciergnon to Vignée Bridge ...	0·000	1·915	1·915	...	Sinuous	Variable		0·20 minimum	...	This river is only navigable for rafts during certain seasons. It is navigable for boats for a length of 530 m. only in Belgium. The width of the stream is variable, being 8 to 9 m. in the province of Luxembourg and 12 to 25 m. in the province of Namur.
Vignée Bridge to Wanlin Bridge	1·915	4·682	2·767	...	Do.	Do.		Do.	...	
Wanlin Bridge to Havenne Bridge	4·682	7·152	2·470	...	Do.	Do.		Do.	...	
Havenne Bridge to Houyet Bridge	7·152	14·317	7·165	...	Do.	Do.		Do.	...	
Houyet Bridge to Pont-à-Lesse Bridge	14·317	29·720	15·403	...	Do.	Do.		Do.	...	
Pont-à-Lesse Bridge to Anseremme Bridge	29·720	33·007	3·287	...	Do.	Do.		Do.	...	
Head of this bridge to the Meuse	33·007	33·015	0·008	...	Do.	Do.		Do.	...	

Liége—Maastricht Canal. [*See Plate* 19.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Between Liége and Haccourt ...	0·130	12·600	12·470	9·925	2·545	23·45	17·00	2·50	57·35	
Between Haccourt and Lanaye	12·600	16·600	4·000	3·375	0·625	Do.	Do.	Do.	52 75	
Between Lanaye and Petit Lanaye	16·600	20·000	3·400	3·015	0·385	Do.	Do.	Do.	50·25	
Between Petit Lanaye and Maastricht	20 000	24·700	4·700	...	...	...		Do.	48·40	
In Maastricht	24·700	25 320	0·620	...	...	...	...	Do.	46·15	
Haccourt–Visé Canal	0·075	0·800	0·725	0·725	...	18·40	10·00	2·10	52·75	

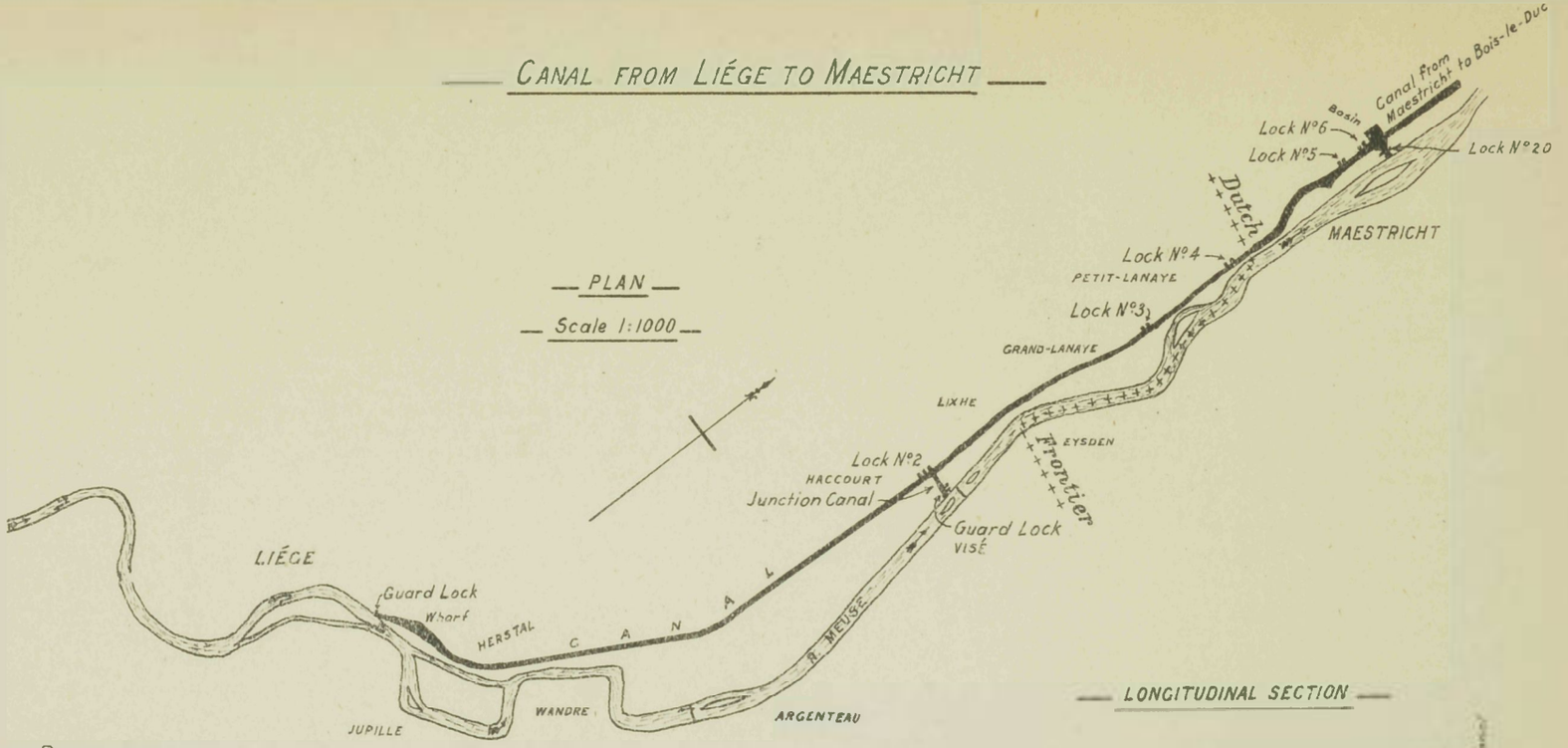
LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful ength of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Lock No. 1 at Liége	0·130	4·10	2·20	2·10	7·00	50·00	Min. Sec. 8 0	Min. Sec. 18 0	Vertical, brick	Sluices and penstocks	...	...	The penstocks are not used for the filling and emptying of lock, but for the draining of the reach.

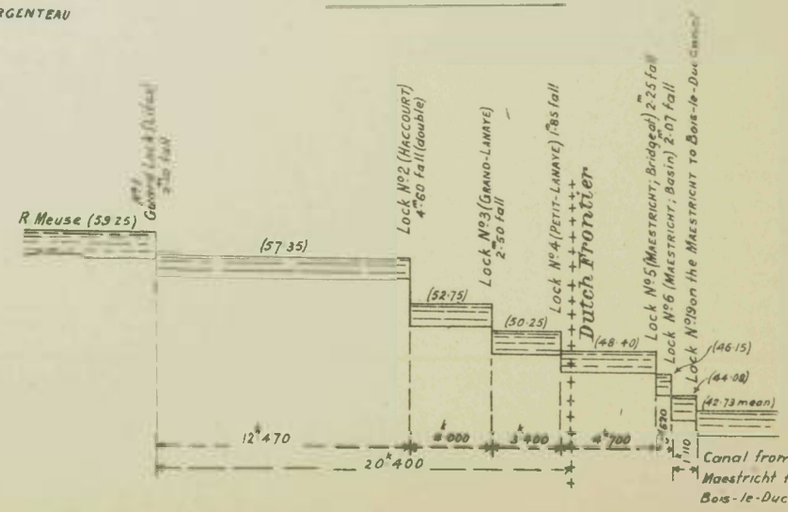
CANAL FROM LIÉGE TO MAESTRICHT

PLAN

Scale 1:1000

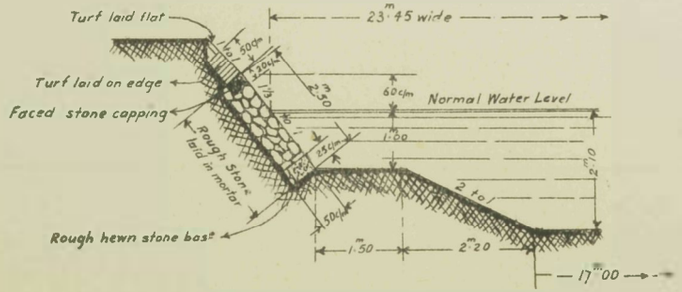


LONGITUDINAL SECTION



TYPE OF BANK PROTECTION

CANAL FROM LIÉGE TO MAESTRICHT.



Soil.
Sandy Clay or Gravel

Plate 19.

Lock No. 2 at Haccourt (Double Lock)	12·600	3·54	2·10	2·30 2·30	Do.	Do.	Do.	25 0 for both chambers	Do	Do	...	...	The double lock has two chambers of the same length. The intermediate gates take sometimes the total fall of 4·60 m.
Lock No. 3 at Grand Lanaye	16·600	3·60	2·10	2·50	Do.	Do.	Do.	18 0	Do.	Do.	...	...	
Lock No. 4 at Petit-Lanaye	20·000	2·10	Do.	1·85	Do.	Do.	Do.	Do.	Do.	Do.	...	...	
Lock No. 5 at Maastricht	24·700	3·40	2·20	2·25	Do.	50·00	Do.	Do.	Do.	Do.	...	...	
Lock No. 6 at Maastricht (basin)	25·320	2·40	2·10	2·05	Do.	Do.	Do.	Do.	Do.	Do.	...	...	
Visé - Haccourt Canal—													
Visé Lock on the Meuse	0·075	3·10	...	Variable	Do.	Do.	Variable according to fall	Variable according to fall	Do.	Do.	...	...	This lock is provided with a double system of gates in consideration of the variation of water level in the Meuse which is sometimes above and sometimes below that of the Canal.

Liége—Maastricht Canal—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Gérard-Cloes Colliery Harbour	0·700	2·75	Timber stockade	...	...	Planking	
Coronmeuse Dock	0·802	1·12	Wall	180·00	12·00	Paving and gravel	Area of 29,260 sq. m.
Benoit Wharf	0·942	0·75	Timber	51·00	Do.	Gravel	
Nihon Bros.' Yard	0·962	...	Earth embankment	40·00	10·00	Do.	
Belle-Vue Colliery	1·776	2·30	Stockade	...	...	Planking	
Petite Bacnure Colliery	1·894	1·90	Do.	...	...	Do.	
Espérance Colliery	4·446	1·60	Wall	50·00	7·00	Gravel	
Abhooz Colliery...	5·940	2·70	Do.	52·00	6·00	Do.	
Abhooz Colliery	6·00	2·40	Stockade	...	...	...	
Biquet-Gorée Colliery	8·305	0·90	Do.	...	...	...	
Biquet-Gorée Colliery	8·20	2·50	Wall and stockade	30·00	...	...	
Hermalle Dock	9·925	...	...	200·00	...	...	Area of 36,000 sq. m.
Lanaye Dock	16·375	...	...	...	...	...	Area of 3,000 sq. m.
Janssen's Wharf	16·690	...	Earth embankment	70·00	16·00	Gravel	
Landing stage (Lock No. 4)	19·965	0·50	Stockade	7·00	2·50	Planking	
Maastricht Dock	25·560	...	...	270·00	...	...	Area of 11,550 sq. m.
Visé Paper Mill landing stage	70 m. below Visé Lock on junction canal	...	Do.	33·00	3·50	Do.	

La Lieve Provincial Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
One reach	0·000	10·645	10·645	9·445	1·200	7·00	3·75	0·95 summer 1·25 winter	5·68 5·98	This canal begins at Stoktevyver and joins up with the Ghent – Bruges Canal. It communicates with this latter canal through the Rabot Lock and is separated from the Lys Diversion Canal by means of a small lock on the right bank, which serves for drainage.

La Lieve Provincial Canal—continued.

LOCKS.

Name of Lock	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
Rabot	At the Junction with the Ghent–Ostend Canal	1·62	1·63	0·24	4·15 chamber 13·50 m. at water level 6·00 m. at bed level	54·0 shape irregular	Min. Sec. 7 0	Min. Sec. 20 0 minimum	...	Sluices	...	...	

Lisseweghe Canal.

REACHES.

Name of Reach.	Distance in kiloms. Beginning of Reach.	Distance in kiloms. End of Reach.	Length in kiloms. Total.	Length in kiloms. Straight.	Length in kiloms. Curved.	Width in metres. At water level.	Width in metres. At bed level.	Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
From Krakeeltje Lock at the Junction with Ghent–Ostend Canal near Bruges to Zwankendamme Lock	0·000	10·230	10·230	9·200	1·030	4·00	2·50	1·09	+2·95	This canal is of no importance as a waterway and serves largely in summer for irrigation purposes.
Zwankendamme Lock to Zeebrugge	10·230	13·019	2·789	1·619	1·170	4·00	2·50	1·09	+2·95	

Lisseweghe Canal.—continued.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
Krakeeltje ...	0·000	2·02	1·19	0·93 summer 0·67 winter	3·30 (8·20 chamber)	25·00	Min. Sec. 5 0	Min. Sec. 15 0	Vertical copings of wrought stone	1 sluice to each leaf	3·0 m. wood	3·0 m. wood	
Zwankendamme	10·230	1·00	1·09	...	3·42 (11·00 chamber)	24·00	Do.	Do.	Do.	Do.	9·0 m. wood	9·0 m. wood	The gates of this lock are mitred towards Bruges, and are only opened when there is plenty of water in the Canal.

Loo Canal.

REACHES.

Name of Reach	Distance in kiloms. Beginning of Reach.	Distance in kiloms. End of Reach.	Length in kiloms. Total.	Length in kiloms. Straight.	Length in kiloms. Curved.	Width in metres. At water level.	Width in metres. At bed level.	Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
From Fintelle Lock to Furnes...	0·000	14·375	14·375	10·482	3·893	15·60	8·00	1·90	2·378	Boats frequenting this canal have a capacity of 40 tons, a length of 13 m. and a beam of 3·30 m. This canal serves largely for the discharge of the Yser flood water into the sea at Nieuport, through the Furnes–Nieuport Canal. It is in communication with the Furnes–Ambacht Canal by locks at Slopgat and at Steengracht. See Note on page 45.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
Fintelle	0·000	This sill level is +0·578, that is, 2·50 below low water in the Yser	This sill level is +0·578, that is, 1·80 below low water in the Furnes-Ambacht	Generally 0·70, but varies according to weather	5·42	28·00	Min. Sec. 10 0	Min. Sec. 15 0	Lock heads of wrought stone	Sluices and penstocks	...	...	This lock has 2 pairs of gates mitred towards the Yser. A drainage lock is situated near this lock.

Louvain—Rupel Canal.

REACHES.

Name of Reach.	Distance in kiloms. Beginning of Reach.	Distance in kiloms. End of Reach.	Length in kiloms. Total.	Length in kiloms. Straight.	Length in kiloms. Curved.	Width in metres. At water level.	Width in metres. At bed level.	Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
Louvain to Thildonck	0·000	7·301	7·301	7·009	0·292	24·00 minimum	12·00	3·60	17·700	The dimensions and tonnage of boats plying upon this canal are very variable. Boats do not generally exceed 37 m. long, 7·5 m. beam, and 3·5 draught, with a capacity of 350 tons.
Thildonck to Campenhout ...	7·301	12·627	5·326	5·266	0·060	25·00	Do.	Do.	15·614	
Campenhout to Boortmeerbeek	12·627	15·983	3·356	2·181	0·175	24·00	Do.	Do.	13·183	
Boortmeerbeek to Battel ...	15·983	26·653	6·160 Brabant 4·510 Antwerp	6·010 4·510	0·150	Do.	Do.	Do.	10·433	The water supply is from the Dyle.
Battel to Sennegat	26·653	29·793	3·140	3·000	0·140	Do.	Do.	Do.	6·763	
Sennegat downstream	...	...	...	...	...	...	...	1·40 low water 4·70 high water	3·87	

Louvain—Rupel Canal—continued.

LOCKS.

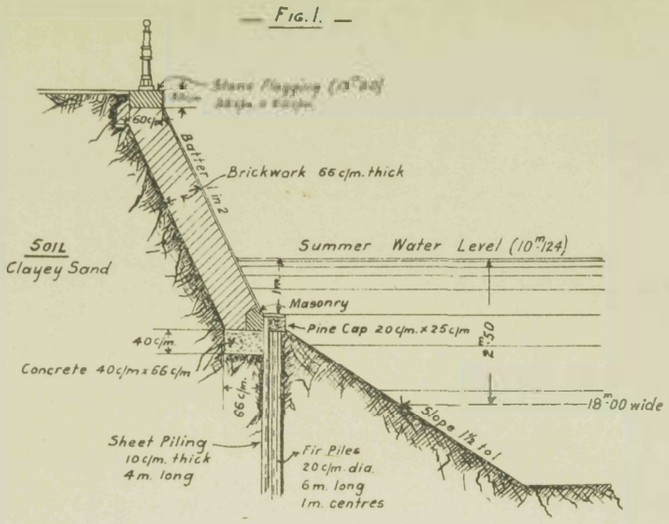
Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
							Min. Sec.	Min. Sec.					
Thildonck ...	7·301	4·78	4·23	2·08	8·20	56·00	15 0	30 0	Walls of brick and wrought stone	2 sluices to each gate	8·00 m. masonry	10·50 m.	Each of these locks has three pairs of mitred gates.
Campenhout ...	12·627	4·27	4·25	2·51	Do.	Do.	Do.	Do.	Do.	Do.	5·00 m. masonry	8·50 m.	
Boortmeerbeek ...	15·983	4·16	3·64	2·75	Do.	55·00	Do.	Do.	Do.	Do.	3·0 m.	5·00 m.	
Battel	26·653	4·06	3·71	3·67	Do.	55·70	Do.	Do.	Do.	Do.	2·50 m.	8·30 m.	
Sennegat ...	29·793	3·80	1·40 to 4·70	2·89 (corresponding to a depth over sill of 3·67)	Do.	63·50	Do.	Do.	Do.	Do.	3·50 m.	7·00 m. wood	

WHARVES AND QUAYS.

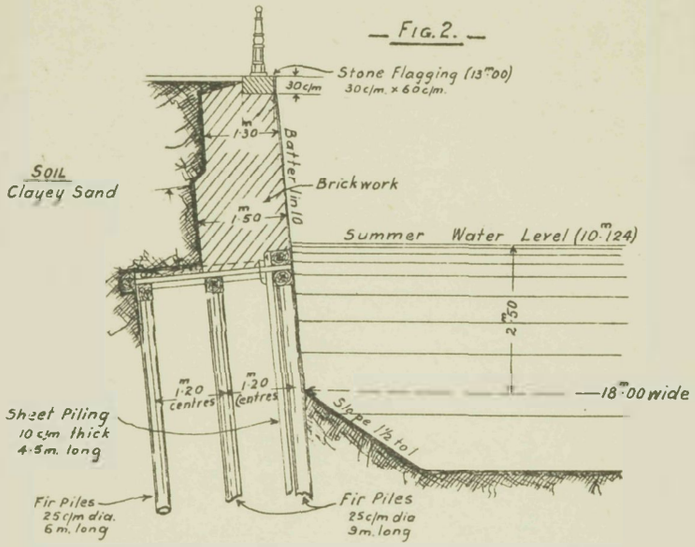
Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf. or Quay wall.	Length of Wharf or Quay.	Quay. Width.	Quay. Construction.	Remarks.
		Metres.		Metres.	Metres.		
Louvain Grand Dock	Commencement of canal	0·85	Wall	350·00	15·00	Paving	Outside Louvain unloading is effected on the embankments at certain points. Area of dock is 9,240 sq. m.
Louvain, Beerkom Dock	Do.	1·50	Timber revetment	195·00	10 to 15·00	Earth	Area of dock is 4,250 sq. m.
Quay walls	Do.	...	Brick walls with stone facing	616·00	...	...	Railway lines running to Docks Station.

Type of Bank Protection — River Lys

— Fig. 1. —

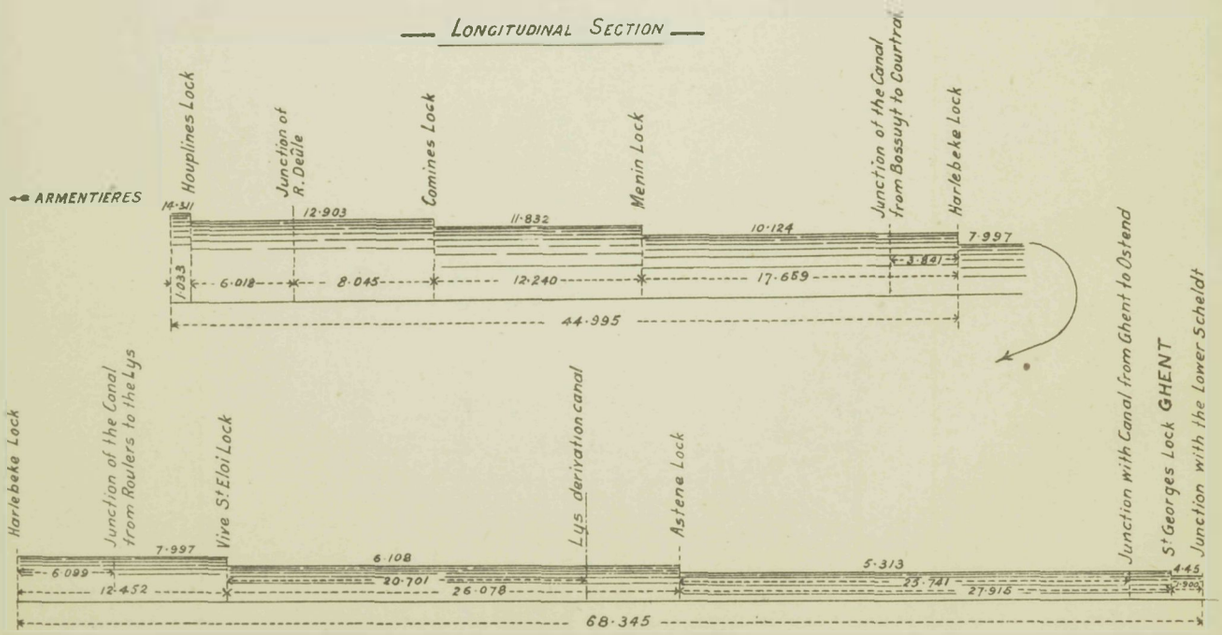


— Fig. 2. —



River Lys

Longitudinal Section



Malby & Sons, Lith.

Lys River. [*See Plates* 12 *and* 20.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.		Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.				
								Sum.	Win.	Mean.	
Houplines to Comines	0·000	14·063	14·063	...	14·063	25·00	10·00	2·10	2·40	12·903	The Lys communicates with the Lower Scheldt at Ghent through the Pêcherie Canal. At Ghent the following canals spring from the Lys: Ghent–Bruges Canal, and the Municipal Canals known as: Quai au Bois, la Lieve, Meerhem and the Ghent Junction Canal. Each lock on the Lys is provided with an adjacent weir which serves to maintain the water level in times of flood. The supplementary locks at Comines. Menin and Harlebeke are also manipulated to this effect. Near Afsné the Lys separates into two branches, the principal arm passing by Afsné and the other by Tronchiennes. These two branches meet again at Ghent at Akkergem pass. Here again they separate, the non-navigable arm joining up with the Ghent–Bruges Canal and the principal arm with a branch leading to the Lieve Municipal Canal.
Comines to Menin	14·063	26·303	12·240	...	12·240	Do.	Do.	Do.	2·34	11·832	
Menin to Harlebeke	26·303	43·963	17·660	...	17·660	Do.	Do.	Do.	2·33	10·124	
Harlebeke to Vive-Saint-Eloi ...	43·963	56·415	12·452	...	12·452	Do.	Do.	Do.	2·10	7·997	
Vive-St.-Eloi to Astene ...	56·415	82·493	26·078	...	26·078	Do.	Do.	2·10		6·108	
Astene Weir to St. Georges Lock at Ghent	82·493	110·408	27·915	...	27·915	Do.	Do.	2·20	2·50	5·313	

Lys River—continued

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.		Mitre Sills. Down stream. Depth below water level down stream in metres.		Fall in metres.		Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Summer	Winter	Summer	Winter	Summer	Winter			Min. Sec.	Min. Sec.					
Comines	14·063	3·662	3·692	2·50	2·74	1·162	1·222	5·40	42·30	10 0	20 0	Brick	Sluices	12 m. fascine	22 m. fascine covered with pitching	
Menin	26·303	4·145	4·358	Do.	2·73	1·645	1·655	Do.	Do.	Do.	Do.	Brick and stone	Do.	6 m. concrete and brick	9 m. concrete and pitching	
Harlebeke ...	43·963	4·432	4·662	2·141	2·141	2·291	2·521	Do.	Do.	Do.	Do.	Brick	Do.	7·5 m. fascine and pitching	24·7 m. fascine and pitching	
Vive-Saint-Eloi ...	56·415	2·840	...	2·930	...	1·89	...	Do.	Do.	Do.	Do.	Do.	Do.	10 m. fascine	30 m. fascine and pitching	
*Astene	82·493	3·25	3·25	2·59	2·59	0·66	0·36	Do.	42·20	1 18	10 0	Copings of brick and wrought stone	Do.	6 m. fascine and pitching	15 m. fascine and pitching	
St. George's Lock and Weir at Ghent.	110·408	3·94	...	3·00	...	0·90	1·50	6·50	41·50	...	...	Brick and stone	Do.	Piles and 10 m. concrete	Piles and 15 m. concrete	See sketch on Plate 12.

* From 15th October to 15th April this Lock is always closed on account of the pollution of the waters due to the flax retting. Traffic is then diverted through the Lys Diversion Canal.

WEIRS.

Name of Weir.	Distance in kiloms.	On Principal arm.			On branch.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Name of Weir.	Number and width of openings.	Type of Weir.	Difference between head and tail race in metres.	
				Summer Winter		Metres.		Summer Winter	
Comines	14·063	3 of 5·00, 4·50, 4·50	Baulk	3·662 3·962	Supplementary Lock	4 of 1·50	Sluices	2·00 2·30	
					Hydraulic Works	4 of 4·13	Do.	2·10 to 2·20 / 2·40 to 2·50	
Menin	26·303	1 of 5·50	Do.	2·93 3·17	Military Weir	3 of 3·50	Baulk	1·71 1·95	
					Supplementary Lock of Hydraulic Works	3 openings, total 2·40	Sluices	2·29 2·53	
Harlebeke	43·963	2 of 5·20	Do.	4·43 4·66	Supplementary Lock	3 of 1·25	...	... ...	
					Hydraulic Works	3 of 1·70, 1·28, 1·30	Sluices	1·85 2·08 / 1·90 2·13 / 2·60 2·83	
						1 of 1·65	Do.	1·79 1·79	
Vive-Saint-Eloi	56·415	4 of 5·20	Do.	4·49 4·49	...	...	...	... ...	
St. George's Weir at Ghent...	110·408	1 of 9·50	Do.	0·90 to 1·50	...	...	...	... ...	
		1 of 6·00	Do.	Do	...	...	...	... ...	

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Warneton Wharf	5·382	1·25	Earth embankment	123·00	11·00	Earth	
	7·833	1·05	Do.	33·00	20·00	Do.	
	9·788	1·15	Do.	50·00	30·00	Do.	
	9·883	1·20	Wall	90·00	57·00	Paving and earth	
	9·948	1·15	Earth embankment	64·00	6·00	Earth	
Bas-Warneton Wharf	10·238	0·95	Do.	26·00	25·00	Do.	
Comines Wharf	13·665	1·18	Wall	85·00	5·00	Paving	

Lys River—continued.

WHARVES AND QUAYS—continued.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Wervicq Wharf	18·783	1·50	Earth embankment	63·00	16·00	Earth	
	19·138	1·60	Wall	38·00	15·00	Macadam	
	20·122	Do.	Earth embankment	48·00	25·00	Earth	
Menin Wharf	25·411	0·62	Do.	34·00	24·00	Do.	
	26·019	1·90	Wall	16·00	10·00	Do.	
	26·075	1·50	Do.	19·00	...	Paving	
	26·561	1·90	Do.	49·00	5·00	Earth	
	26·590	1·05	Do.	60·00	3·50	Do.	
Lauwe Wharf	32·837	0·60	Earth embankment	100·00	8·00	Do.	
Bisseghem Wharf	37·292	Do.	Do.	60·00	6·00	Do.	
Courtrai	39·876	2·15	Wall	395·00	9·00	Paving	
	39·889	1·95	Do.	170·00	20·00	Do.	
Harlebeke	43·661	1·22	Earth embankment, 40·00 Wall, 81·00	121·00	5·00	Earth	
	43·916	1·90	Earth embankment	36·00	9·00	Do.	
	44·502	2·10	...	Do.	Do.	Do.	
	44·640	2·50	...	121·00	Do.	Do.	
	44·715	1·70	...	36·00	12·00	Do.	
	44·844	2·00	...	40·00	9·00	Do.	
Wielsbeke	51·145	1·25	...	60·00	10·00	Do.	
	55·095	1·60	...	50·00	8·00	Do.	
Vive-St. Eloi	56·095	1·30	...	40·00	8·50	Do.	
	57·383	1·80	...	28·00	7·00	Do.	
	57·400	2·65	...	100·00	8·00	Do.	
	57·583	1·30	Wall	30·00	Do.	Do.	
Ousselghem	66·283	1·70	Earth embankment	50·00	Do.	Do.	
Ide's Wharf, Zulte, right bank	58·827	2·90	Do.	40·00	30·00	Do.	
Van Thuyne's Wharf, Zulte, right bank ...	64·227	1·75	Do.	100·00	40·00	Do.	
Olsene Wharf, right bank	68·427	2·50	Do.	20·00	8·00	Do.	
Devenyn's Wharf, Gotthem, left bank ...	70·727	1·75	Do.	85·00	25·00	Do.	
Amerlynck's Wharf, Gotthem, left bank ...	71·127	1·50	Do.	100·00	Do.	Do.	
Desmet Wharf, Gotthem, left bank	72·327	1·85	Do.	30·00	10·00	Do.	
Machelen Communal Wharf, right bank ...	72·927	2·10	Do.	60·00	Do.	Paving	
Vermeersch Wharf, Deynze, left bank ...	76·127	1·90	Do.	80·00	30·00	Do.	

Vereecke's Wharf, Peteghem, right bank	78·927	2·50	Do.	40·00	Do.	Earth
De Backer's Wharf, Deynze, left bank	79·227	2·00	Do.	20·00	10·00	Do.
Deynze Town Wharf, left bank	79·827	2·40	Quay wall	40·00	12·00	Paving
Astene Wharf, right bank ...	82·027	1·70	Earth embankment	60·00	20·00	Earth
Astene Weir Wharf, left bank	83·127	3·30	Do.	250·00	7·00	Do.
Gapaert Wharf, Astene, right bank	84·927	1·80	Do.	50·00	20·00	Do.
Deurle Wharf, right bank ...	87·227	2·20	Do.	40·00	10·00	Paving
Deurle Bridge Wharf, right bank	89·127	1·40	Do.	50·00	28·00	Earth
Marten's Wharf, Lerne-St. Martin, right bank	89·427	1·90	Do.	60·00	30·00	Do.
Baerle Wharf, near Tronchiennes, left bank	93·927	1·80	Do.	50·00	15·00	Do.
Laethem-St. Martin Wharf, right bank	96·127	1·00	Do.	60·00	10·00	Do.
Vincke Wharf, Laethem-St.-Martin, right bank	96·327	1·80	Do.	80·00	12·00	Do.
Maebe Wharf, Afsné, right bank ...	100·827	1·10	Do.	40·0	6·00	Do.
Steenaard, St. Denis Westrem, right bank	101·427	1·30	Do.	100·00	8·00	Do.
Biloque Wharf, Ghent, left bank	107·850	2·26	Do.	220·00	14·00	Earth and paving
Aux Tilleuls Quay Ghent, left bank	108·416	...	...	100·00	10·80	Paving
Récollets' Quay, Ghent, left bank	108·571	...	...	160·00	14·50	Do.
Oignons' Quay, Ghent, left bank	108·750	...	...	175·00	10·25	Do.
Dominicain's Quay, Ghent, right bank	108·925	...	...	180·00	8·50	Do.
Aux Herbes Quay, Ghent, right bank	109·100	...	...	140·00	17·20	Do.
Au Blé Quay, Ghent, left bank	109·100	...	...	140·00	14·50	Do.
De la Grue Quay, Ghent, left bank	109·373	...	...	111·00	8·25 to 20·00	Do.
Arrière Lys Quay, Ghent, left bank	109·929	...	...	145·00	11·60	Do.
Tanneurs' Quay, Ghent, left bank	110·077	...	...	150·00	11·30	Do.
Tour Rouge Quay, Ghent, left bank	110·700	...	...	80·00	over 25·00	Do.
Du Pas Quay	110·800	...	...	92·00	11·00	Do.
Wharf above Pêcherie Lock, Ghent, right and left bank	112·225	1·25	Earth embankment	150·00 on each bank	13·00	Earth and paving

Lys Diversion Canal (or Schipdonck Canal).

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Reach upstream of Deynze Lock	0·000 (Lys at Deynze)	1·149	1·149	0·614	0·535	22·56	10·0 to 10·16	3·03	6·107	When the waters of the Lys are polluted they are diverted from their course to Ghent by the Astene weir and discharged by this diversion into the sea.
Reach downstream of Deynze Lock	1·149	14·067 (Ghent–Bruges Canal)	12·918	10·483	2·435	20·28	10·16 to 15·00	2·40 summer 2·70 winter	5·747 winter 5·477 summer	This canal is separated from the Ghent–Bruges Canal by two weirs serving to prevent pollution. A siphon establishes connection between the two reaches. When the water is pure the weirs are always open, and when polluted closed, except to let traffic pass. At such times the weir at Blagerhoeke is manipulated to reduce the fall.
Reach downstream of Schipdonck	14·132	27·408 Balgerhoeke Weir	13·276	9·455	3·821	23·68	12·00 to 17·13	2 90 summer 3·20 winter	Do.	

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Deynze	1·149	3·30	2·37 summer	0·66 summer	5·40	42·20	Min. Sec. 2 30	*Up :* 10 m. 30s. empty, 14 m. 30 s. full. *Down :* 10 m. 30 s. empty, 14 m. full	Brick	1 sluice to each leaf	10 m. fascine covered by pitching	10 m. fascine covered with pitching	

WEIRS.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Deynze	1·149	...	...	...	2 of 5·40	...	Baulk	0·66 summer 0·36 winter	
Nevele	6·625	1 of 5·40	Baulk	...	Do.	...	Do.	...	
Upstream of Schipdonck ...	13·984	Do.	2 mitre gates	...	Do.	...	Do.	Variable, 0·0 to 0·30	
Down stream of Schipdonck	14·132	1 of 6·10	Baulk	...	1 of 6·10	...	Do.	Variable, 0·0 to 0·50	
Balgerhoeke	27·408	...	...	...	4 of 5·20	...	Do.	Variable, 0·0 to 2·28	

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay Wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Lindekens Bridge, left bank	16·521	4·15	Earth embankment	50·00	6·00	Earth	
Do. do.	16·611	Do.	Do.	Do.	Do.	Do.	
Do. Dobbelaire Landing ...	16·631	1·80	Timber	4·00	Do.	Do.	
Do. right bank	16·471	4·15	Earth embankment	100·00	Do.	Do.	
Do. Do.	16·611	Do.	Do.	Do.	Do.	Do.	
Stoktevyver, right bank	19·126	Do.	Do.	Do.	Do.	Do.	
Oostwinkel, left bank	21·716	Do.	Do.	Do.	Do.	Do.	
Van Leeurde Landing	21·746	1·80	Timber	4·00	Do.	Do.	
Veldekens, left bank	23·009	4·15	Earth embankment	50·00	Do.	Do.	
Do. De Ruyter Landing ...	23·050	1·80	Timber	3·50	Do.	...	
Do. right bank	22·959	4·15	Earth embankment	100·00	Do.	Paving 100·00 × 3·00	
Balgerhoeke, Potbliege Landing, right bank	27·240	1·30	Timber	5·00	Do.	Earth	
Do. right bank	27·290	2·01	Earth embankment	150·00	Do	...	

Lys Diversion Canal—continued.

WHARVES AND QUAYS—continued.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.	Metres.	
Deynze, left bank	1·069	4·20	Earth embankment	50·00	6·50	Paving 36·60 × 3·00	
Do. do.	1·199	Do.	Do.	Do.	5·00 to 8·50	Do. 210·00 × 3·00	
Do. right bank	1·069	Do.	Do.	Do.	6·50	Do. 92·50 × 3·00	
Do. do.	1·199	Do.	Do.	Do.	8·50 to13·80	Do. 97·50 × 3·00	
Meygem, left bank	4·700	3·97	Do.	100·00	8·50	Earth	
Nevele, do.	6·525	Do.	Do.	50·00	6·50 to 8·00	Paving 40·00 × 3·00	
Do. do.	6·675	Do.	Do.	Do.	5·00 to 8·00	Do. 59·50 × 3·00	
Do. right bank	6·525	Do.	Do.	Do.	6·50 to10·00	Do. 50·00 × 3·00	
Do. do.	6·675	3·97 to 3·30	Do.	106·00	6·50	Do. 106·00 × 3·00	
Landegem, left bank	9·700	2·90	Do.	50·00	Do.	Do. 65·00 × 3·00	
Do. right bank...	Do.	Do.	Do.	150·00	Do.	Do. 66·00 × 3·00	
Meerendré, do	11·437	2·65	Do.	50·00	Do.	Do. 33·60 × 3·00	
Do. do.	11·527	Do.	Do.	100·00	Do.	Do. 33·00 × 3·00	

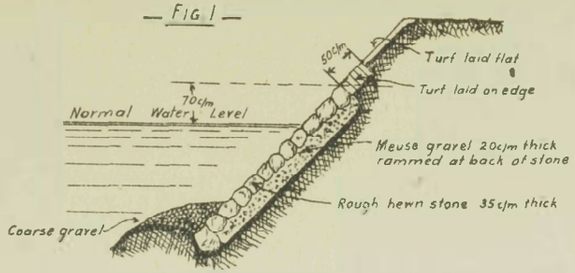
Maastricht—Bois-le-Duc Canal (or Zuid Willemsvaart). [*See Plate* 21.]

REACHES.

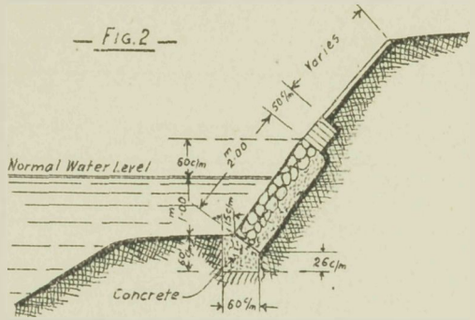
Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Maastricht to Bocholt	1·319 (Lock 19 at Maastricht)	43·409 (Lock 18 at Bocholt)	40·171 in Belgium	35·282	4·889	20·00	10·00	2·10	42·73 42·06	In Belgium the canal is in cutting for the first 9 kms. and for the following 39 kms. embankment.
Bocholt to Loozen	43·409 Lock 18 at Bocholt	45·624 Lock 17 at Loozen	2·215	1·606	0·609	Do.	Do.	Do.	40·22	The water supply is from the Meuse below Maastricht and is delivered to the canal by a system of regulating sluices below Lock No. 19.
Loozen to Weert	45·624 Lock 17 at Loozen	Lock 16 at Weert	2·181	2·181	...	Do.	Do.	Do.	37·71	The Meuse–Scheldt Junction Canal receives its water supply from this canal.
										At Bocholt there is a turning basin at the entrance to the Meuse–Scheldt Junction Canal.

— Type of Bank Protection — Canal from Maestricht to Bois-le-Duc —

— Fig 1 —



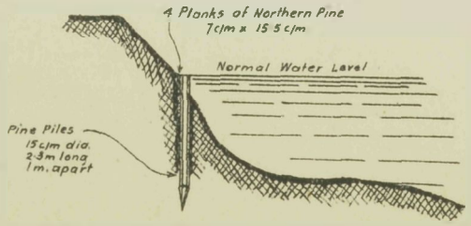
— Fig 2 —



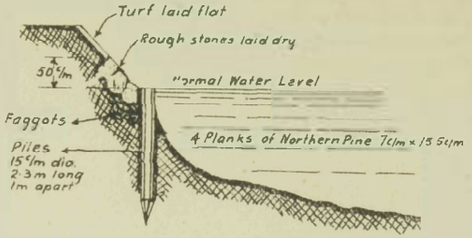
Soil

Gravelly Clay upstream
Sandy Clay downstream

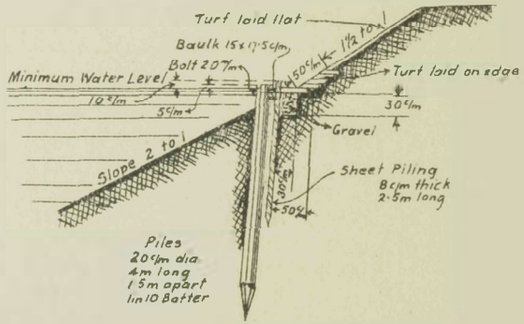
— Fig 3 —



— Fig 4 —



— Fig 5 —



— Fig 6 —

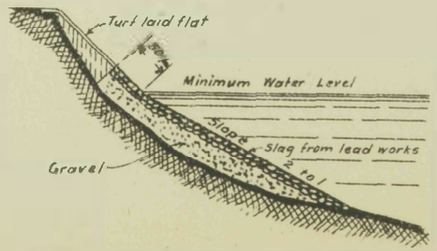


Plate 23.

Maastricht—Bois-le-Duc Canal—continued.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level up stream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
							Min. Sec.	Min. Sec.					
Lock No. 19 at Maastricht (Holland)	...	3·10	2·10	1·35	7·00	50·00	6 0	16 0	Masonry	2 sluices	...	...	The total number of locks on this Canal is 20, of which 2 are in Belgium, the remainder in Holland. The locks are all similar, the average fall being 2·05 m. They are numbered from Bois-le-Duc to Maastricht, whereas the milestones number the opposite way.
Lock No. 18 at Bocholt	43·409	2·89	Do.	1·84	Do.	Do.	Do.	Do.	Do.	Do.	6·00 m. wood	6·50 m. wood	
Lock No. 17 at Loozen	45·624	3·57	2·10	2·51	Do.	Do.	7 30	19 0	Do.	Do.	Do	Do.	

Maastricht—Bois-le-Duc Canal—continued.

WEIRS.

Name of Weir.	Distance in kiloms	Navigable Passage.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Boorsheim	10·866	3 openings : 2·80, 7·40, 3·90	Baulks in grooves	3·00	...	...	...	...	
Evsden	15·880	3 openings : 2·80, 7·60, 3·70	Do.	3·15	...	...	...	...	
Rothem	23·842	3 openings : 2·80, 7·40, 3·90	Do.	3·00	...	...	...	...	
Neeroeteren	27·680	Do.	Do.	3·54					

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Smeermaas Dock	3·368	1·56	Fascined path	192·00	7·00	Gravel	Area of 1,420 sq. m.
Hocht Dock	5·104	3·44	Earth embankment	220·00	14·50 L.bank 4·00 R.bank	Earth and gravel	Do. 4,000 do.
Reckheim Dock and Station	8·655	1·04	Do.	211·00	25·00 to 30·00	Paving 3·50 and gravel	Do. 1,579 do.
Boorsheim Dock	10·954	1·08	Do.	82·00	10·00	Earth and gravel	Do. 390 do.
Mechelen Dock	12·666	1·01	Do.	120·00	11·80	Do.	Do. 525 do.
Do. Basin	13·575	0·98	Do.	1120·00	13·10 L.bank 14·20 R.bank	Do.	Do. 7,280 do.
Eysden Small Dock	15·975	0·78	Do	195·00	12·00	Do.	Do. 6,325 do.
Do. Large Dock	17·139	0·76	Do.	500·00	10·00	Do.	Do. 19,840 do.
Ferry Wharf	18·004	1·23	Do.	54·00	12·00	Do.	
Lanklaar Dock	19·440	0·81	Do.	235·00	20·00	Paving 3·50 and gravel	Do. 1,200 do.
Dilsen Dock	21·841	1·32	Do.	120·00	10·00	Earth and gravel	Do. 450 do.
Rothem Dock	23·748	1·25	Do	156·00	Do.	Paving and gravel	Do. 1,060 do.

Neeroeteren 1st Dock	25·887	0·96	Do.	190·00	Do.	Earth and gravel	Do.	2,400	do.
Do. 2nd Dock...	26·896	1·14	Do.	104·00	5·00	Do.	Do.	885	do.
Do. Dock	27·785	0·97	Do.	114·00	10·00	Do.	Do.	480	do.
Claes and Fléchet's Wharf	29·140	0·95	Do.	175·00	Do.	...			
Neeroeteren 3rd Dock (Geysteren)	29·392	0·98	Do.	226·00	8·00 to 22·00	...	Do.	3,300	do.
Solt Dock	31·504	0·77	Do.	248·00	10·00	...	Do.	3,400	do.
Tongerloo Dock	33·100	1·18	Do.	115·00	12·00	...	Do.	480	do.
Brée Dock and Station	36·836	1·08	Do.	430·00	8·00 to 28·00	Paving and macadam	Do.	4,340	do.
Beek Dock	39·803	1·44	Do.	120·00	10·00	Earth and gravel	Do.	2,755	do.
Bocholt Dock	41·777	0·97	Do.	127·00	12·00	Do.	Do.	2,340	do.
Loozen Large Dock	45·00	1·59	Do.	1850·00	10·00	Do.	Do.	27,630	do.
Do. Round Dock	45·448	1·45	Do.	210·00	Do.	Do.	Do.	7,270	do.
Customs Landing Stage at Loozen	45·781	...	Do.	12·00	...	...			
Loozen Dock	45·810	1·35	Earth slope and wall, 12·00 m. long	170·00	5·45	Earth	Do.	800	do.

Martje River Canalised.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
This river has only one reach ...	0·000	3·080	3·080		Sinuous	5·00	2·00	0·55 at the commencement 1·70 at the junction with the Ypres–Yser Canal	3·24 3·08	Navigation on the canalised section is only possible in the rainy season. Boats 12 m. to 15 m. long, 2·5 m. beam and 0·80 m. draught then ply upon the canal. In summer only boats with a draught of 0·55 m. can use this canal.

Meuse River. [*See Plates* 22 *and* 23.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width of Diversion in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
French frontier to Hastière ...	0·000	3·981	3·981	...	...	24·00	12·00	2·20	98·16	* The widths of the navigable channels for this section average 30 m. and range from 20 m. to 30 m.
Hastière Lock to Waulsort Lock	3·981	8·900	4·919	...	...	23·10	Do.	Do.	95·31	
Waulsort Lock to Anseremme Lock	8·900	16·222	7·322	...	...	22·50	Do.	Do.	92·83	
Anseremme Lock to Dinant Lock	16·222	20·134	3·912	...	...	...	...	Do.	90·56	The widths of river at water level and at bed level are very variable. In the Province of Namur it is 110 m. and in Liége 140 m. The Meuse is navigable over its whole length in Belgium and is canalised from Dinant to Visé.
Bouvignes Lock to Houx Lock	20·134	23·603	3·469	...	...	...	...	Do.	88·52	
Houx Lock to Hun Lock ...	23·603	28·643	5·040	...	...	22·28	15·00	Do.	86·49	
Hun Lock to Rivière Lock ...	28·643	33·557	4·914	...	...	...	...	Do.	83·67	The fall of the river is 45 cm. per kilometre in the Province of Namur and 27 cm. per kilometre in that of Liége. From Liége to Eysden over a distance of 19 km. the fall is 38 cm. per kilometre.
Rivière Lock to Tailfer Lock ...	33·557	39·090	5·533	...	...	...	...	Do.	81·57	
Tailfer Lock to La Plante Lock at Namur	39·090	45·369	6·279	...	...	...	...	Do.	79·47	
La Plante Lock to Grands Malades Lock	45·369	48·538	3·169	...	...	...	...	Do.	77·52	
Grands Malades Lock to Maizeret	48·538	54·740	6·202	...	...	...	...	Do.	75·77	The low water discharge is:— At Givet 25 cubic metres per second. At Namur 46 ,, ,, At Liége 60 ,, ,,
Maizeret Lock to Sclayn Lock...	54·740	61·001	6·201	...	...	...	...	Do.	73·97	
Sclayn Lock to Andenelle Lock	61·001	67·270	6·269	...	...	...	...	Do.	72·17	
Andenelle Lock to Ben-Ahin Lock	67·270	73·000	5·730	...	...	120·00 to 140·00	115·00	Do.	70·42	Boats frequenting the Meuse are generally 41 m. long, 5 m. to 6·50 m. beam, and 1·80 m. to 2·10 m. draught with capacities varying from 300 to 350 tons.
Ben-Ahin Lock to Huy Lock	73·000	79·104	6·104	...	...	Do.	Do.	Do	68·82	
Huy Lock to Ampsin Lock	79·104	81·604	2·500	...	...	Do.	Do.	Do	67·27	
Ampsin Lock to Amay Lock	81·604	87·334	5·730	...	...	Do.	Do.	Do	65·65	
Amay Lock to Awirs Lock	87·334	94·504	7·170	...	...	Do.	Do.	Do	64·00	
Awirs Lock to Jemeppe Lock	94·504	101·914	7·410	...	...	Do.	Do.	Do	62·35	
Jemeppe Lock to Avroy Lock	101·914	110·399	8·485	...	...	Do.	Do.	Do	60·65	
Avroy Lock and Cannon Foundry Lock, Liège	110·399	113·455	3·056	...	...	Do.	Do.	Do	59·25	
Cannon Foundry Lock to Hermalle-sous-Argenteau Lock	113·455	123·455	10·000	...	...	Do.	Do.	Do.	54·75	
Hermalle-sous-Argenteau Lock to Visé Lock	123·455	128·055	4·600	...	...	Do.	Do.	Do.	52·75	
Visé Lock to Dutch frontier ...	128·055	131·975	3·920	...	...	Do.	Do.	Variable	Low water level	

THE CANALISED MEUSE

LONGITUDINAL SECTION

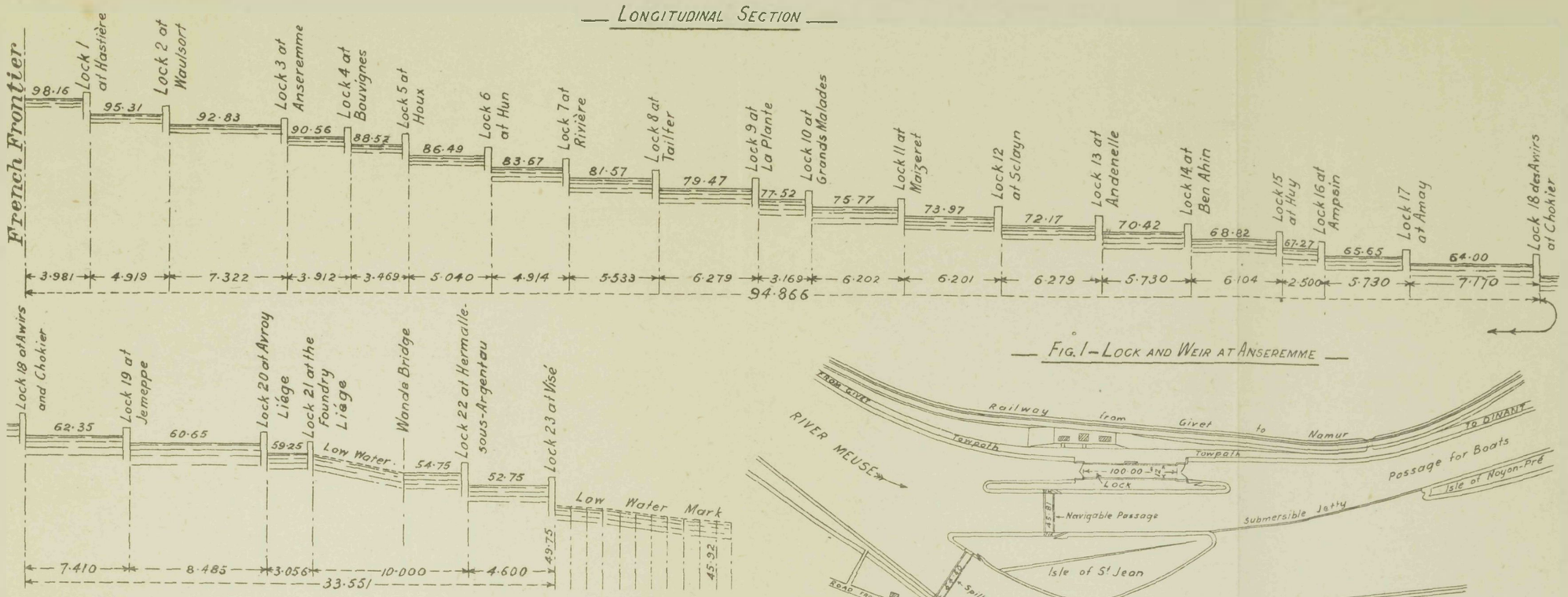


FIG. 1 – LOCK AND WEIR AT ANSEREMME

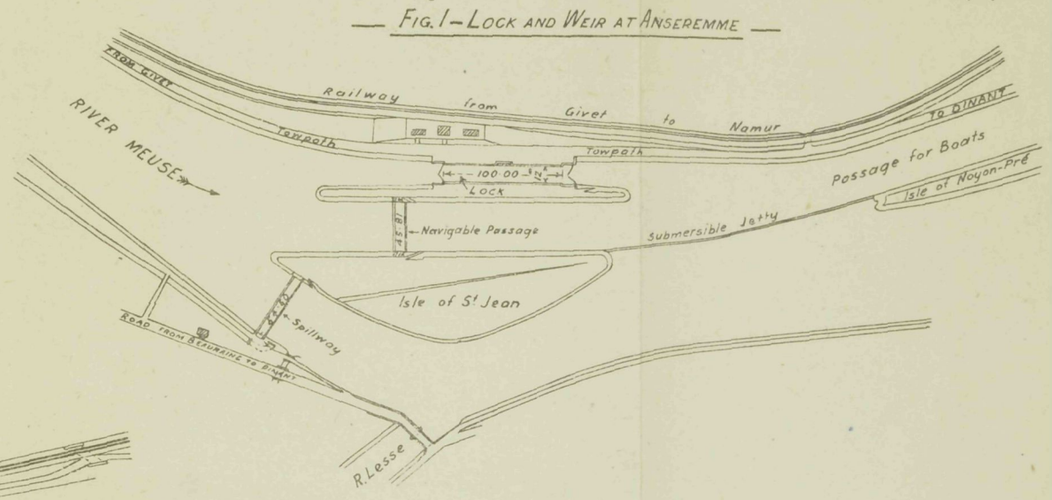


FIG. 2 – LOCK AND WEIR AT BOUVIGNES

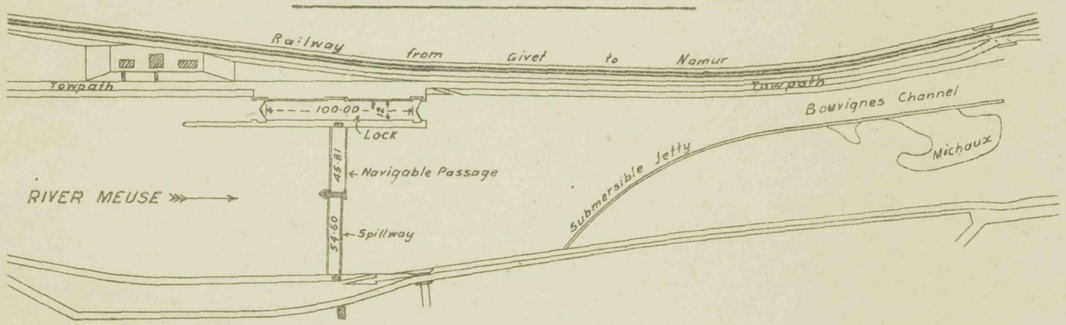


FIG. 3 – LOCK AND WEIR AT HOUX

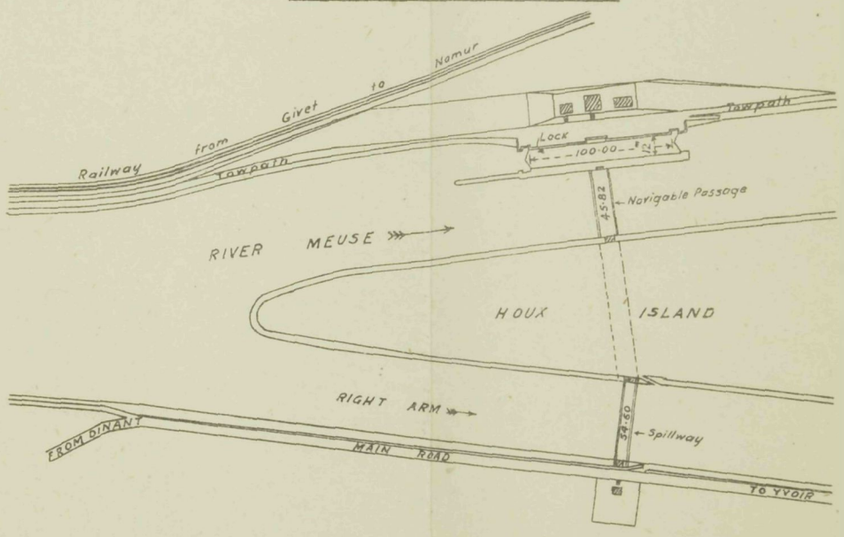


FIG. 4 – LOCK AND WEIR AT MAIZERET

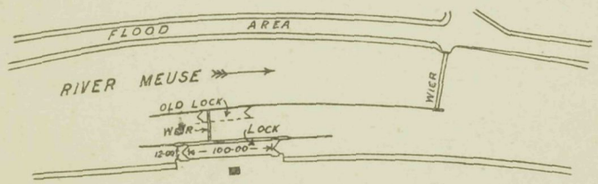


FIG. 5 – LOCK AND WEIR AT HUN

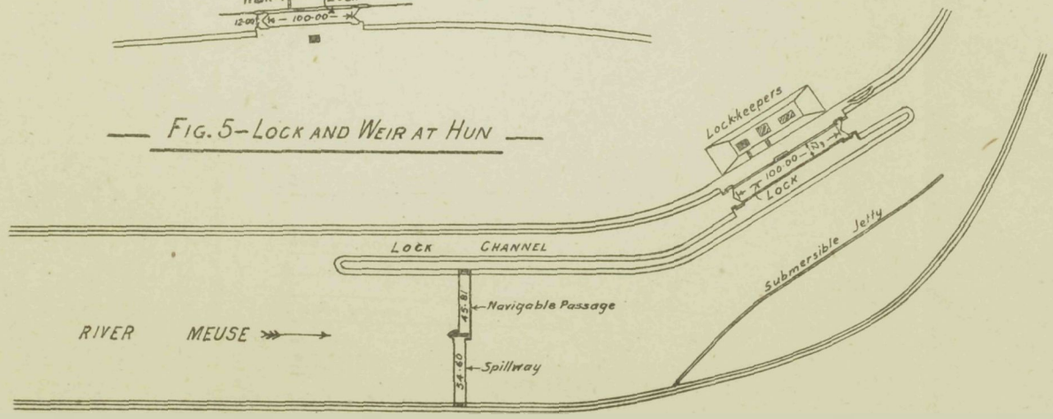
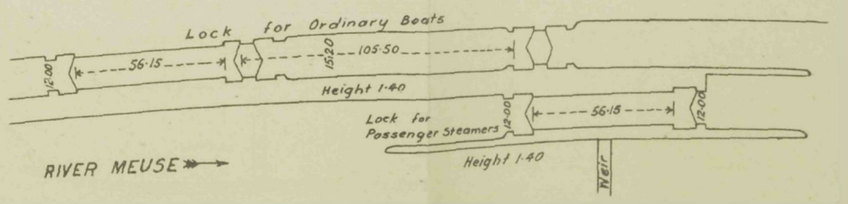


FIG. 6 – LOCKS AND WEIR AT AVROY



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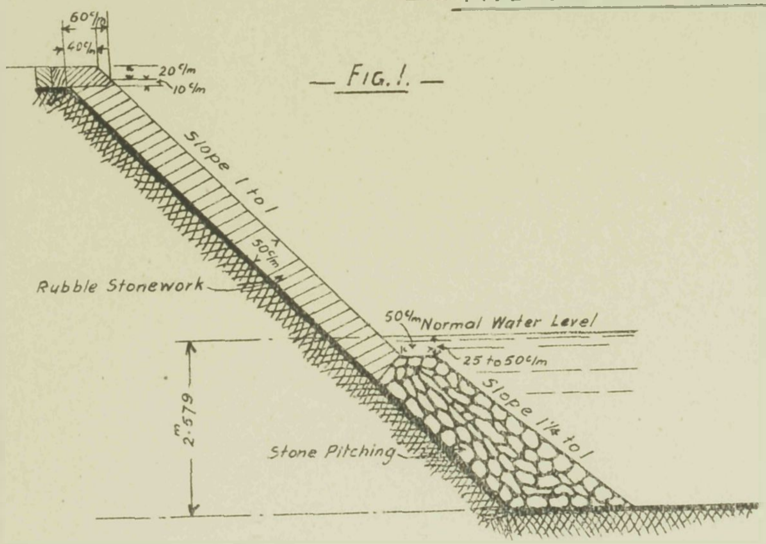
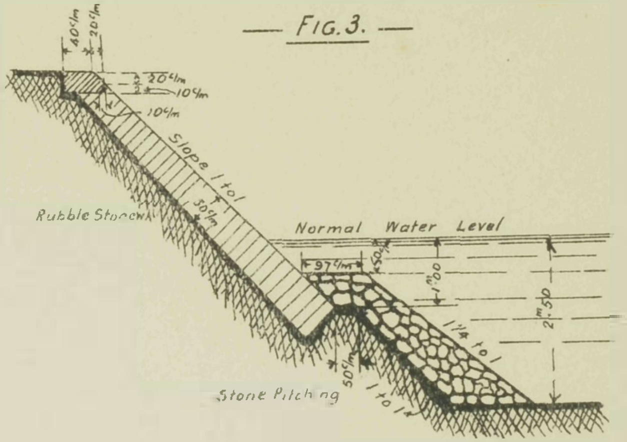
Type of Bank Protection — The Canalised Meuse

— Fig. 1. —



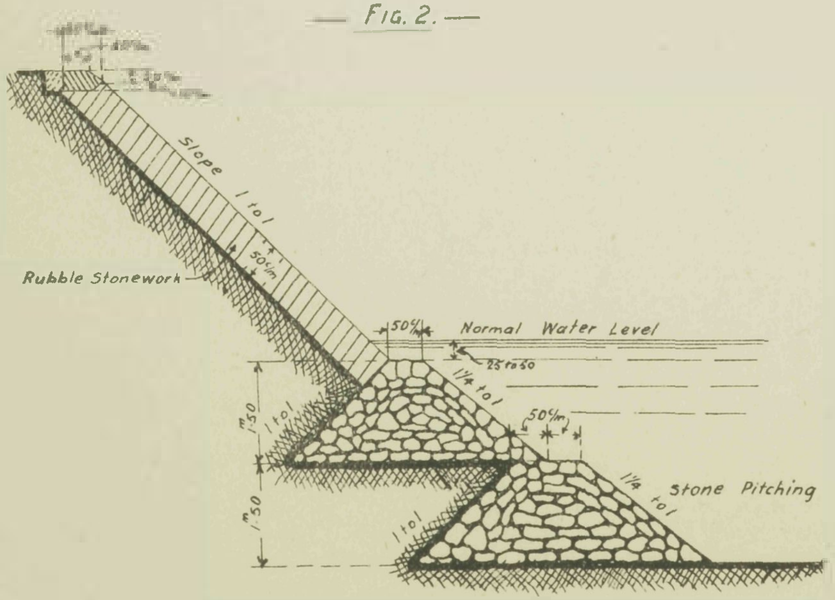
— Fig. 3. —



— Soil —

The bottom of the Meuse is formed of gravel
On the banks gravel mixed with clay

— Fig. 2. —



— Fig. 4 —

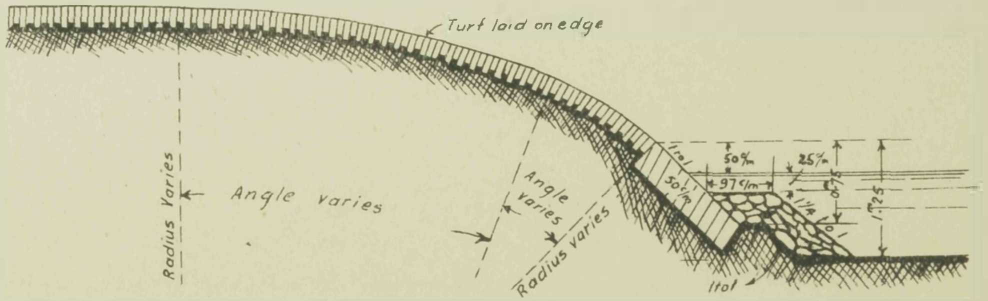


Plate 23.

Meuse River—*continued.*

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
							Min. Sec.	Min. Sec.					
Hastière	3·981	4·95	2·10	2·85	12·00	100·00	5 0	10 0	Wrought stone	2 penstocks to each head 2 sluices to each leaf	...	...	
Waulsort ...	8·900	4·58	Do.	2·48	Do.	Do.	Do.	Do.	Do.	Do.	...	...	
Anseremme ...	16·222	4·37	Do.	2·27	Do.	Do.	4 0	Do.	Do.	Do.	...	...	See Fig. 1, Pl. 22
Bouvignes ...	20·134	4·14	Do.	2·04	Do.	Do.	Do.	9 0	Do.	Do.	...	...	See Fig. 2, ,,
Houx	23·603	4·13	Do.	2·03	Do.	Do.	Do.	8 0	Do.	Do.	...	...	See Fig. 3, ,,
Hun	28·643	4·92	Do.	2·82	Do.	Do.	5 0	10 0	Do.	Do.	...	...	See Fig. 5, ,,
Rivière	33·557	4·20	Do.	2·10	Do.	Do.	6 30	Do.	Do.	1 penstock to each head 2 sluices to each leaf	...	...	
Tailfer	39·090	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	...	
La Plante ...	45·369	4·05	Do.	1·95	Do.	Do.	Do.	Do.	Do.	Do.	...	...	
Grands-Malades	48·538	3·95	Do.	1·75	9·00	56·75	7 0	12 0	Brick	1 sluice to each leaf	...	...	
Maizeret	54·740	Do.	Do.	1·80	Do.	Do.	Do.	Do.	Do.	Do.	. .	...	See Fig. 4, Pl. 22
Sclayn	61·001	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	..	...	
Andenelle ...	67·270	3·90	Do.	1·75	Do.	Do.	Do.	Do.	Do.	Do.	. .	...	
Ben-Ahin ...	73·000	3·75	Do.	1·60	Do.	Do.	6 0	16 0	Do.	Sluices			
Huy	79·104	3·70	Do.	1·55	Do.	Do.	Do.	Do.	Do.	Do.	...	...	
Ampsin	81·604	Do.	Do.	1·62	Do.	Do	Do.	Do.	Do.	Do.	...	...	
Amay	87·334	Do.	Do.	1·65	Do.	Do.	Do.	Do.	Do.	Do.	...	...	
Awirs	94·504	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	...	...	
Jemeppe ...	101·914	3·80	Do.	1·70	Do.	Do.	4 0	14 0	Do.	Do.	...	...	
*Avroy—													
1st Chamber ...	110·399	3·50	Do.	1·40	12 00	56·15	Do.	Do.	Dressed stone	Penstocks with sluices	...	...	See Fig. 6, Pl. 22
2nd Chamber	Do.	Do.	Do.	Do.	15 20	105·50	8 0	18 0	Battered	Do.	...	...	

* These 2 chambers are built in a channel basin laterally to the Meuse. If necessary the 2 chambers can be used as a single one. In times of flood the water level can be held lower than that of the Meuse. To this effect the upstream end of the channel has gates mitred in the up-stream direction, and the downstream and gates mitred down stream. By a double action of the gates boats may in times of flood be brought into the channel basin by the down stream end. Laterally to these locks there is a lock in the Meuse itself reserved for steam passenger boats— the dimensions of this lock are similar to that of the Avroy 1st Chamber given in the Table.

Meuse River—continued.

LOCKS—continued.

Name of Lock.	Distance in kiloms.	Mitre Sills		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Cannon Foundry Lock at Liége	113·455	2·95	1·05 below low water	Variable	9·00	56·75	Min. Sec. Variable	Min. Sec. Variable	Brick	Sluices	...	...	Down stream of this lock to Visé, the Meuse is partly canalised.
Hermalle-sous-Argenteau Lock	123·455	3·70	2·10	2·00	Do.	55·82	8 0	18 0	Do.	Do.	...	...	
Visé	128·055	Do.	Variable	Variable	Do.	Do.	Variable	Variable	Do.	Do.	...	...	
Communication lock No. 20 between the Meuse and the Maastricht Canal Basin	141·715	The 2 sills are at +41·98 above Datum, that is, 2·10 below normal Canal level, which is 44·08 and 1·44 to 6·72 below the level of the Meuse, according as this level is 42·42 minimum or 48·70 maximum		Varies from 0·66 from the Canal to the Meuse to 4·15 from the Meuse to the canal.	7·00	56·00	5 0 to 15 0	10 0 to 25 0	Brick	2 sluices	7 m. stone	7 m. stone	There are 2 pairs of gates to each lock head, mitred in both directions.

WEIRS.

Name of Weir.	Distance in kilomes.	Navigable Passage. Number and width of openings in metres.	Navigable Passage. Type of Weir.	Navigable Passage. Difference between head and tail race in metres.	Spillway. Length in metres.	Spillway. System of closing. Fixed.	Spillway. System of closing. Adjustable.	Spillway. Difference between head and tail race in metres.	Remarks.
									Needle dam has—
Hastière	3·435	1 of 41·01	Needle	3·10	54·60	...	39 baulks	2·25	33 frames, 410 needles.
Waulsort	8·477	1 of 43·41	Do.	Do.	Do.	...	Do.	Do.	35 do. 410 do.
Anseremme	16·132	Do.	Do.	Do.	Do.	...	Do.	Do.	35 do. 410 do.
Dinant	20·134	1 of 45·81	Do.	Do.	Do.	...	Do.	Do.	37 do. 458 do.
Houx	23·603	Do.	Do.	Do.	Do.	...	Do.	Do.	37 do. 458 do.
Hun	28·365	Do.	Do.	Do.	60·0	...	43 baulks	Do.	37 do. 458 do.
Rivière	33·615	1 of 30·0	Baulk	Do.	Do.	...	Do.	Do.	
Tailfer	39·148	Do.	Do.	Do.	Do.	...	Do.	Do.	
La Plante	45·427	Do.	Do.	Do.	Do.	...	Do.	Do.	
Grands-Malades	48·771	2 of 35·0	Needle	2·60	150·0	Masonry		2·60	68 do. 700 do.
Maizeret	54·973	Do.	Do.	Do.	Do.	Do.		Do.	68 do. 820 do.
Sclayn	61·234	2 of 41·0	Do	Do.	Do.	Do.		Do.	80 do. 700 do.
Andenelle	67·517	2 of 42·0	Do.	Do.	Do.	Do.		Do.	82 do. 840 do.
Ben-Ahin	73·250	2 of 41·0	Do.	Do.	Do.	Do.		Do.	80 do. 820 do.
Huy	79·354	2 of 47·0	Do.	Do.	Do.	Do.		Do.	92 do. 940 do.
Ampsin	81·854	2 of 48·0	Do.	Do	Do.	Do.		Do.	94 do. 960 do.
Amay	87·584	2 of 49·0	Do.	Do.	Do.	Do.		Do.	96 do. 980 do.
Awirs	94·754	2 of 50·0	Do.	Do.	Do.	Do.		Do.	98 do. 1,000 do.
Jemeppe—									
Weir upstream	101·693	1 of 60·0	Do.	Do.	200·0	Do.		Do.	54 do. 600 do.
Weir abutting on Lock ...	101·914	Do.	Do.	Do.	Do.	Do.		Do.	54 do. 600 do.
Avroy—									
Weir upstream	110·028	Do.	Do.	Do.	Do.	Do.		Do.	54 do. 600 do.
Weir abutting on Lock ...	110·472	Do.	Do.	Do.	Do.	Do.		Do.	54 do. 600 do.
Cannon Foundry Weir at Liége	113·455	2 of 60·0	Do.	Do.	150·0	Do.		Do.	108 do. 1,200 do.
Hermalle-sous-Argenteau ...	123·705	Do.	Do.	Do.	Do.	Do.		Do.	108 do. 1 200 do.
Visé—									
Weir upstream	127·692	1 of 65·0	Do.	Do.	Do	Do.		Do.	64 do. 650 do.
Weir down stream ...	127·855	Do.	Do.	Do.	Do.	Do.		Do.	64 do 650 do.

Meuse River—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Customs Quay, Agimont, left bank	0·050	2·15	Loose stone wall at an angle of 45°	80·00	15·00	Gravel	
Hermeton Harbour, left bank...	3·211	1·00	Do.	90·00	15·00	Paving and gravel	
Hastière-Lavaux Harbour No. 1, left bank ...	5·305	1·60	Revetment at a slope of 45°	65·00	20·00	Gravel	
Do. do. 2 do. ...	5·563	2·48 upstream 2·71 downstream	Loose stone wall at angle of 45°	107·00	No terre-plein	Paving	
Hastière-par-delà, right bank	5·620	1·00	Earth slope	250·00	10·00	Gravel	
Ferry slope, Waulsort, left bank	9·416	2·50	Revetment at an angle of 45°	47·00	No terre-plein	Macadam	
Slope below Freyr Chateau, left bank ...	13·303	1·65	Do.	40·00	Do.	Do.	
Moniat slope, left bank	15·080		Rubble wall at angle of 45°	17·00	10·00	Rough stone	
Anseremme Harbour, right bank	15·760	1·08	Do.	400·00	10·00 average	Gravel	
St. Jean Bridge wharf, at mouth of Lesse, right bank	16·155	2·30	Earth slope	230·00	40·00	Earth	
Anseremme Quarry Wharf, right bank ...	16·916	1 75	Do.	130·00	30·00	Rough stone	
Froideveau Harbour, Dinant, right bank ...	17·106	0 60	Vertical rubble walls	87·00	5·00	Small stones	
St. Paul Wharf, Dinant, right bank	17·636	1·50	Rubble wall at angle of 45°	90·00	12·00 average	Quarry and other refuse	
Jeu de Balle Harbour, Dinant, right bank ...	18·620	1·60	Earth slope	140·00	15·50	Paving	
Steamboat Quay, Dinant, right bank ...	19·080	0·60	Rubble wall at angle of 45°	170·00	11·50 average	Paving 5·00 m. wide Small stones 6·50 m. wide	
Tannery Harbour, Dinant. right bank ...	19·320	1·00	Earth slope	97·00	8·00	Paving	
Bouyet Wharf, Dinant...	19·425	1·40	Rubble wall at angle of 45°	160·00	12·50 average	Earth and rough stones	
Pâtis de Leffe Quay, Dinant, right bank ...	19·567	1·50	Do.	175·00	Do.	Earth and broken stones	
Bouvignes Harbour, left bank	20·790	2·30	Do.	180·00	7·00	Do.	
Houx Wharf, right bank	24·377	2·10	Earth slope	60·00	43·00	Earth and turf	

Anhée Wharf, left bank	25·434	1·75	Rubble wall at angle of 45°	15·00	10·00	Macadam and earth
Moulin-Warnant Wharf, left bank	26·450	1·70	Do.	275·00	6·50	Earth and broken stones
Dapsens Wharf, Yvoir, right bank	27·196	0·80	Rubble wall with slightly sloping revetment	130·00	...	Do.
Foundry Harbour, Yvoir, right bank	28·144	1·25	Rubble wall with slope of 45°	80·00	17·00 average	Gravel
Rouillon-Annevoie Harbour, left bank ...	30·329	2·73	Rubble wall with revetment at 45°	307·00	15·20 and 30·00	Earth and broken stones
Mines Wharf, Rouillon, left bank	30·925	Do.	Do.	130·00	25·00 average	Do.
Godinne Wharf, right bank	32·735	0·80	Rubble wall at angle of 45°	75·00	15·00	Natural soil
Rivière Harbour, left bank	33·430	1·15	Do.	125·00	25·00	Do.
Burnot Wharf, left bank	33·557	0·80	Do.	100·00	Do.	Do.
Frappe-Cul Wharf, right bank	34·085	Do.	Earth slope	40·00	10·00	Do.
Fresne-Lustin Wharf, right bank	35·791	2·00	Do.	75·00	5·00	Do.
Profondeville Wharf, left bank	36·352	1·75	Revetment	230·00	15·00	Do.
Petit-Bonheur Wharf, Profondeville, left bank	37·551	Do.	Earth slope	40·00	5·00	Do.
Seresia Wharf, Tailfer, right bank	37·644	1·10	Do.	175·00	Do.	Do.
Devant Wharf, Tailfer, left bank	37·971	1·00	Revetment	200·00	Do.	Do.
Tailfer Wharf, right bank	38·074	1·50	Rubble wall at angle of 45°	95·00	8·00	Do.
Collet's Wharf, Wépion, left bank	38·749	1·20	Do.	90·00	15·00	Do.
Grand Ry Wharf, left bank	39·982	1·50	Revetment	70·00	12·00	Do.
Dave Wharf, right bank	40·782	...	Earth slope	110·00	10·00	Do.
Perribonnier Wharf, left bank	41·549	1·60	Revetment	75·00	15·00	Do.
Private wharf, Wépion, left bank	42·00	1·50	Rubble wall at angle of 45°	200·00	Do.	Do.
Wépion Wharf, left bank...	42·892	Do.	Earth slope	130·00	23·00	Do.
La Pairelle Wharf, left bank	43·628	1·60	Earth slope and rubble wall	100·00	5·00 (the bank)	Do.
La Chapelle Wharf, Namur, left bank	14·726	1·50	Rubble wall at angle of 45°	20·00	Tow path	Do.
St. Martin Harbour, La Plante, left bank ...	45·896	1·00	Wall	24·00	10·00	Do.
Jambes Harbour, right bank	46·447	1·25	Rubble wall at angle of 45°	140·00	8·00	Do.
Grognon Harbour, Namur, left bank	46·600	0·60	Wall	150·00	17·00	Paving
Gravière Quay, Namur, left bank	47·078	1·50	Do.	640·00	5·00 to 35·00	Do.
Bon-Dieu Harbour, Namur, left bank	47·640	Do.	Do	185·00	Variable	...

Meuse River—continued.

WHARVES AND QUAYS.—continued.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Mettes.	Metres.		
Glass Works Wharf, Jambes, right bank ..	47·905	1·30	Rubble wall at angle of 45°	110·00	4·00	Natural soil	
Grands Malades Harbour, left bank	48·638	0·80	Do.	230·00	13·00	Quarry refuse	
Tête du Pré Harbour, right bank	49·552	0·50	Do.	150·00	4·00	Natural soil	
Mines Wharf, Beez, left bank	50·605	...	Earth slope	80·00	50·00	Do.	
Lives Harbour, right bank	50·775	2·00	Rubble wall at angle of 45°	257·00	23·00	Paving and natural soil	
Abreuvoir Wharf, Beez, left bank	51·543	...	Earth slope	13·00	14·00	Natural soil	
Deschamps Mines Wharf, left bank	51·700	...	Do.	65·00	35·00	Do.	
Brumagne Wharf, right bank	53·396	0·80	Rubble wall at angle of 45°	125·00	10·00	Do.	
Marche-les-Dames Harbour, left bank ..	54·458	0·65	Do.	340·00	17·00	Do.	
Haigneaux Wharf, left bank	55·052	...	Earth slope	220·00	30·00	Do.	
Deschamps Mines Wharf, left bank	55·850	...	Do.	70·00	25·00	Do.	
St. Roch Chapel Wharf, Namêche, left bank	56·188	...	Slope of quarry refuse	50·00	10·00	Do.	
Legrand Wharf, Samson, right bank ..	56·310	...	Do.	160·00	9·00	Do.	
Abreuvoir Wharf, Namêche, left bank ..	56·448	...	Do.	66·00	5·00	Do.	
Daix Wharf, Samson, right bank	56·746	2·00	Rubble wall at angle of 45°	123·00	17·00	Do.	
Aux Poids Wharf, Samson, right bank ..	57·186	Do.	Do.	50·00	25·00	Do.	
Namêche Mines Wharf, right bank	57·286	...	Earth slope	40·00	30·00	Do.	
Namêche Harbour, left bank	57·515	1·20 and 0·80	Rubble wall at an angle of 45°	300·00	20·00	Macadam and gravel	
Pirlot's Termagne Quarry Wharf, left bank	Do.	...	Earth slope	92·00	9·40	Natural soil	
Legrand Foundry Wharf, right bank ..	57·535	...	Do .	63·00	10·00	Meuse bank	
Loise Quarry Wharf, right bank	57·685	...	Slope of quarry refuse	93·00	11·00	Do.	
Timber Wharf below Samson, right bank ..	58·315	...	Do.	292·00	14·00	Natural soil	
Quarry Wharf below Samson, right bank ..	58·644	...	Do.	75·00	18·00	...	
Heumont Wharf, right bank	59·069	...	Do.	510·00	23·00	...	
Quarry Wharf above Sclayn, right bank ...	59·649	...	Do.	291·00	12·00	...	
Sclaignaux Mines Wharf, left bank	60·356	...	Earth slope	140·00	20·00	...	
Do. do. formerly Espérance Co.	60·376	...	Do.	251·00	25·00	...	
Landen Company's Wharf, left bank... ...	61·254	...	Do.	120·00	60·00	Natural soil	
Vezin-Brichebo's Wharf, Sclaignaux, left bank	61·320	...	Do.	Do.	Do.	Do.	

Dumont Works Wharf, left bank	62·020	...	Do.	135·00	22·00	Slag
Limekiln Wharf, Seilles, left bank	63·223	...	Do.	315·00	30·00	Natural soil
Anthon Wharf, right bank	63·442	...	Do.	44·00	8·00 (bank)	Earth
Seilles Harbour, left bank	64·673	1·00	Wall	100·00	83·00	Do.
Belgrade Harbour, Audenne, right bank ...	65·683	0·60	Rubble wall at angle of 45°	390·00	14·00	Paving
Andenne Bridge Wharf, left bank ...	65·923	1·40	Rubble wall and earth	40·00	16·00	Earth
Lagasse Colliery Wharf, right bank ...	67·622	0·50	Rubble wall at angle of 45°	130·00	3·00	Do.
Rieudotte Wharf, right bank	68·387	0·75	Do.	60·00	Do.	Do.
Wanhérif Wharf	68·643	...	Landing	250·00	10·00	Gravel
Rieudotte Harbour	68·938	0·25	Rubble wall	23·00	3·50	Macadam
Java Wharf	70·508	...	Do.	80·00	12·00	Paving
Lovegnée Harbour, right bank ...	73·523	1·70	Wall and rubble wal	70·00	6·00	Macadam
Bas-Oha Harbour, left bank	Do.	1·00	Rubble wall	85·00	Do.	Do.
Ore-washing Works, Bas-Oha ...	73·723	0·50	Earth slope	110·00	50·00	Gravel
Do Wanze	75·393	2·00	Do.	80·00	15·00	Turf
Quay wall, Statte-lez-Huy	75·527	...	...	71·00 & 60·00	...	...
Statte-lez-Huy Harbour	75·663	0·72	Wall, rubble wall and earth slope	110·00	8·00	Gravel
Ahin Harbour	76·473	0·25	Rubble wall	28·30	4·00	Macadam
Quay wall above Huy Bridge ...	77·100	...	...	91·50	...	...
Neuve-Voie Harbour, Huy	77·393	0·25	...	170·00	11·40	Paving
La Barque Harbour, Huy	77·883	Do.	Wall	24·00	11·00	Do.
La Barque Quay	77·900	...	...	51·00	...	...
Lebeau Harbour, Huy	78·013	0·35	Wall and rubble wall	230·00	12·00	Paving and macadam
Récollets' Quay, Huy	78·100	...	...	131·00	...	...
Corphalie Harbour, Antheit	80·530	0·25	Wall	31·50	1·60	Paving
Delamine Harbour, Antheit	80·600	1·00	Wall and timber	50·00	2·15	Planking
Corphalie Quay wall	80·900	...	...	1695·00	...	...
Ampsin Harbour (Taverne à Meuse) ...	82·210	1·00	Wall	55·00	9·50	Macadam
La Neuville Harbour	83·110	1·20	Earth slope	35·00	20·00	Gravel
Chapelle du Bois, Neuville	83·780	1·00	Do.	25·00	5·00	Turf
Riz-de-Mer Harbour (Ombret) ...	84·630	0·50	Rubble wall	70·00	20·00	Gravel
Ponthière Harbour	85·590	...	Earth slope	30·00	15·00	Turf
Amay Harbour (Ponthière Lane) ...	85·690	0·20	Rubble wall	17·00	4·25	Macadam
Rorive Wharf (Meuniers Road) ...	86·360	...	Do.	25·00	7·20	Paving
Ombret Harbour and Shipyard ...	86·470	...	Gravelled slope	125·00	25·00	Gravel
Amay Harbour (Flône)	86·650	0·50	Rubble wall	13·50	4·00	Macadam
Jadoul Wharf (Flône)	87·520	1·00	Wall and earth slope	90·00	5·00	Gravel

Meuse River—continued.

WHARVES AND QUAYS—continued.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Flône Factory Harbour	88·120	50·0	Wall	13·00	3·70	Paving	
Do. do.	Do.	2·40	Do.	47·00	5·40	Gravel	
Flône Quay wall	88·200	...	...	640·00	...	...	
Burton Colliery Harbour	88·564	2·40	...	...	...	...	
Quay wall of the Vieille Montagne ...	88·600	...	...	300·00	...	...	
Hermalle-sous-Huy Harbour	89·567	0·80	Earth slope	50·00	13·00	Turf	
Jadoul Bros. Wharf	89·717	0·60	Do.	90·00	4·50	Gravel	
Quay wall Hermalle-sous-Huy	89·750	...	...	337·00	...	...	
Dethier and Troquay Wharf	90·947	0·40	Gravelled slope	50·00	5·00	Gravel	
Nouvelle Montagne Harbour	91·167	Do.	Do.	Do.	Do.	Do.	
Clermont Harbour	91·647	2·40	Earth slope	80·00	12·00	Turf	
Quay wall above Nouvelle Montagne ...	91·800	...	...	470·00	...	...	
Ore washing Works of Nouvelle Montagne ...	92·367	0·20	Rubble wall	20·00	3·60	Gravel	
Villégia and Servais Wharf	92·617	0·50	Gravelled slope	60·00	6·00	Paving and gravel	
Engis Harbour	92·817	0·75	Rubble wall	100·00	25·00	Gravel	
Engis and Engihoul Harbours	92·867	1·35	Do.	80·00	15·00	Do.	
Chainaye Lhoest Wharf	92·957	0·50	Rubble wall and timber	40·00	35·00	Do.	
Villégia and Dache Wharf	93·152	1·40	Rubble wall	46·00	11·00	Macadam	
Sart d'Avette Colliery	93·277	0·40	Earth slope	70·00	5·00	Paving and gravel	
Les Awirs Harbour	94·590	1·00	Rubble wall	20·00	2·10	Paving	
Ramioul Harbour	94·820	0·40	Wall	Do.	18·70	Gravel	
Tour-Dame Harbour, Palante	95·274	1·25	Rubble wall	40·00	3·00	Paving	
Mouvet Works Wharf	95·704	3·00	Wall	60·00	9·50	Gravel	
Chokier Harbour	95·904	...	Earth slope	18·00	15·00	Paving and macadam	
Do.	95·953	...	Do.	40·00	Do.	Gravel	
Sacré Wharf	96·384	1·00	Do.	35·00	7·00	Do.	
Demet Landing	96·510	2·70	Wall	20·00	10·00	Paving	
Do.	96·436	1·00	Rubble wall	30·00	4·50	Turf	
Dame Sacré Landing	96·546	2·70	Do.	35·00	5·60	Turf and paving	
Lime Works Wharf	96·976	3·00	Do.	40·00	5·00	Gravel	
Flémalle-Haute Harbour (Chokier)	97·077	1·[illegible]	Do.	Do.	11·50	Macadam	
Dame Sacré Landing Stage	97·110	0·[illegible]	Earth slope	30·00	3·00	Gravel	
Bois Billard Wharf	97·280	1·00	Rubble wall	Do.	5·00	Do.	

Baldaz-Lalor Colliery	97·964	3·50	Do.	135·00	3·20	Gravel
Val-St. Lambert Wharf	98·850	0·60	Wall	20·00	12·00	Do.
Baldaz-Lalor Colliery	98·909	3·50	Do.	90·00	3·00	Do.
Marihaye Colliery, Flémalle	99·460	0·40	Rubble wall	200·00	10·00	Do.
Flémalle Grande Wharf	99·907	1·30	Do.	14·00	5·00	Paving
Marihaye Colliery, Seraing	100·340	3·20	Wall	21·00	7·00	Gravel
Place de l'Abbaye Quay, Seraing, right bank	101·616	...	...	195·20	...	...
Romarins Kessale Colliery	101·354	2·20	Wall	120·00	7·00	Gravel
Vieille Montagne	101·444	2·40	Do.	60·00	6·00	Do.
Espérance Harbour, Seraing	101·507	Do.	Timber	20·00	9·00	Paving
La Concorde Wharf	101·527	2·10	Wall	107·00	10·00	Gravel
Place de l'Abbaye Quay, right bank	101·616	...	...	195·20	...	...
Espérance Landing Stage	101·632	0·70	Wall	52·00	4·50	Planking
Quay 49·00 m. above Jemeppe Lock, left bank	101·664	...	...	98·00	...	...
Jemeppe Harbour	102·030	1·05	Wall and rubble wall	110·00	26·00	Macadam paving
Gosson Lagasse Colliery	102·400	0·70	Wall	22·50	2·00	Paving
John Cockerill Company's Harbour	102·400	0·95	Do.	64·00	9·40	Macadam
Quay above and below Seraing Bridge, right bank	102·474	...	...	44·20	...	...
Quay above and below Seraing Bridge, left bank	102·474	...	...	32·50	...	...
John Cockerill Company's Elevator	102·486	15·00	Wall and timber	16·60	5·00	Planking
Braconnier Harbour, Horloz	103–544	0·95	Timber	40·00	8·00	Macadam
Selessin Works Harbour	104·064	1·05	Do.	19·00	7·00	Do.
Grand Bac Colliery	104·294	0·75	Wall	85·00	6·00	Gravel
Ougrée Harbour, above bridge	104·654	1·50	Do.	135·00	17·00	Macadam
Do. below bridge	105·057	1·00	Rubble wall	60·00	5·00	Gravel
Ougrée Blast Furnaces	105·554	3·30	Wall	150·00	15·00	Flagged and gravelled
Hanzeue & Co.	108·257	2·20	Do.	93·00	12·00	Turf
Quay above and below Val Benoit Bridge, right bank	108·299	...	...	127·80	...	...
Val Benoit Colliery	108·367	1·00	Rubble wall	110·00	8·00	Gravel
Beco Yards	108·867	...	Earth embankment	60·00	20·00	Do.
Angleur Harbour	108·900	1·05	Wall	10·70	6·00	Paving
Vieille Montagne	Do.	Do.	Do.	Do.	Do.	Do.
Les Aguesses Colliery	109·024	2·00	Do.	40·00	20·00	Do.
Fragnée Quay, left bank	109·320	...	...	643·80	...	...
Chapelle du Paradis Harbour	109·607	...	Do.	25·00	5·00	Paving
Fragnée Quay, left bank	109·676	...	...	69·00	...	...
Chapelle du Paradis Quay, left bank ...	109·798	...	...	245·00	...	...
Bridgeman's Quay, Chapelle du Paradis, left bank	109·850	...	...	90.00 towards Meuse 70·40 towards channel	...	...

Meuse River—continued.

WHARVES AND QUAYS—continued.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Continuation of above to Commerce Bridge, left bank	110·020	...	...	455·00	...	...	
Wall of opposite channel	Do.	...	...	435·00	...	...	
Avroy Quay, opposite above	Do.	...	...	455·00	...	...	
Harbour under Commerce Bridge	110·250	0·80	Wall	20·00	4·00	Gravel	
Continuation from Commerce Bridge ...	110·299	...	...	98·00	...	...	
Steamer quay below Commerce Bridge ...	110·362	...	...	225·00	...	...	
Industrie Quay below Commerce Bridge, right bank	110·465	...	...	430·60	...	...	
Cockerill Quay, above La Boverie Bridge, left bank	110·720	...	...	363·30	...	...	
Industrie Harbour	110·867	1·00	Wall	190·00	11·00	Paving	
Université Quay, below La Boverie Bridge, left bank	110·950	...	...	108·00	...	...	
Commerce Quay, below La Boverie Bridge, right bank	110·975	...	...	150·00	...	...	
Université Quay, above Régence footbridge...	111·150	...	...	192·00	...	...	
Pêcheurs Quay, right bank	111·360	...	...	298·00	...	...	
Chéravoie Harbour	111·375	0·65	...	119·00	20·00	Paving	
Pêcheurs Quay Harbour	111·400	...	...	...	4·50	Gravel	
Quai sur Meuse, left bank	111·420	...	...	120·00	...	...	
La Goffe Quay, left bank	111·575	...	...	109·00	...	...	
Tanneurs Quay, right bank	111·575	...	...	82·50	...	...	
La Goffe Harbour	111·740	0·70	Wall	285·00	10·00	Paving	
Tanneurs Harbour	111·767	...	Do.	50·00	13·00	Do.	
Between Tanneurs Harbour and St. Barbe Landing, right bank	111·795	...	...	60·00	...	...	
La Batte Quay, left bank	111·820	...	...	310·00	...	...	
Ste. Barbe Landing	111·864	...	Wall	...	4·00	...	
" Maastricht " Harbour	111·907	0·70	Do.	50·00	17·00	Paving	
" Maastricht " Quay, left bank	112·110	...	...	220·00	...	...	
St. Barbe Wharf Quay, right bank	112·110	...	...	176·00	...	...	
Dos Fanchon Harbour	112·350	0·70	Rubble wall	60·00	6·00	Gravel	
Dos Fanchon Quay, right bank	112·442	...	...	445·00	...	...	
St. Léonard Quay, left bank	112·567	...	...	695·00	...	...	

St. Léonard Quay Harbour	112·684	0·45	Wall	80·00	8·70	Paving
Abattoir Quay, right bank	112·930	...	...	170·00	...	...
Harbour opposite Cannon Foundry	113·300	0·10	Wall	35·00	10·50	Paving
Jupille Harbour...	115·955	0·75 above low water	Rubble wall	65·00	4·30 to 8·50	Macadam
Wandre Quay Harbour	119·323	1·00	Do.	61·70	13·00	Gravel
Esperance Colliery	119·413	2·30	Timber	...	...	...
Abhooz Colliery	120·990	3·00	Wall	12·00	15·00	Gravel
Chératte Colliery	122·238	1·50	Timber	...	...	...
Dejardin Landing Slope, Chertal	122·668	Do.	Rubble wall	23·00	3·00	Paving
Jonlet Do.	123·764	Do.	Do.	30·00	Do.	Do.
Morette Do.	124·00	Do.	Do.	29·00	3·50	Do.
Bastin Do.	124·140	Do.	Do.	28·00	3·00	Do.
Christophe Do.	124·270	Do.	Do.	24·00	4·00	Do.
Harbour opposite Church, Hermalle-sous-Argenteau	124·450	...	Do.	50·00	Do.	Do.
Argenteau Harbour	124·775	...	Do.	Do.	9·00	Do.
Beautemps Lane Landing, Hermalle-sous-Argenteau	125·260	1·50	Rubble wall	15·00	4·00	Do.
Dossin & Co.'s Lime Kilns	125·467	0·40	Do.	50·00	5·00	Gravel
Andrieu's Lime Kilns	125·767	0·90	Wall	50·00	5·00	Do.
Visé Harbour	127·275	0·10	Rubble wall	60·00	6·00	Do.
Lixhe Harbour	129·175	0·20	Do.	9·00	4·25	Macadam
Smeermaes, Lanaken	145·080	1·50	Timber	30·00	20·00	Gravel
Cothem, Boorsheim	156·075	2·50	Rubble wall	70·00	15·00	Rough rubble paving
Keeskamer, Stockheim...	167·558	2·50	Embankment with rubble walls	50·00	10·00	Gravel
Vieille Meuse, Dilsen	170·834	2·50	...	125·00	15·00	Natural ground
Elen	173·588	3·00	Rubble wall	50·00	10·00	Gravel
Sloot, Maesyck	179·260	1·50 to 3·00	Brick quay wall	102·00	10·00	Do.
Maesyck Wharf	179·900	3·00	Rubble wall	150·00	12·00	Do.
Cheval Blanc, Ophoven	186·873	1·50	Do.	50·00	10·00	Rough rubble paving
Ophoven Brickworks Wharf	187·730	2·50	Do.	100·00	15·00	Turf

Meuse—Scheldt Junction Canal. [*See Plate* 24.]

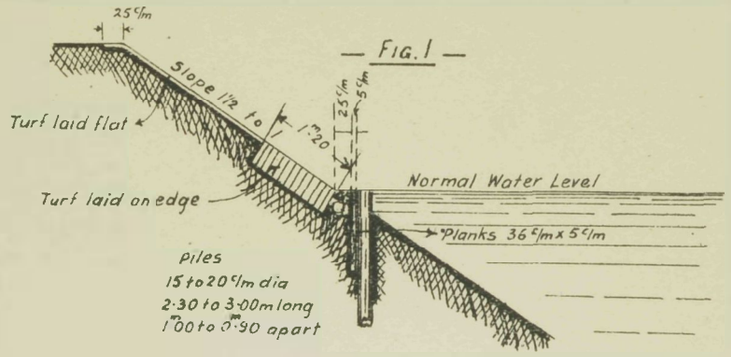
REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
1st. From Bocholt to Lock No. 1 at Pierre Bleue, below Lommel	0·000	26·856	26·856	25·185	1·671	16·30	10·00 In sidings 20·0	2·10	42·06	The water supply for the first section is from the Maastricht-Bois le Duc Canal. At Grobbendonck the water is taken from the Nèthe for the best part of the year.
Lock No. 1 to the boundary of the Province of Antwerp	26·856	27·283	0·427	0·086	0·341	Do.	10·00	Do.	37·68	
2nd. Between Locks Nos. 1 and 2 (partly comprised above)	27·283	27·705	0·422	0·357	0·065	Do.	Do.	Do.	Do.	
3rd. Between Locks Nos. 2 and 3	27·705	29·145	1·440	0·920	0·520	Do.	Do.	Do.	33·35	
4th. Do. 3 and 4	29·145	31·050	1·905	1·905	...	Do.	Do.	Do.	29·02	
5th. Do. 4 and 5	31·050	32·692	1·642	1·642	...	Do.	Do.	Do.	26·45	
6th. Do. 5 and 6	32·692	37·287	4·595	4·155	0·440	Do.	Do.	Do.	21·34	
7th. Do. 6 and 7	37·287	39·987	2·700	2·645	0·055	26·30	Do.	Do.	22·42	
8th. Do. 7 and 8	39·987	43·819	3·832	3·832	...	Do.	Do.	Do.	19·92	
9th. Do. 8 and 9	43·819	46·460	2·641	2·276	0·365	26·30 and 16·30	Do.	Do.	17·93	
10th. Do. 9 and 10	46·460	54·086	7·626	6·386	1·240	16·30	Do.	Do.	15·97	
11th. Do. 10 and 11	54·086	56·257	2·171	1·415	0·756	Do.	Do.	Do.	13·36	
12th. Do. 11 and 12	56·257	57·540	1·283	0·493	0·790	Do.	Do.	Do.	11·37	
13th. Do. 12 and 13	57·540	59·384	1·844	1·239	0·605	Do.	Do.	Do.	10·17	
14th. Do. 13 and 14	59·384	74·892	15·508	14·269	1·239	Do.	Do.	Do.	8·97	
15th. Do. 14 and 15	74·892	79·583	4·691	4·691	...	Do.	Do.	Do.	7·57	* The level of this reach is usually the same as that of the "Bassin Asia" in Antwerp, which is in direct communication with the Kattendyck Basin.
16th. Do. 15 and 16	79·583	83·231	3·648	3·181	0·467	Do.	Do.	Do.	4·97	
17th. Do. 16 and 17	83·231	86·353	3·122	2·090	1·032	Do.	Do.	Do.	4·5 *	

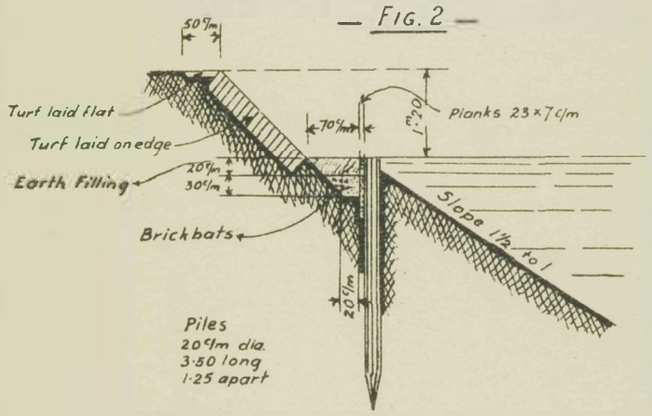
TYPE OF BANK PROTECTION

JUNCTION CANAL FROM THE MEUSE TO THE SCHELDT

— FIG. 1 —

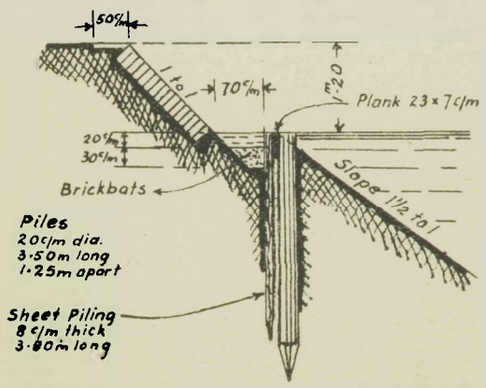


— FIG. 2 —



Soil
Sandy

— FIG. 3 —



These Types of Protection are also used from 18·5 Kilos. to the end of THE TURNHOUT TO ANTWERP CANAL

Meuse-Scheldt Junction Canal—continued.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
Lock No. 1 at Pierre - Bleue below Lommel. Double lock	26·856	2·53	2·10	4·28 minimum	7·00	50·00 (each)	Min. Sec. 6 0 for each chamber	Min. Sec. 33 0	Brick copings, sills, quoins and recesses of wrought stone	6 sluices, 6 penstocks	...	...	
Lock No. 2. Double lock at Moll	27·705	2·10	Do.	4·33	Do.	Do.	7 0 for each	30 0 minimum	Vertical, brick	2 penstocks upstream and down stream 1 sluice to each gate	5·22 m. brick	5·60 m. brick 20 m. bottom in fascine work	
Lock No. 3. Double lock at Moll	29·145	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	
Lock No. 4 at Desschel	31·050	2·17	2·10	2·57	7·00	50·00	10 0	22 0	Vertical brick	2 pentstocks up stream, and down stream. One sluice to each gate.	5·22 m. brick.	5·60 m. brick. 20 m. bottom in fascine work.	
Lock No. 5 do.	32·692	2·11	2·50	2·11	Do.	Do.	8 0	25 0	Do.	...	Do.	Do.	
Lock No. 6 at Moll	37·287	2·10	2·18	1·92	Do.	Do.	6 0	20 0	Do.	...	Do.	Do.	
Lock No. 7 at Gheel	39·987	Do.	2·10	2·50	Do.	Do.	9 0	30 0	Do.	...	Do.	Do.	
Lock No. 8 do.	43·819	Do.	2·11	1·99	Do.	Do.	7 0	30 0	Do.	...	Do.	Do.	

Meuse—Scheldt Junction Canal—continued.

LOCKS—continued.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
Lock No. 9 at Gheel	46·460	2·10	2·10	1·96	7·00	50·00	Mins. Secs. 7 0	Mins. Secs. 20 0	Vertical brick.	...	5·22 m. brick.	20 m. bottom in fascine work.	
Lock No. 10 at Herenthals	54·086	2·22	2·11	2·61	Do.	Do.	11 0	30 0	Do.	...	Do.	Do.	
Lock No. 11 Do.	56·257	2·10	2·39	1·90	Do.	Do.	7 0	20 0	Do.	...	Do.	Do.	
Lock No. 12 Do.	57·532	2·13	2·10	1·20	Do.	Do.	6 0	13 0	Do. *	...	...	20 m. pitching	*The upstream gates have no sluices, but the down stream gates have sluices. The chamber is filled by means of penstocks.
Lock No. 13 at Vorselaere	59·376	Do.	Do.	Do.	Do	Do.	6 0	13 0	Do. *	...	...	Do.	
Lock No. 14 at Oeleghem	74·884	2·41	Do.	1·40	Do.	Do.	7 0	14 0	Do. *	...	...	Do.	
Lock No. 15 at Wyneghem	79·575	2·19	Do.	2·60	Do.	Do.	13 0	20 0	Do. *	...	...	Do.	
Lock No. 16 ...	83·223	2·17	3·06	0·47	Do	Do.	12 0	19 0	Do. *	...	...	Do.	
Lock No. 17 at Antwerp	86·295	3·25	2·19	...	Do.	Do.	5 0	12 0	Do.	Sluices in leafs and penstocks	Vertical in wrought stone	...	This lock is now generally open.
Kattendyck Maritime Lock	87·436	3·40 below Datum, 3·38 below low water, 6·38 below Antwerp Basin, 7·43 below high water at Antwerp		...	24·80	66·60	20 to 25 m. to open each pair of gates	...	Walls battered, 1 in 20, wrought stone	2 sluices to each leaf and penstocks	7·0 m. pitching	5·0 m. pitching	This lock has 3 pairs of gates, of which 2 pairs are ebb mitred towards the Basin, and 1 pair flood mitred towards the Scheldt.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Water supply sluice at Bocholt	0·00	1 of 7·50	Baulks can be inserted in the bridge pier grooves to isolate the canal from the Maastricht–Bois-le-Duc Canal.	...	5·50 of baulk sluice.	...	Baulks.	...	These sluices are only used to separate this canal from the Maastricht–Bois-le-Duc Canal.
Spillway on right bank corresponding to Hamonterbeek Siphon	2·140	...	...	...	1·70	...	Baulks in grooves	2·39	These weirs are usually closed, and only opened when it is necessary to drain a reach. The towpaths are above the spillways.
Spillway on right bank corresponding to the Warmbeek siphon	7·251	...	...	...	3·00	...	Do.	2·51	
Spillway on right bank corresponding to the Dommel Siphon	12·267	...	...	...	2 openings of 1·75	...	Do.	2·83	
Springput Spillway	26·742	...	...	...	2·00	...	Do.	2·63	
Spillway on the Blanche-Nèthe	34·238	...	...	...	3·00	...	Do.	0·30 below water level	The spillways are built above the siphons, and are covered by arch spans for the whole width of the towpath.
Daelmansloop Spillway ...	43·343	...	...	...	2·00	...	Do.	Do.	
Elsenloop Spillway	46·032	...	...	...	2·00	...	Do.	Do.	
Moesloop Spillway	55·207	...	...	..	1·25	...	Baulks in in grooves	...	
Vuylvoortbeek Spillway ...	58·021	...	...	...	2·00	...	Do	Level of canal	

Meuse—Scheldt Junction Canal—continued.

WEIRS—continued.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Length in metres.	Spillway.			Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.		System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Spillway over the Nèthe ...	62·685	...	...	...	2 openings 3·98	...	Baulk	Level of non-canalised Nèthe	
					1 of 1·50	...	Sluices		
Water supply from the Nèthe near Lock 13	62·685	...	...	...	3 of 1·25	...	Do.	Do.	*Water supply inlet from Petite Nèthe.*
Toppelbeek Spillway ...	71·073	...	...	...	3·50	...	Baulk	Level of Canal	
Wezelschebeek	78·337	...	...	...	4·00	...	Do.	Do.	
Spillway over the Petit Schyn	79·973	...	...	...	4·50	...	Do.	Do.	
Spillway over the fortification moat	85·488	...	...	...	3 openings of 4·00	...	Do.	Do.	
Spillway over the Schyn in the backwall of Lock 17	86·296	...	...	...	3·00	...	Do.	Do.	

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Caulille Wharf, above Bridge No. 2	2·564	0·90	Earth embankment	180·00	17·00	Earth, gravel road	On this canal there are numerous refuge sidings not enumerated below.
Lille St. Hubert Harbour above Bridge No. 3	3·949	0·80	Do.	168·00	29·00	Do.	Area of 2,080 sq. m.
Do. do. do. No. 5	7·595	0·70	Do.	323·00	19·00	Earth, paved road	Do. 4,040 do.
Neerpelt Harbour, above Bridge No. 7 ...	11·375	0·90	Do.	172·00	13·00	Earth, gravel road	Do. 2,050 do.
Lommel Harbour, below Bridge No. 9 ...	15·440	1·50	Do.	230·00	15·00	Earth, paved road	Do. 6,815 do.
Do. do. No. 12 ...	20·407	2·90	Do.	190·00	35·00	Earth, gravel road	Do. 2,940 do.
Pierre-Bleue Basin	26·624	...	...	434·00	...	...	Do. 9,070 do.
Desschel Dock	30·920	1·00	Do.	50·00	4·00	Natural ground	Do. 2,975 do.

Moll Dock	34·613	Do.	Do.	150·00	Triangular, height of triangle 60.00	Natural ground, paved approach 130·00 × 3·00	Do.	2,835	do.
Gheel Dock No. 1	39·957	Do.	Do.	100·00	20·00	Natural ground	Do.	2,400	do.
Do. No. 2	44·285	1·50	Do.	200·00	10.00 to 25.00	Natural ground, paved approach, 127·00 × 3·00	Do.	7,600	do.
Herenthals Small Dock	54·759	1·20	Do.	150·00	13·00	Do. 130·00 × 3·00	Do.	3,675	do.
Do. Quay	55·307	1·50	Brick walls	130·00	9·70 (average)	Paving 4·00 wide, rest natural ground			
Do. Large Dock	55·615	1·00	Earth embankment	200·00	20·00	Natural ground, paved approach, 178·00 × 3·00	Do.	4,520	do.
Do. 3rd Dock	55·743	Do.	Do.	55·00	7·00	Natural ground	Do.	385	do.
Do. Basin	57·430	...	...	155·00	...	...	Do.	3,825	do.
Grobbendonck Basin	62·824	...	...	215·00	...	...	Do.	5,800	do.
Viersel Basin	68·333	...	...	155·00	...	...	Do.	3,825	do.
Massenhoven Basin	69·946	...	...	Do.	...	...		Do.	
Oeleghem Dock	72·959	...	...	110·00	...	...	Do.	427	do.
Wyneghem Basin	78·243	...	...	165·00	...	...	Do.	3,850	do.
Schooten Dock	81·321	...	...	128·00	...	...	Do.	575	do.
Merxem Dock	84·006	...	...	110·00	...	...		Do.	
Looibroeck Basin at Antwerp	85·725	...	...	930·00	...	...	Do.	34,400	do.

Moervaert Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Moervaert: Roodenhuyze Lock near the Ghent–Terneuzen Canal to Spletterspit on the Durme	0·000	21·038	21·038	13·238	7·800	11·00	6·00	1·65 Summer 2·05 Winter	3·45 Summer 3·85 Winter	This canal is in communication with the Ghent–Terneuzen at Roodenhuyzen by means of a lock and is in free communication with the Durme. The Zuidleede River, Langleede Canal and the Stekene Canal spring from the Moervaert and are in free communication with it. The Moervaert and these canals are subject to tide fluctuations over their whole length.

Moervaert Canal—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Spanjaerdsveer Ferry, Wynckel, left bank ...	1·700	1·80 summer 1·45 winter	Earth slope	49 00	12·00	Earth	Along this canal at the kilometric distances of 8·940, 10·900, 12·300, 14·980 there are four sidings, permitting boats to pass each other.
Wachtebeke Wharf, left bank...	5 805	1·86 summer 1·51 winter	Do.	50·00	7·40	Do	
Do. right bank	5·920	Do.	Do.	75·00	9·00	Paving 3·00 m. wide	
Calvebrug Wharf, right bank	7·600	1·85 summer 1·50 winter	Do.	60·00	6·00	Earth	
Terwest Bridge Wharf, Moerbeke, right bank	9·936	2·00 summer 1·65 winter	Do.	50·00	10·00	Do.	
Dambrug Bridge Wharf, Moerbeke, right bank	12·086	2·25 summer 1·90 winter	Do.	40·00	Do.	Do.	
Caudenborn Bridge Wharf, right bank ...	14·120	2·05 summer 1·70 winter	Do.	70·00	Do.	Do.	
Sinay Bridge Wharf, left bank	17·510	2·00 summer 1·65 winter	Do.	90·00	16·00	Earth paving, 26·00 × 3 00	

Moerdyck Canal and Branches.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Moerdyck Canal...	0·000	8·368	8·368	...	...	10·00	4·00	1·48 to 1·75	3·88 Summer 3·62 Winter	Generally these canals are in free communication with the Plasschendaele–Nieuport Canal. Boats plying upon the Moerdyck Canal have a maximum beam of 4 m. and a maximum draught of 1·60 m.
Bourgogne Canal	0 000	1·620	1·620	...	...	8·00	4·00	1·40 to 1·75	Do.	
Ghistelles Branch	0·000	1·400	1 400	...	...	8·00	4·00	1·75	Do.	

Mons—Condé Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
No. 1. From faubourg du Parc at Mons to Pont-Canal Lock	0·000	1·324	1·324	1·192	0·132	29·20	20·00	2·30	31·55	This reach comprises: (1) the basin adjacent to the Mons-Manage Railway, which is 559 m. long, 24·90 m. wide at water level and 24 m. wide at bed level, and 2·30 m. deep, provided over its whole length with quay walls; (2) the Mons basin, 120 m. long, 109 m. wide and 2·3 m. deep.
No. 2. Pont-Canal Lock to Jemappes Lock	1·374	4·782	3·408	3·408	...	19·60	10·00	2·40	29·57	This reach comprises: (1) the Cuesmes Basin 710 m. long, 29·60 m. wide and 2·40 m. deep; (2) the Jemappes Basin, 776 m. long 53·6 m. wide at water level, 24 m. at bed level, and 2·40 m. deep.
No. 3. Jemappes Lock to St. Ghislain Lock	4·840	8·473	3·633	3·633	...	Do.	Do.	Do.	27·392	On this reach, over a length of 592 m., there is a quay wall and the width at water level here is 21·16 m. There is also a quay wall on the right bank, 2 km. long, where the width at water level is 20·48 m. Alongside the Quaregnon Station, for a length of 216 m., the width at water level is 41·97 m., at bed level 32·37 m., and the depth 2·40 m.
No. 4. St. Ghislain Lock to Herbières Lock	8·531	11·392	2·861	2·861	...	Do.	Do.	Do.	25·372	The St. Ghislain basin is 785 m. long, 29·60 m. wide at water level and 20·0 m. at bed level. The Herbières Basin is 690 m. long, 53·6 m. wide at water level, and 44 m. at bed level. Further over a length of 670 m. both banks have quay walls, the width at water level here being 21·16 m. Over a length of 160 m. the left bank is provided with a quay wall where the width at water level is 21·16 m.

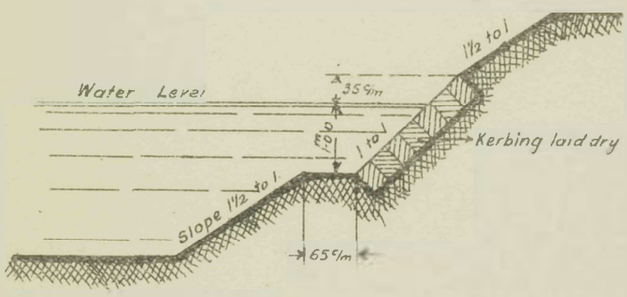
Mons—Condé Canal—continued. [*See Plates 5 and 25.*]

REACHES—continued.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
No. 5. Herbières Lock to Malmaison Lock	11·450	17·525	6·075	6·075	...	19·60	10·00	2·50	23·422	Near Thulin Bridge there is a quay wall 25 m. long and the width at water level 21·16 m. The Thulin basin is 670 m. long, 53·6 m. wide at water level and 44 m. at bed level, and the depth is 2·40 m.
No. 6. Malmaison Lock to Thivencelles Lock in France	17·583	22·185	4·602	4·602	...	18·80	Do.	2·20	21·162	*Water supply.*—The water supply is taken from four sources:—The first at Hyon, below the Moulin-au-Bois from the Trouillon channel, which after a course of 4·7 km. flows into Bassin des Anglais at Mons and supplies the first reach. The second from the Haine, which feeds into the second reach below the first lock called "Pont Canal." The third is the Jemappes feeder taken from the Haine and delivers below the Jemappes Locks and supplies the third and fourth reaches. The fourth feeder is the "Caraman Canal," taking water from the Haine into the fifth reach and supplying both the fifth and sixth reaches.
No. 7. Thivencelles Lock to Goeulzin Lock	22·185	25·185	3·000	3·000	...	Do.	Do.	2·10		

TYPE OF BANK PROTECTION

CANALS FROM MONS TO CONDÉ AND POMMEREUL TO ANTOING



SOIL

Sand, Clay & Marl.

Mons—Condé Canal—continued.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
Pont-Canal (Mons)	1·324	2·40	2·40	1·98	5·20	41·06	Min. Sec. 3 0	12 m. up or down empty. 15 m. 30 s. down when loaded. 22 m. up when loaded.	Brick and wrought stone	Sluices	...	12 m. masonry	Each leaf has 3 sluices, 1·465 m. × 0·14 m. Immediately above the up-stream sill there is an aqueduct.
Jemappes ...	4·740	2·46	2·44	2·18	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	A water supply aqueduct from the Haine is situated near the left down stream lock-wall.
St. Ghislain ...	8·480	2·40	2·44	2·02	Do.	Do	Do.	Do.	Do.	Do.	...	Do.	
Herbières ...	11·400	2·40	2·55	1·90	...	...	...	*Up :* 9 m. empty, 16 m. loaded. *Down :* 12 m. empty, 15 m. 13 s. loaded.	Do.	Sluices and penstocks	...	Do.	The area of the penstock is 4 sq. m.
Malmaison ...	17·553	2·40	2·20	2·27	Do.	Do.	3 0	*Up :* 12 m. empty, 22 m. loaded. *Down :* 12 m. empty, 15 m. 30 s. loaded.	Do.	Sluices	...	Do.	
Thivencelles (France)	19·5	...	...	...	Do.	38·50	...	...	Do.	Do.	...	Do.	
Goeulzin (France)	22·0	...	...	...	Do.	Do.	...	...	Do.	Do.	...	Do	

Mons—Condé Canal—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf. or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
First Section :—		Metres.		Metres.	Metres.		
Railway Dock, both banks	At origin	0·36	Wall	559·00	30·00	Sanded	Area of 13,920 sq. m.
Public Quay, right bank	0·566	0·94 (average)	Do.	91·00	Do.	Paved	Mons Basin, 13,000 sq. m.
Do. left bank	1·152	0·54	Earth slope	40·00	27·00	Paved for 20·00 m.	
Second Section :—							
Cuesmes Harbour, both banks	1·374	0·44	Do.	710·00	12·00 average without towpath	Earth	Area of 20,600 sq. m.
Wharf above Postes Bridge, right bank ...	3·539	Do.	Do.	156·00	40·00	Sanded	
Wharves between Postes Bridge and Jemappes Harbour, both banks	3·701	Do.	Do.	22·00	5·00 left 40·00 right	...	
Jemappes Harbour, both banks	3·723	Do.	Do.	776·00	40·00	...	Area of 36,560 sq. m
Do. to Lock, both banks	4·499	Do.	Do.	233·00	7·00 left 40·00 right	...	
Third Section :—							
Wharves between Jemappes Lock and Chaussée Richebé Bridge, both banks	4·790	0·60 right 0·70 left	Wall and earth	598·40	Do.	...	
Quay wall above Chaussée Richebé Bridge, left bank	5·207	...	...	182·00	...	...	
Wharves between Chaussée Richebé Bridge and that of Bas-Flénu Railway, both banks	5·395	0·60 right 0·70 left	Wall and earth	87·50	7·00 left 40·00 right	Sanded	
Wharves between Bas-Flénu Railway Bridge and Quaregnon Bridge, both banks	5·491	0·60 right 0·70 left	Do.	990·45	Do.	Do.	
Quaregnon Coal Basin	5·686	...	...	450·00	...	...	Consists of a canal enlargement and has an area of 4,100 sq. m.
Quay wall above Quaregnon Bridge ...	6·458	...	...	24·00	...	...	
Quay wall below Do. ...	6·488	...	...	Do.	...	...	
Wharves above St. Ghislain Lock, left bank	8·337	0·44	Wall 88·50	136·00	30·00	Sanded	
Quay walls Do. do.	8·384	...	...	88·50	...	...	

Fourth Section :—							
St Ghislain Harbour, both banks	8·539	0·44	Earth slope	797·00	28·00 left 40·00 right	Sanded	Area of 22,900 sq. m., occupying 785 m. of canal length.
Wharves between St. Ghislain Bridge and Railway Bridge, both banks	9·334	0·57	Walls	317·20	28·00 left 18·00 right	Do.	
Wharves below St. Ghislain Railway Bridge	9·661	Do.	Do.	429·50 left 316·50 right	40·00 left 18·00 right	Do.	
Quay wall following entrance to loading quay of Belgian Coal Company	9·984	...	...	160·00	...	...	
Herbières Harbour	10·702	0·44	Earth embankment	690·00	10·00 including tow paths	...	Area of 34,520 sq. m., occupying 690 m. of canal length.
Quay walls above Herbières Lock, right and left banks	11·375	...	...	74·00 together	...	...	
Quay wall below Herbières Lock, right and left banks	11·450	...	...	55·00	...	...	
Quay wall above Thulin Bridge, right and left banks	15·346	...	...	50·00	...	...	
Thulin Harbour	15·377	0·44	Earth embankment	600·00	12·00	Earth	Area of 29,980 sq. m., occupying 600 m. of canal length.

Nèthe, Grande, River—(Canalised Section).

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Grande Nèthe canalised from the Moulin d'Oosterloo Weir below Gheel to the junction with the Petite-Nèthe at Lierre.	0·000	44·090	44·090	...	44·090	Variable	3·00 to 8·00	0·40 to 2·80	...	The tide travels as far as de Boeckt below Gestel, a distance of 7 kms. from the mouth of the river. The maximum tonnage of the boats is 20 tons ; they are usually 12 m. long and 4·5 m. beam.

Nêthe, Petite, River—continued.

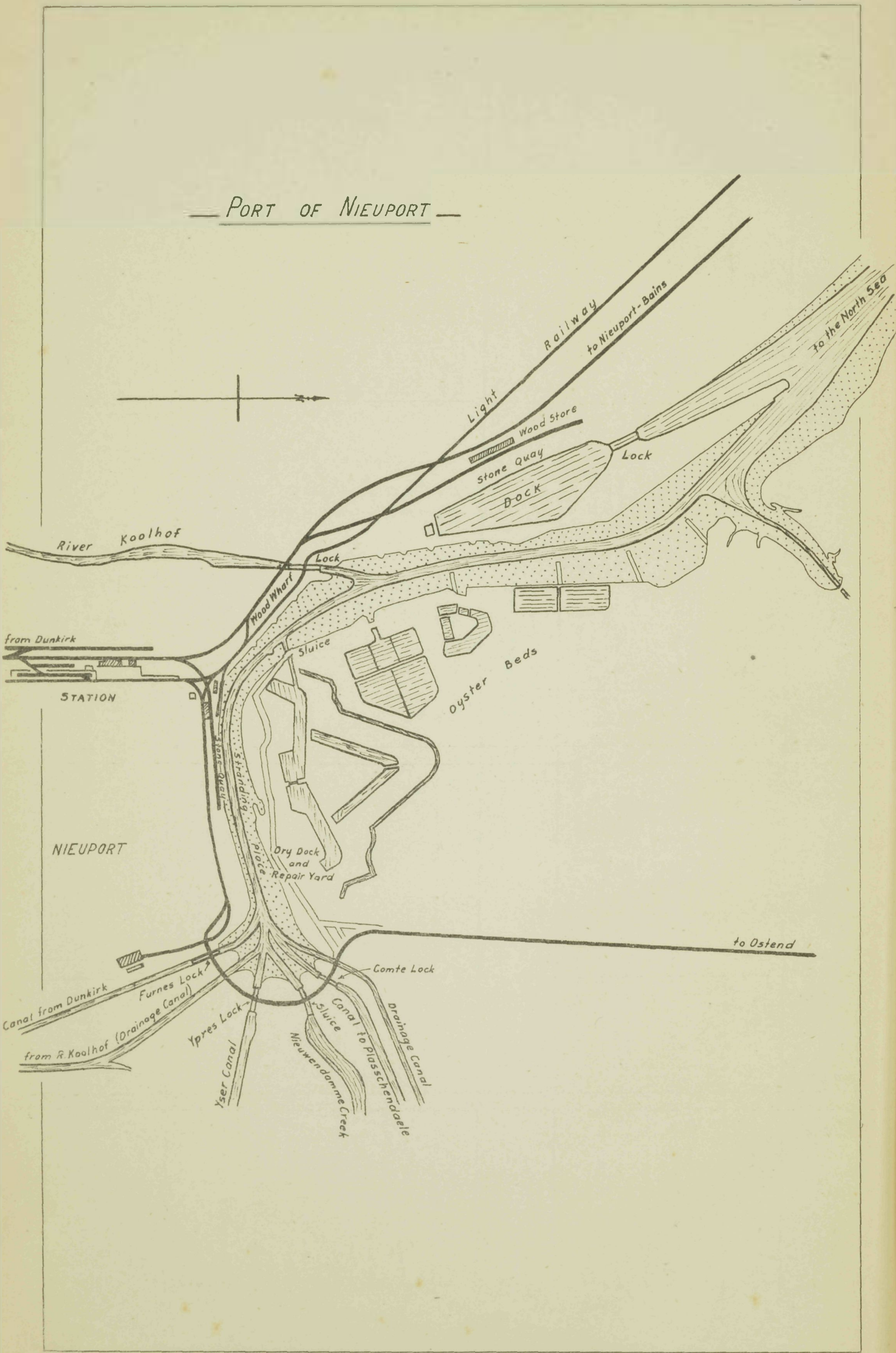
WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Grobbendonck Bridge, right bank	0·300	1·35	Earth embankment	80·00	25·00	Earth	
Do. left bank	Do.	1·61	Do.	50·00	20·00	Do.	
D'Ursel Landing Stage, No. 1, Grobbendonck	2·00	1·04	Do.	40·00	15·00	Do.	
Do. No. 2, Do.	2·500	0·76	Do.	Do.	Do.	Do.	
Grand Elsendonck, near Nylen	4·200	1·05	Do.	50·00	12·00	Do.	
At place called " Gewat "	5·200	0·82	Do.	20·00	8·00	Do.	
Molter–Nêthe Bridge	8·900	1·50	Do.	25·00	5·00	Do.	
Seppekens, near Emblehem	11·200	0·46	Do.	20·00	8·00	Do.	
De Groof Creek, Lisp	14·500	Tidal	Do.	40·00	10·00	Do.	
Moll's Landing, Lisp	17·00	Do.	Do.	20·00	15·00	Do.	
Above Louvain Gate, Lierre	17·10	Do.	Do.	80·00	30·00	Do.	
Below Do. do.	17·100	Do.	Earth embankment	20·00	40·00	Do.	
			Quay wall	80·00			
Fishmarket Wharf in Lierre	...	Do.	Do.	300·00	6·00	Paving	
" Le Quai," in Lierre	...	Do.	Earth embankment	140·00	12·00	Earth	

Nêthe Inférieure, River.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Nêthe Inférieure (from Moll Weir at Lierre to junction with the Dyle)	0·000	15·000	15·000	...	15·000	Varies according to tide 30 m. to 50 m.	10·0 m. minimum	0·40 low water 2·80 high water	4·50 at high water	The Nêthe Inférieure is formed by the Grande-Nêthe and by the Petite-Nêthe at Lierre. At Lierre it receives the Itterbeek and further down the Lachenenbeek. It is tidal over its whole length. Boats are generally 46 m. long, 5 m. beam, and 2 m. draught.



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Nieuport—Dunkirk Canal, via Furnes. [*See Plate* 26.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Dunkirk to Furnes	Lock at Dunkirk	Nieuport Lock at Furnes	In Belgium 9·802	15·315	3·487	15·00	9·00	2·20	2·378	
Furnes to Nieuport	Nieuport Lock at Furnes	Furnes Lock at Nieuport	9·719	...	...	Do.	Do.	Do.	Do.	

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
"Nieuport" Lock at Furnes	9·082 from French Frontier	2·35 m. belo	w low water	Varies	5·40	43·00	Min. Sec. ...	Min. Sec. ...	Vertical	1 sluice to each leaf	Fascines and pitching	Fascines and pitching	Serves to separate the waters of the Yser and Loo Canal from that part of the Canal which extends from Furnes to the French Frontier.

Nieuport—Dunkirk Canal—continued

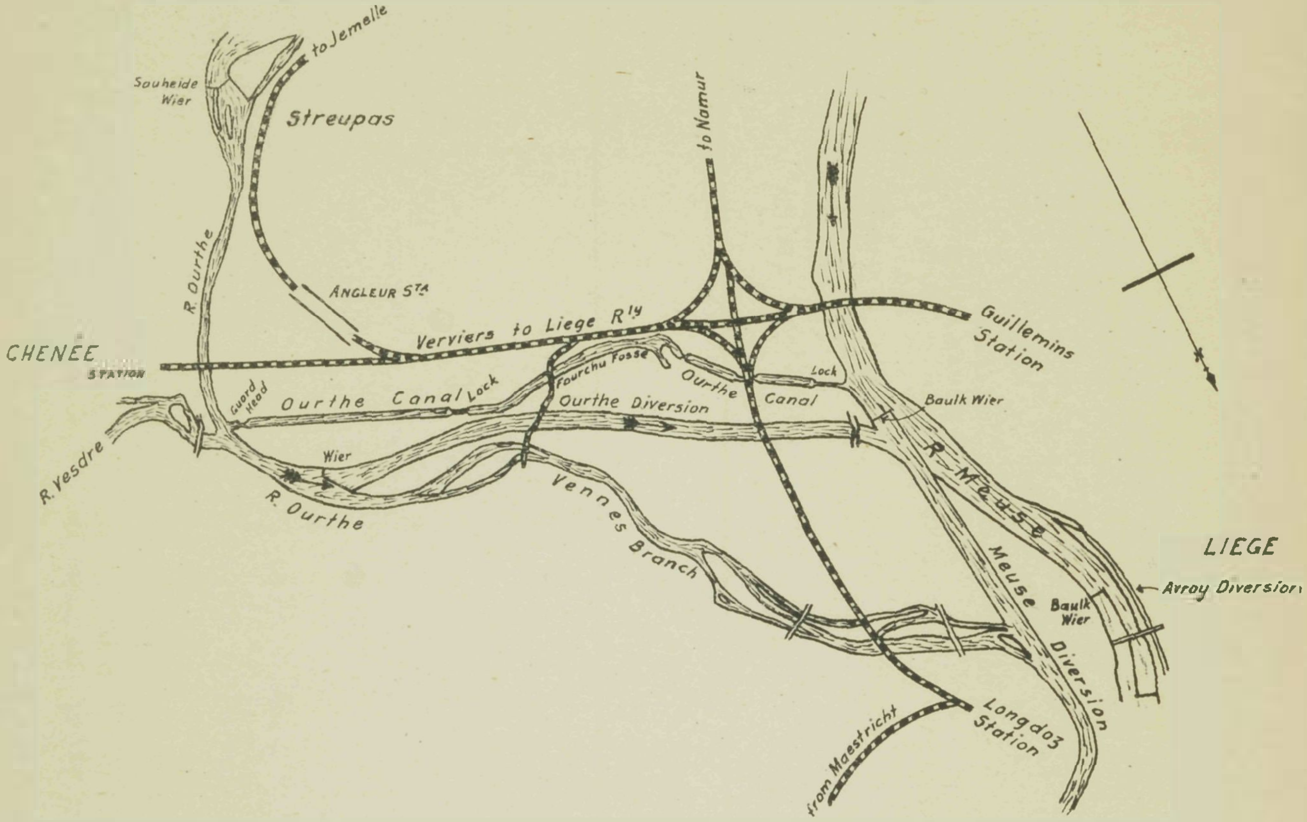
LOCKS—continued.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
"Furnes" Lock at Nieuport	18·801	2·37 below low water	4·75 below l.w.s.t.	Varies	8·50	45·10	10 min.	20 min.	Copings of brick and sills of wrought stone	4 penstocks, 8 sluices	8·75 m. fascine with pitching	7·85 m. concrete covered with pitching	2 pairs of flood and 2 pairs of ebb gates. There is a drainage lock adjacent to this.

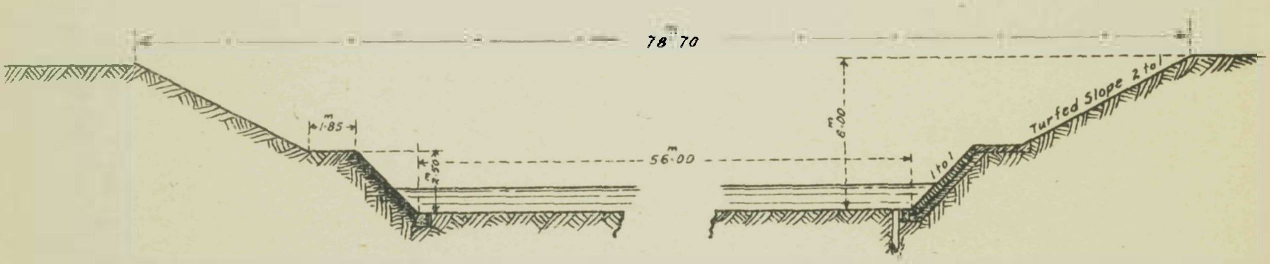
WEIRS.

Name of Weir.	Distance in kiloms.	Navigable Passage. Number and width of openings in metres.	Navigable Passage. Type of Weir.	Navigable Passage. Difference between head and tail race in metres.	Number and width of openings in metres.	Spillway. System of closing. Fixed.	Spillway. System of closing. Adjustable.	Spillway. Difference between head and tail race in metres.	Remarks.
Drainage lock adjacent to the "Furnes" Lock at Nieuport	18·801 from Frontier	...	...	...	4 of 2·00	...	Sluices worked by racks	Varies	This lock drains the surplus water of the Canal into the outer port. There are 8 sluices, 4 up and 4 down stream. The upstream head is provided with grooves for beams.

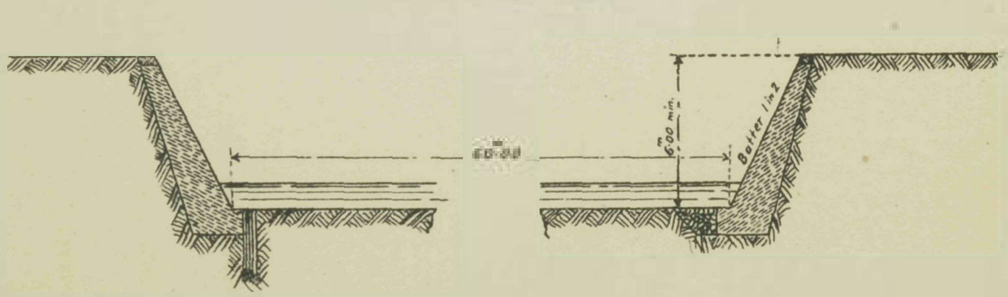
THE OURTHE BETWEEN CHENÉE AND LIÉGE



TYPICAL SECTION OF THE OURTHE DIVERSION



BRIDGE APPPOACHES



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WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
	From French Frontier	Metres.		Metres.	Metres.		
Adinkerke	3·585	1·50	Timber quay	35·00	6·00	Earth	
Furnes	9·007	1·50	Quay wall	28·00	23·00	Paving, 6·00 m.	
Do.	9·007	1·50	Earth embankment	125·00	19·00	Do. 3·00 m.	Furnes Basin, 1,400 sq. m. area with 135 m. perimeter.
Do.	9·544	2·25	Timber quay	50·00	20·00	Do. 3·50 m.	
Wulpen	13·838	2·00	Brick revetments and stairs	...	6·00	Earth	
Pelican Bridge	16·925	2·00	Do.	...	9·00	Do.	
Nieuport	18·801	3·50	Do.	...	9·00	Do.	

Ourthe River. [*See Plate 27.*]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Non-Canalised Portion :										
Laroche to Comblain-la-Tour ...	0·000	95·800	95·800	...	...	...	...	0·15 to 0·30	274·0 to 104·52	
Comblain-la-Tour to Lock No. 17	95·800	101·200	5·400	...	...	...	...	0·40 to 1·20	104·52 to 97·18	
Canalised Portion :										
Reach No. 17	100·600	101·200	0·600	0·455	0·145	7·40	5·00	1·20	97·18	
Reach No. 16	101·200	103·190	1·990	1·697	0·293	7·90	5·50	Do.	94·98	
Chanxhe Branch Canal... ...	103·020	...	...	...	...	...	...	...	...	
Reach No. 15	103·190	104·670	1·480	0·843	0·637	9·10	5·50	Do.	Do.	
Reach No. 14	104·670	108·330	3·660	2·244	1·416	8·40	Do.	Do.	90·04	

Ourthe River—continued.

REACHES—continued.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Reach No. 13	108·330	109·190	0·860	0·660	0·200	9·10	5·50	1 20	87·04	
Reach No. 12	109·190	111·340	2·150	1·652	0·498	8·40	Do.	Do.	84·04	
Reach No. 11	111·340	112·525	1·185	0·544	0·614	9·10	Do.	Do.	82·58	
Reach No. 10	112·525	115·300	2·775	1·808	0·967	Do.	Do.	Do.	79·58	
Reach No. 9	115·300	116·380	1·050	0·306	0·744	Do.	Do.	Do.	78·08	
Reach No. 8	116·380	117·705	1·325	0·832	0·493	7·90	Do.	Do.	75·78	
Reach No. 7.	117·705	120·265	2·560	2·060	0·500	9·10	Do.	Do.	72·50	
Reach No. 6	120·265	121·145	0·880	0·080	0·800	Do.	Do.	Do.	71·22	
Reach No. 5	121·145	123·130	1·985	1·631	0·354	7·90	Do.	Do.	69·22	
Reach No. 4	123·130	124·850	1·720	1·320	0·400	9·10	Do.	Do.	67·02	
Reach No. 3	124·850	125·605	0·755	0·645	0·110	7·60	Do.	Do.	65·56	
Reach No. 2	125·605	127·745	2·140	2·080	0·060	16·30	10·00	Do.	63·94	
Reach No. 1	127·745	129·320	1·575	1·253	0·322	13·60	Do.	Do.	61·99	

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
							Min. Sec.	Min. Sec.					
Lock No. 17 ...	101·200	1·20	1·20	2·20	3·00	20·47	3 0	8 0	Brick	4 sluices	...	7·50 m. rough ashlar	
Lock No. 16 ...	103·190	1·70	3·00	2·60	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
Lock No. 15 ...	104·670	3·34	1·20	2·34	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
Lock No. 14 ...	108·330	2·45	1·30	3·00	Do.	Do.	Do.	Do.	Rubble	Do.	...	Do.	
Lock No. 13 ...	109·190	2·20	1·20	Do.	Do.	Do.	Do.	Do.	Brick	Do.	...	Do.	
Lock No. 12 ...	111·340	1·44	Do.	1·46	Do.	Do.	Do.	Do.	Brick and rubble	Do.	...	Do.	

Lock No. 11 ...	112·525	2·20	Do.	3·00	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
Lock No. 10 ...	115·300	1·35	Do.	1·50	Do.	Do.	Do.	Do.	Brick	Do.	...	Do.	
Lock No. 9 ...	116·380	1·75	Do.	2·30	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
Lock No. 8 ...	117·705	2·78	1·31	3·28	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
Lock No. 7 ...	120·265	1·48	1·20	1·28	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
Lock No, 6 ...	121·155	1·51	1·26	2·00	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
Lock No. 5 ...	123·130	1·46	Do.	2·20	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	
Lock No. 4 ...	124·850	1·45	1·42	1·46	Do.	Do.	Do.	Do.	Rubble	Do.	...	Do.	
Lock No. 3 ...	125·605	1·64	1·28	1·62	Do.	Do.	Do.	Do.	Brick and rubble	Do.	...	Do.	
Lock No. 2 ...	127·745	2·10	1·20	1·95	5·20	45·10	4 0	20 0	Wrought stone	Do.	...	15·0 m. rough ashlar	
Lock No. 1 ...	129·320	1·20	2·57	1·34	Do.	Do.	Do.	Do.	Do.	Do.	...	Do.	This lock has 3 gates, of which one is a flood gate towards the Meuse.

WEIRS.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Non-Canalised portion—									
Poignefer Mill at Laroche	22·800	...	...	...	...	...	Baulks 4·65 m.	1·00	
Jupille Mill	31·350	...	...	...	...	...	Do. 6·00 m.	0·90	
Rendeux Mill	37·050	...	...	...	...	...	Do. 7·00 m.	1·00	
Hampteau Mill	41·580	...	...	...	...	...	Do. 6·00 m.	0·90	
Hotton Mill (upstream) ...	43·780	...	...	...	...	...	Do. Do.	1·00	
Hotton Mill (down stream)	44·780	...	...	...	...	...	Do. Do.	Do.	
Monville Mill	46·980	...	...	...	...	Fixed	...	1·05	
Noiseux Mill	55·480	...	...	...	...	...	Baulks 6·00 m.	1·35	
Petite-Enseilles Mill ...	58·480	...	...	...	...	...	Do. 5·00 m.	1·15	
Petithan Mill	64·780	...	...	...	...	...	Do. 2·50 m.	0·85	
Durbuy Mill	67·750	...	...	...	...	...	Do. 5·00 m.	1·20	
Barvaux Mill	74·450	...	...	...	...	...	Do. Do.	1·06	

Ourthe River—continued.

WEIRS—continued.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Canalised portion—									
Douxflamme	101·050	...	...	...	90·00	85·00 pitching	Baulks 5·00 m.	2·12	
Chanxhe	102·373	...	...	...	118·50	108·50 Do.	Do. 10·0 m.	3·00	
Gombe	106·003	...	...	...	100·00	95·00 Do.	Do. 5·00 m.	2·25	
Esneux	109·421	...	...	...	85·00	80·00 Do.	Do. Do.	1·50	
Hony	114·438	...	...	...	84·00	74·00 Do.	Do. 10·0 m.	3·50	
Tilff	120·265	...	...	...	55·00	55·00 Do.	...	1·80	
Tilff	Do.	...	...	...	110·00	105·00 Do.	Baulks 5·00 m.	2·80	
Colonstère Works	122·630	...	...	...	195·12	190·00 Do.	Do. 5·12 m.	2·80	
Campana Works	124·425	...	...	...	157·00	150·00 Do.	Do. 7·00 m.	1·00	
Sauheid Works	125·605	...	...	...	135·50	130·00 Do.	Do. 5·50 m.	0·80	
Aguesses Works	128·739	...	...	...	147·50	147·50 Do.	...	1·20	

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Scay Bridge Wharf	100·60	...	Earth embankment	...	...	...	
Chanxhe Bridge Wharf	103·190	...	Do.	...	...	...	
Poulseur Basin	104·676	...	...	860·00	...	...	Area of 12,000 sq. m.
Poulseur Wharf	105·170	0·80	Pitching	105·00	6·00	Gravel	
Esneux Harbour	109·421	0·40	Do.	39·25	4·28	Paving	
Hony Harbour	115·330	0·90	Timber	15·00	5·00	Gravel	
Tilff Harbour	120·235	0·45	Wall	8·00	5·50	Do.	
Chênée Wharf	126·632	...	Earth embankment	...	...	...	
Fourchu-Fossé Quay, Angleur	128·439	...	Wall	130·00	...	...	This wall is not used for unloading.
Angleur Harbour (See Meuse)	129·430	...	...	...	...	...	Area of 8,200 sq. m. Serves largely for the transhipment of the Ourthe freight to the Meuse.

Plasschendaele—Nieuport Canal.

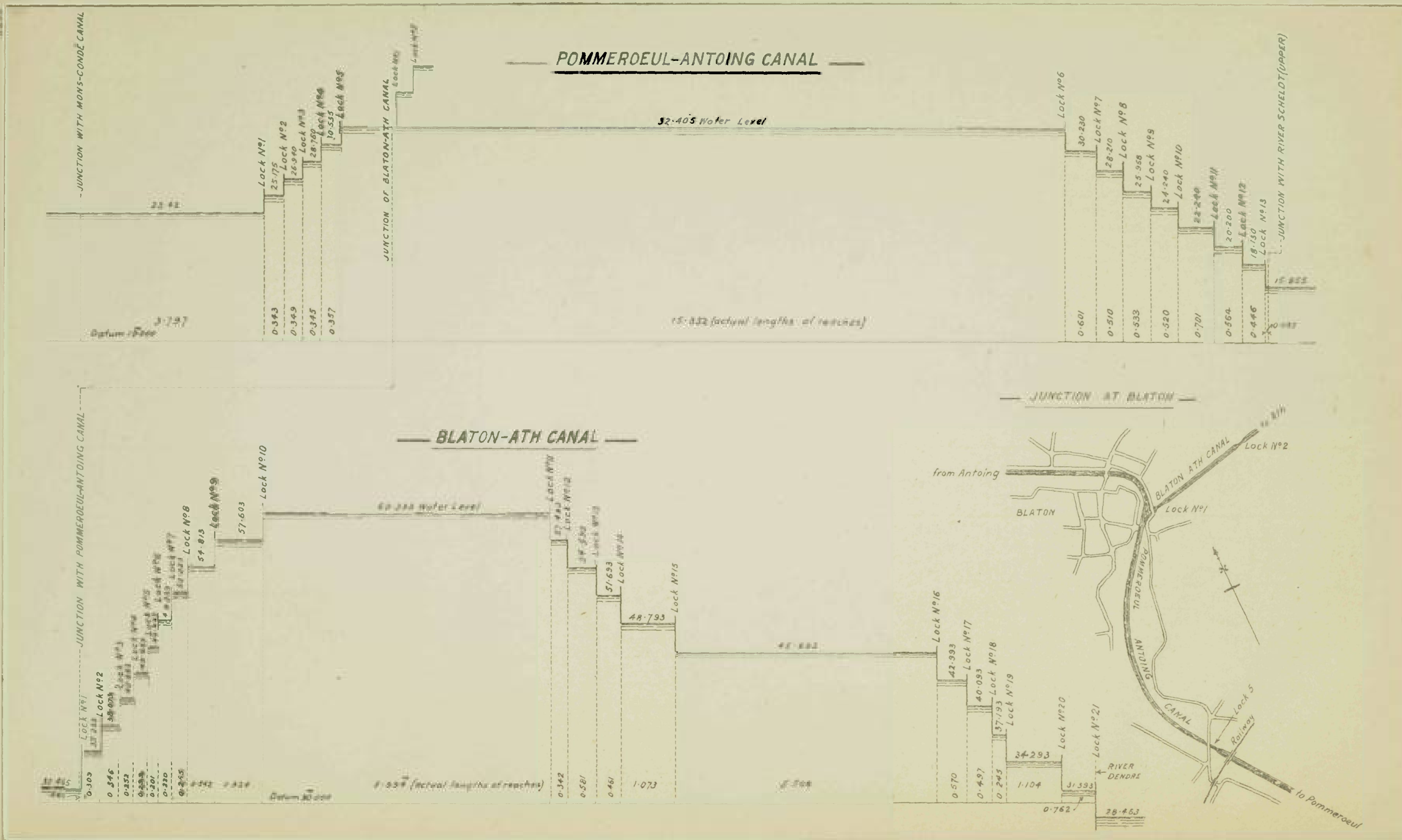
REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level	At bed level.			
Plasschendaele-Nieuport ...	0·000	21·018	21·018	...	...	20·00	8·00	2·50 summer 2·24 winter	3·88 3·62	Boats have a maximum beam of 6 m. and a draught of 2·20 m. This canal serves besides for navigation, also for drainage and water supply purposes. It receives the waters of the Moerdyck and Bourgogne Canals and conducts them to the sea. In dry periods it supplies water to the Yser and to the Furnes-Ambacht system.
Oudenbourg Branch	0·000	0·800	0·800	...	...	8·00	4·00	1·50 summer 1·24 winter	3·88 3·62	This branch is in free communication with the Plasschendaele-Nieuport Canal. It can only accommodate 50-ton boats.

Plasschendaele—Nieuport Canal—continued.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
Plasschendaele ...	At the beginning of the Canal	4·73 summer	4·73 summer	...	6·50 chamber 38·0	90·00	...	...	Copings of lock heads of wrought stone. Walls of brick	2 penstocks in the down stream head. 1 sluice in each down stream gate, and 2 sluices in each up stream gate	...	...	This lock has 4 pairs of mitred gates. In general the water level is the same in the Bruges–Ostend and in the Plasschendaele–Nieuport Canals.
"Comte" Lock at Nieuport	21·018	3·41 summer	3·41 summer	4·05 in summer l.w.s.t.	8·00	45·00	...	...	Masonry walls	2 penstocks to each end. 1 sluice in each flood gate, 2 sluices in each ebb gate	8 m. fascine covered with Tournai rubble	10 m. fascine covered with Tournai rubble	This lock has 4 pairs of mitred gates. See Plate 26.



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WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Oudenbourg Sugar Factory Wharf	1·716	0·70	Earth slope	160·00	8·00	Earth	Above this wharf there is a 12 m landing stage connected with the railway line.
" Espérance " Sugar Factory Wharf, Snaeskerke	7·00	1·25	Do.	135·00	12·00	Do.	This wharf is provided with timber landings 85 m. and 9 m. long. The longer siding is connected with a double narrow-gauge line.

Pommerœul—Antoing Canal. [*See Plates* 25 *and* 28.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
1st Mons-Condé Canal to Harchies	0·000	3·797	3·797	3·797	...	19·60	10·00	2·40	23·42	Winter levels. Summer levels are 0·20 m. less.
2nd Harchies	3·858	4·201	0·343	0·343	...	24·20	15·00	2·30	25·175	
3rd Harchies	4·257	4·606	0·349	0·349	...	Do.	Do.	Do.	26·940	
4th Harchies to Blaton ...	4·662	5·007	0·345	0·345	...	Do.	Do.	Do.	28·760	*Water Supply.*—Two steam pumps at Lock No. 3 draw water from the 5th Reach of the Mons-Condé Canal and discharge into the summit level reach.
5th Blaton	5·063	5·420	0·357	0·357	...	Do.	Do.	Do.	30·535	
6th Summit level Blaton to Maubray	5·481	20·813	15·332	10·295	5·037	11·30	9·50	2·40	32·405	
7th Maubray	20·869	21·470	0·601	0·601	...	15·00	10·00	2·30	30·230	For the greater part of the year the water supply is from the streams at the summit level.
8th Maubray	21·526	22·036	0·510	0·030	0·480	24·20	15·00	Do.	28·210	
9th Maubray	22·092	22·625	0·533	0·533	...	Do.	Do.	Do.	25·985	
10th Maubray to Péronnes ...	22·681	23·201	0·520	0·520	...	Do.	Do.	Do.	24·240	
11th Péronnes	23·257	23·958	0·701	0·701	...	21·20	12·00	Do.	22·240	
12th Péronnes	24·014	24·578	0·564	0·564	...	24·20	15·00	Do.	20·200	
13th Péronnes Basin	24·634	25·080	0·446	0·446	...	69·20	60·00	Do.	18·130	
14th Péronnes to Scheldt ...	25·136	25·168	0·032	0·032	...	17·00	10·00	2·35	15·855	

Pommerœul—Antoing Canal—continued.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock. in minutes. With reservoir.	Time taken to pass through Lock. in minutes. Without reservoir.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
							Min. Sec.							
No. 1	3·828	2·30	2·338	1·75	5·20	39·20	3 25	33	26	Brick	Sluices	3·75 m. masonry pitching	19·60m. masonry pitching	Each lock has a reservoir.
No. 2	4·229	Do.	2·30	1·76	Do.	39·19	3 30	28	23	Do.	Do.	Do.	19·50 m.	
No. 3	4·634	Do.	Do.	1·82	Do.	39·05	Do.	27	Do.	Do.	Do.	Do.	19·30 m.	
No. 4	5·035	Do.	Do.	1·77	Do.	39·10	3 20	29	Do.	Do.	Do.	Do.	19·50 m.	
No. 5	5·448	2·40	Do.	1·87	Do.	39·15	3 30	35	30	Do.	Do.	Do.	19·60 m.	
No. 6	20·841	2·47	Do.	2·17	Do.	39·30	Do.	25	22	Do.	Do.	Do.	18·50 m.	
No. 7	21·498	2·30	Do.	2·02	Do.	39·17	3 0	28	23	Do.	Do.	Do.	15·00 m.	Each leaf is provided with 2 sluices, having each an area of 0·369 sq. m.
No. 8	22·064	Do.	Do.	2·22	Do.	29·12	3 30	31	26	Do.	Do.	Do.	19·50 m.	
No. 9	22·653	Do.	2·47	1·74	Do.	Do.	3 0	24	20	Do.	Do.	Do.	19·25 m.	
No. 10	23·229	2·47	2·30	2·00	Do.	Do.	3 30	23	18	Do.	Do.	Do.	17·80 m.	
No. 11	23·986	2·30	Do.	2·04	Do.	39·40	Do.	29	24	Do.	Do.	Do.	18·28 m.	
No. 12	24·606	Do.	Do.	2·07	Do.	39·30	3 15	28	23	Do.	Do.	Do.	18·50 m.	
No. 13	25·108	Do.	3·50	2·27	Do.	39·12	4 0	29	24	Do.	Do.	Do.	19·50 m.	

Pommeræul—Antoing Canal—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Bernissart Company's Wharf	5·648	1·00	Wall	154·00	45·00	Paving	
Messrs. Duchateau's Wharf	Do.	Do.	Do.	60·00	16·00	Do.	
Mill Aqueduct Wharf, Blaton	6·040	...	Earth embankment	42·00	17·00	Natural ground	
Blaton Sugar Works Wharf	6·339	...	Do.	100·00	50·00	Do.	
Delcourt's Landing Quay	6·825	...	...	70·00	...	...	
Duchateau-Bougy's Wharf	Do.	1·60	Wall	50·00	5·00	Natural ground	
Duchateau Farm Quay	7·035	...	...	40·00	...	...	
Trivier's Wharf	7·265	1·80	Wall	60·00	5·00	Natural ground	
Saquelen's Wharf	7·355	1·50	Do.	123·00	5·00	Do.	
Alph. Duchateau's Quay	7·635	...	...	46·00	...	...	
Carrière's Wharf	7·735	...	Earth embankment	...	...	...	
Duchateau Bros. Quay...	8·070	...	...	100·00	...	...	
Coal Wharf	8·400	1·55	Wall	...	...	...	
Du Marais Quay	8·712	...	...	40 00	...	...	Abandoned
Péruwelz Harbour	11·000	...	...	1230 00	...	...	
Blandiau's Quay, Péruwelz	11·472	...	...	50 00	...	...	Do.
Ponchaux Bridge Wharf	11·562	0·80	Wall	60 00	17·80	Natural ground	
Capouillet's Glass Works Quay, Péruwelz ...	11·562	...	...	50 00	...	...	
Small Sugar Works Quay, Péruwelz	11·902	...	...	40 00	...	...	
Edmund Roberte's Quay, Péruwelz	12·060	...	...	36 00	...	...	
Péruwelz Company's Quay	12·085	...	...	40 00	...	...	
Duez Defline's Wharf	13·695	...	Pitching and earth slope	25 00	4·00	Natural ground	
Tondreau Sugar Works Wharf	13·695	...	Earth slope	116·00	16·00	Do.	
Grosmont Sugar Works Wharf	16·290	...	Do.	64·00	12·00	Do.	
Wiers Sugar Works Wharf	17·440	...	Do.	110·00	6·00	Do.	
Callenelle Sugar Works Quay	17·543	...	...	70·00	...	...	
Caby Wharf	18·285	...	Pitching and embankment	35·00	4·50	Natural ground	
Henneton Wharf	18·415	...	Do.	45·00	6·00	Do.	
Moslies Bridge Wharf	20·759	...	Do.	110·00	5·00	Do.	
Maubray Sugar Works Wharf...	20·991	...	Do.	60·00	25·00	Do.	
Péronne Wharf	24·086	...	Embankment	140·00	5·00	Do.	

Roulers—Lys Canal. [*See Plate* 29.]

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Roulers to Cachtem	0·000	4·090	4·090	3·232	0·858	15·75	6·00	3·25	16·178	* For water supply, see note below.
Cachtem to Oyghem	4·090	16·585	12·495	10·399	2·096	13·50	Do.	2 50	15·428	

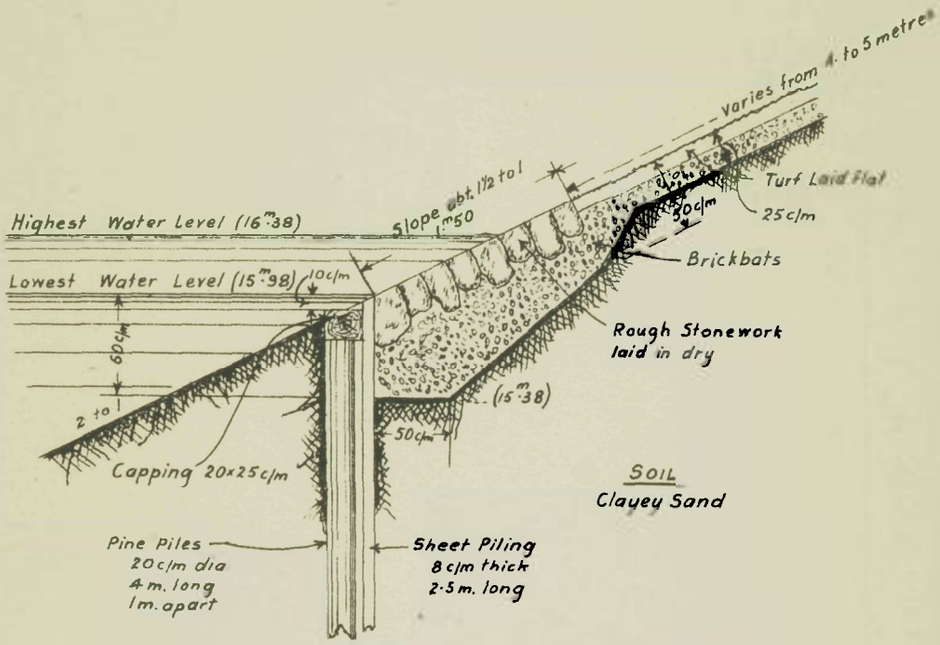
LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Cachtem	4·121	3·25	2·50	0·75	5·40	42·30	Min. Sec. ...	Min. Sec. ...	Vertical, brick	Sluices	...	...	This lock is only an auxiliary lock serving to stop the surplus water of the upper reach and to protect the dykes of the lower reach, which are relatively low, in time of flood.
Triple Lock at Oyghem—													
1st Chamber ...	16·442	3·00	2·50	7·43	Do.	Do.	5 0	40 0 minimum	Do.	Do.	10 m. fascines	15 m. fascines and pitching	
2nd Chamber	16·488	2·50	Do.		Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	
3rd Chamber ...	16·534	Do.	Do.		Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	

* *Water supply.*—This is drawn principally from the Mandel, St. Amand and Krombeke. In dry periods this is often insufficient, and water is then obtained by means of a plant at Oyghem Lock operating a centrifugal pump which draws water from the Lys. In winter and in times of flood, on the other hand, the Mandel brings down larger quantities of water than are necessary to maintain the normal water level. The surplus water is diverted into the natural bed of the Mandel by means of the Rumbeke Weir a little above Cachtem Lock.

Type of Bank Protection

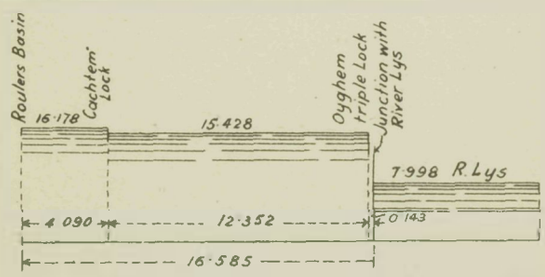
Canal from Roulers to the Lys



Scale 1·50

This protection is used for a length of 3 Kilos.
for remaining portion see Plate No 1.

Longitudinal Section of Canal.



Vertical Scale 1mm = 1meter
Longitudinal Scale 3mm. = 1kilom.

Roulers—Lys Canal—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Roulers	0·140	1·05	Wall	281·00	20·00	Paving	
Cachtem	4·090	0·95	Earth embankment	150·00	5·00	Earth	
Iseghem	6·650	0·60	Do.	150·00	11·50	Paving	
				Do.	6·50		
Ingelmunster	9·550	Do.	Do.	180·00	5·00	Earth	
Oostroosebeke (Geitjen)	13·890	Do.	Do.	200·00	Do.	Do.	
Oyghem (Zwaantje village)	14·855	Do.	Do.	Do.	Do.	Do.	
Oyghem	16·402	Do.	Do.	180·00	6·00	Do.	

Rupel River.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Single Reach	0·000	11·982	11·982	...	11·982	Variable 100 m. to 230 m.	Variable	At low water. 1·60 m. at Rumpst 2·39 m. at Boom 4·30 m. at Schelle	0·11 to 1·00 at low water 3·97 to 4·50 at highwater	The Rupel is formed by the junction of the Nêthe and Dyle rivers at Rumpst. There are no tow-paths along this river. The Rupel is tidal, the amplitude varying from 3·50 at Rumpst to 3·86 at Schelle. The course of the river is very sinuous. At Willebroeck it connects up with the Brussels-Rupel Canal.

Rupel River—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
				Metres.	Metres.		
Boom Landing Stage	4·497	...	Timber	50·00	4·20	...	
Niel Do.	8·899	...	Timber staging quay with timber revetment	90·00	5·00	...	There a number of quays along the Rupel, built by private firms. Their level is generally that of ordinary high tide.
Quays in the Communes of :—							
Rumpst	...	...	...	380·00	...	...	
Terhagen	...	...	...	685·00	...	...	
Boom	...	...	...	1600·00	...	...	
Niel	...	...	...	865·00	...	...	

Sambre River.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
									Metres.	
1. From frontier to Lock No. 1 at Solre-sur-Sambre	0·000	2·897	2·897	The course of the river is very irregular, the bends varying from 75 m. to 1,000 m. radius		In the diversions 14·20 m.	In the river 15·00 m. and in the diversions 10·00 m.	2·10 m.	122·53	*Tow Paths.*—The width of the tow-path varies from 3 m. to 7 m. Between Erquelinnes and Marchienne it is on the left bank, between Marchienne and Charleroi on the right bank, between Charleroi and Tamines, on the left bank, between Tamines and Namur on the right bank and in Namur on the left bank.
2. From Lock No 1 to Lock No. 2 at Labuissière	2·897	7·608	4·711			Do.		Do.	121·05	
3. From Lock No. 2 to Lock No. 3 at Fontaine-Valmont	7·608	11·780	4·172	...	...	Do.	Do.	Do.	118·93	
4. From Lock No. 3 to Lock No. 4 at Lobbes	11·780	17·565	5·785	...	...	Do.	Do.	Do.	116·81	
5. From Lock No. 4 to Lock No. 5 at Thuin	17·565	19·895	2·330	...	...	Do.	Do.	Do.	115·18	

6. From Lock No. 5 to Lock No. 6 at Grand-Courant	19·895	22·300	2·405	...	...	Do.	Do.	Do.	113·92
7. From Lock No. 6 to Lock No. 7 at Trou-d'Aulne	22·300	25·970	3·670	...	...	Do.	Do.	Do.	111·56
8. From Lock No. 7 to Lock No. 8 at Abbaye-d'Aulne	25·970	27·930	1·960	...	...	Do.	Do.	Do.	108·85
9. From Lock No. 8 to Lock No. 9 at Landelies	27·930	30·445	2·515	...	...	In the diversions 14·20 m.	Do	Do.	106·92
10. From Lock No. 9 to Lock No. 10 at Jambe-de-Bois	30·445	33·660	3·215	...	...	Do.	Do.	Do.	104·68
11. From Lock No. 10 to Lock No. 11 at Charleroi	33·660	40·420	6·760	...	...	Do.	Do.	Do.	101·62
12. From Lock No. 11 to Lock No. 12 at Montigny-sur-Sambre	40·420	43·240	2·820	...	...	Do.	Do.	Do.	98·81
13. From Lock No. 12 to Lock No. 13 at Châtelineau	43·240	46·290	3·050	...	...	Do.	Do.	Do.	97·70
14. From Lock No. 13 to Lock No. 14 at Farciennes	46·290	51·140	4·850	...	...	Do.	Do.	Do.	96·78
15. From Lock No. 14 to Lock No. 15 at Moignelée	51·140	56·094	4·954	...	...	Do.	Do.	Do.	94·58
16. From Lock No. 15 to Lock No. 16 at Grogniaux	56·094	62·165	6·071	...	...	In the diversions 16·10 m.	Do.	2·10 m.	92·06
17. From Lock No. 16 to Lock No. 17 at Anvellis	62·165	65·158	2·993	...	...	Do.	Do.	Do.	90·20
18. From Lock No. 17 to Lock No. 18 at Ham-sur-Sambre	65·158	71·451	6·293	...	...	Do.	Do.	Do.	88·81
19. From Lock No. 18 to Lock No. 19 at Mornimont	71·451	74·443	2·992	...	...	Do.	Do.	Do.	87·08
20. From Lock No. 19 to Lock No. 20 at Floriffoux	74·443	82·442	7·999	...	...	Do.	Do.	Do.	84·21
21. From Lock No. 20 to Lock No. 21 at Bauer	82·442	86·814	4·372	...	...	Do.	Do.	Do.	82·03
22. From Lock No. 21 to Lock No. 22 at Namur	86·814	93·638	6·824	...	...	Do.	Do.	Do.	79·93
23. From Lock No. 1 to the junction with the Meuse	93·638	94·021	0·383	...	...	—	—	Do.	77·63

Sambre River—continued.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock. Min. Sec.	Time taken to pass through Lock. Min. Sec.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
1. Solre-sur-Sambre	2·987	2·35	2·45	1·48	5·20	37·45	6 25	27 0	Vertical, faced with brick, and having wrought stone copings	Each leaf provided with sluice valves giving 3 openings of a total area of 63 sq.cm.	...	Masonry 10·00 m.	
2. Labuissière ...	7 608	2·45	2·52	2 12	Do.	37 42	10 0	35 0	Do.	Do.	...	Do.	
3. Fontaine-Valmont	11 780	2 43	2·55	2 12	Do.	37 44	8 0	22 0	Do.	Do.	...	Do.	
4. Lobbes ...	17 565	2 52	2·53	1 63	Do.	37 53	5 0	23 0	Do.	Do.	...	Do.	
5. Thuin ...	19 895	2 40	2·65	1 26	Do.	37 49	2 47	17 0	Do.	Do.	...	Do.	
6. Grand-Courant	22 300	2 67	2·76	2 36	Do.	37 40	12 0	22 0	Do.	Do.	...	Do.	
7. Trou d'Aulne	25 970	2 90	2 38	2 71	Do.	37 43	11 0	20 0	Do.	Do.	...	Do.	
8. Abbaye d'Aulne	27 930	2 25	2 38	1 93	Do.	37 42	8 0	18 0	Do.	Do.	...	Do.	
9. Landelies ...	30 445	2 20	2·25	2 34	Do.	37 65	6 25	20 0	Do.	Do.	...	Do.	
10. Jambe-de-Bois	33 660	2 17	2·11	3 06	...	45 90	7 30	23 30	Do.	Do.	...	Do.	
11. Charleroi ...	40 420	3 63	2 15	2 81	5·20	45 90	7 0	23 0	Do.	Do.	...	23·00	
12. Montigny-sur-Sambre	43 240	2 05	2 14	1 11	Do.	46 45	4 30	20 0	Do.	Do.	...	10·00	
13. Châtelineau	46 290	2 05	2 19	0 92	Do.	46 00	4 0	19 0	Do.	Do.	...	Do.	
14. Farciennes ...	51 140	2 32	2 13	2 20	Do.	46 00	6 0	17 0	Do.	Do.	...	Do.	
15. Moignelée ...	56 094	2 18	2 12	2 52	Do.	45 66	5 0	17 0	Do.	Do.	...	Do.	
16. Grogniaux ...	62 165	2 31	2·39	1 86	5·18	47 09	6 0	15 0 to 25 0	Brick	1 sluice in each leaf, with opening of 50 sq. cm.	...	...	
17. Auvelais ...	65·158	2·52	2·74	1·39	5·16	47·19	5 0	Do.	Do.	Do. 56 sq. cm. opening	...	...	
18. Ham ...	71·451	2·92	2·63	1·73	5·14	47·17	5 0	Do.	Do.	Do. 62 sq. cm. opening	...	...	

19. Mornimont ...	74·443	2·70	2·28	2·87	5·20	47·26	8	0	Do.	Do.	Do.	...	...
20. Floriffoux ...	82·442	2·43	2·51	2·18	Do.	47·13	5	0	Do.	Stone	57 sq. cm. opening Do. 52 sq. cm. opening	...	...
21. Bauce ...	86·814	2·76	2·06	2·10	Do.	45·95	6	0	Do.	Brick	Do.	...	...
22. Namur ...	93·638	2·19	2·21	2·30	Do.	45·85	6	0	Do.	Do.	Do. 40 sq. cm. opening	...	...

WEIRS.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Length in metres.	Spillway.			Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.		System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
1. Solre-sur-Sambre ...	3·017	4 { 5·35, 4·60, Do., Do. }	Baulk	{ 2·40, 2·00, Do., Do. }					
2. Labuissière	7·563	3 of 4·55	Do.	2·95					
3. Fontaine-Valmont ...	11·655	4 { 4·60, 4·55, Do., Do. }	Do.	{ 2·80, 2·40, Do., Do. }					
4. Lobbes	17·415	4 { 5·50, 4·65, Do., Do. }	Do.	{ 2·92, 2·36, Do., Do. }					
5. Thuin	19·625	3 of 4·75	Do.	2·95					
6. Grand-Courant	22·200	4 { 4·65, 4·80, Do., Do. }	Do.	{ 3·14, Do., Do., Do. }					
7. Trou d'Aulne	25·885	4 { 4·75, 4·80, Do., Do. }	Do.	{ 3·00, 2·65, Do., Do. }					

Sambre River—continued.

WEIRS—continued.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.			Difference between head and tail race in metres.	Remarks
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in Metres.	Length in Metres.	System of closing.			
						Fixed.	Adjustable.		
8. Abbaye d'Aulne ...	27·800	3 of 4·80	Baulk	3·20					
9. Landelies	30·375	4 { 4·90, 4·85, Do., 4·82 }	Do.	{ 2·83, Do., Do., Do. }					
10. Jambe de Bois	33·380	3 { 4·80, Do., 4·85 }	Do.	{ 3·58, Do., Do. }					
11. Charleroi	40·015	6 { 4·31, 4·36, Do., Do., 4·31, 4·40 }	Do.	{ 2·20, Do., Do., Do., Do., 2·80 }					
Weir at Lock No. 11 ...	40·420	2 { 5·05, 5·02 }	Do.	{ 3·01, Do. }					
12. Montigny	43·190	6 { 5·00, 5·23, 5·22, 4·95, 5·00, Do. }	Do.	{ 2·16, 2·77, 2·76, 2·16, Do., Do. }					
13. Châtelineau	46·255	6 { 5·17, 5·12, 5·10, 5·14, Do., 4·97 }	Do.	{ 2·30, Do., Do., 2·85, Do., 2·30 }					

14. Farciennes	50·480	6 of 5·00	Do.	3·36					
15. Moignelée	55·669	5 {5·15, Do., 5·20, Do., Do.}	Do.	{3·15, Do., Do., Do., 2·77}					
16. Grogniaux	62·168	3 {5·45, 5·46, 5·47}	Do.	{2·70, 2·74, 2·72}					
17. Auvelais	65·154	5 {5·40, 5·47, Do., 5·50, 5·48}	Do.	{2·70, 2·72, 2·71, 2·70, 2·72}					
18. Ham	71·303	5 {5·50, 5·48, 5·45, 5·48, 5·45}	Do.	{2·75, Do., 2·83, 3·95, 4·00}					
19. Mornimont	73·660	5 {5·48, Do., 5·46, Do., 5·45}	Do.	{3·08, Do., 3·07, 3·03, Do.}					
20. Floriffoux	82·486	5 {5·38, Do., 5·40, 5·39, 5·34}	Do.	{2·75, Do., Do., Do., Do.}					
21. Bauce	86·771	5 {5·49, Do., 5·48, 5·46, Do.}	Do.	{3·00, 3·05, Do., 3·03, 3·02}					
22. Namur	93·643	4 {6·50, 6·46, 6·48, 6·47}	Do.	{2·31, 3·20, 3·14, 3·11}					

Q

Sambre River—continued.

WHARVES AND QUAYS

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Erquelinnes Basin	0·692	...	...	690·00	...	...	Area of 1,350 sq. m.
Puissant & Co.'s Wharf at Merbet le Chateau	7·280	0·65	Masonry wall	60 00	30·00	Earth and paving	
				90 00	3·25		
Fontaine-Valmont Wharf	10·500	1·10	Do.	97·00	10·00	Macadam	
Lobbes Wharf	16·800	0·85	Pitching	190·00	25·00	Earth	
Thuin Wharf	19·325	0·90	Masonry wall	125·00	20 00	Do.	
Thuin Quarry Wharf	20·500	1·70	Pitching	580 00	10·00	Macadam and earth	
Hourpes Wharf ... ..., ...	24·930	0·90	Masonry wall	184 00	Do.	Earth	
Quay at Nord Railway Bridge	30·623	...	...	76·00	...	...	
Landelies Quarries Wharf	30·900	1·90	Pitching	40·00	12·00	Earth	
Taillante Roche Quarries Wharf	32·000	Do.	Earth	65·00	Tow-path	Do.	
Roche à Bayard Quarry Wharf	32·100	1·85	Do.	145·00	Do.	Macadam and earth	
Dolban Quarry Wharf	32·360	1·30	Pitching	115·00	40·00	Earth	
Gailly Quarry Wharf	32·850	1·20	Earth	175·00	20·00	Do.	
Marcq Quarry Wharf	33·000	1·30	Do.	120·00	150·00	Do.	
Hameau Landing Stage	34·280	1·50	Do.	20·00	15·00	Do.	
Monceau Works...	35·850	1·00	Masonry wall	175·00	8 00	Do.	
Monceau Coke Oven Company's Basin ...	35·965	...	...	152 00	...	...	Area of 8,750 sq. m
Gobeau Wharf	36·000	1·00	Wall and pitching	120·00	150·00	Earth	
St. Martin Wharf	36·120	1·50	Pitching	50·00	15·00	Do.	
Quay at footbridge, Marchienne	36·576	...	...	183·00	...	...	
Marchienne Wharf	36·605	2 20	Masonry wall	65 × 2	12·00 & 14·00	Earth and paving	
Bonehill Wharf	37·000	1·10	Wall and pitching	215·00	6·00	Earth	
Brussels Canal (large section)	37·130	...	...	...	...	...	
Parent and Cabouy Wharf	37·290	1·40	Earth	60·00	4·00	Earth	
Providence Wharf	37·540	1·00	Wall and earth	210·00	30·00	Do.	
Vieille Sambre Wharf and Basins	38·240	...	...	...	...	...	Group of basins having a total area of 8,730 sq. m.
Sacré-Madame Wharf	38·500	1 00	Pitching	245 00	65·00	Earth	
Thy-le-Château	38·680	Do.	Do.	150·00	50·00	Do.	
Brussels Canal (small section)	38·800	...	...	...	...	...	
Crawez Wharf	38·935	0·50	Earth	100·00	40·00	Earth	
Louvain Railway Bridge Wharf	39·260	0·70	Do.	390·00	60·00	Do.	

François Wharf	39·500	1·00	Masonry wall	225·00	10·00	Earth	
Ardinoises Wharf	39·640	Do.	Do.	180·00	50·00	Do.	Mambourg Basin, 2,070 sq. m. area.
Charleroi Wharf	39·900	2·16	Do.	250·00	15·00	Tow-path	
Quay above lock in Charleroi ...	40·200	...	...	1150·00	...	...	Length comprises 550·00 on right bank, 600·00 on left.
Quay below lock in Charleroi (left bank)	40·580	...	...	370·00	...	...	
Do. do. (right bank)	Do.	...	...	260·00	...	...	
Dupret Wharf	40·990	0·70 & 1·20	Wall and earth	255·00	15·00	Paving and earth	
Poirier Wharf	41·110	0·80	Masonry wall	132·00	57·00	Do.	
Bonne Esperance Wharf	41·430	1·20	Do.	91·00	85·00	Earth	
Bary Wharf	42·285	0·80	...	105·00	50·00	Do.	Marcinelle and Couillet Company's Basin, 1,645 sq. m. area.
Montigny-sur-Sambre Lock	43·240	1·00	Masonry wall	255·00	15·00	Paving and earth	
Champeau Wharf	43·770	...	...	...	...	...	Delloye-Mathieu Bros. Basin, 2,000 sq. m. area.
Boubier Wharf	44·500	0·60	Masonry wall	100·00	50·00	Earth	
Forêts Wharf	45·150	1·50	Do.	130·00	Do.	Paving and earth	
Dupont and Boubier Wharf	45·640	0·60	Wall and pitching	360·00	50·00	Earth	
Gillain Wharf	45·810	1·00	Masonry wall	135·00	6·00	Do.	
Wilmar Wharf	45·850	1·20	Do.	75·00	20·00	Paving	
Ormont Wharf	46·080	1·00	Do.	50·00	70·00	Earth	
Dorlodot Wharf...	46·565	...	...	...	...	...	Basin, 920 sq. m. area.
Châtelineau Wharf	46·640	1·00	Masonry wall	90·00	25·00	Earth	
Carabiniers-Français Wharf	46·740	1·15	Do.	50·00	100·00	Do.	
Gouffre Wharf	47·350	0·40	Do.	250·00	50·00	Do.	
Masse St. François	49·100	0·75	Do.	175·00	10·00	Do.	
Pont de Loup Wharf	49·600	0·90	Pitching	110·00	45·00	Do.	
St. Jacques Wharf	52·320	...	...	...	...	...	Basin, 3,105 sq. m area.
Roton Wharf	53·000	0·50	Pitching	110·00	60·00	Earth	
Monia Wharf	53·920	...	...	...	...	...	
Bonne Espérance Wharf	54·700	0·50	Masonry wall	110·00	50·00	Earth	
Marmitte Wharf	55·900	0·90	Do.	135·00	Do.	Do.	
Oignies Wharf, right bank	56·728	0·45	Timber work	67·00	35·00	Do.	
Do.	...	1·75	Do.	47·00	40·00	Do.	
Oignies Factory Wharf	57·00	1·00	Do.	15·00	20·00	Do.	
Tamines Bridge, left bank	58·298	Do.	Masonry wall	50·00	26·00	Do.	
Lamédia Coal Wharf, right bank ...	58·906	1·90	Do.	90·00	15·00	Do.	
New St. Roch Wharf, right bank ...	60·250	1·11	Pitching	166·00	Do.	Do.	
Beaulet Wharf, left bank	61·566	0·50	Masonry wall	80·00	33·00	Do.	
Petit Hasard Wharf, left bank ...	61·686	0·45	Do.	90·00	70·00	Do.	
Velaine Colliery Wharf, left bank ...	62·348	1·97	Timber	38·00	36·00	Do.	
Wharf below Auvelais Bridge, left bank	64·009	0·80	Natural bank	90·00	20·00	Do.	

Sambre River—continued.

WHARVES AND QUAYS—continued.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Auvelais Chemical Works Wharf, left bank ...	64·428	0·75	Masonry	60·00	30·00	Earth	
Vacherie Colliery Wharf, left bank	65·449	2·50	Timber	35·00	25·00	Do.	
Pecherie Colliery Wharf, right bank	65·971	3·40	Wall	95·00	15·00	Do.	
Do. do.	...	1·20	Do.	80·00	7·50	Macadam	
Auvelais Glassworks Wharf, left bank ...	66·698	1·00	Natural bank	95·00	20·00	Earth	
Jemeppe Wharf, No. 1, left bank	69·111	0·95	Do.	40·00	5·00	Do.	
Do. No. 2, do.	69·251	Do.	Do.	Do.	Do.	Do.	
Ormeau Wharf, left bank	Do.	Do.	Do.	Do.	Do.	Do.	
Ham Spillway, No. 18 Wharf, left bank ...	71·251	1·00	Do	Do.	10·00	Do.	
Liénard Wharf (quarries), right bank ...	71·698	3·10	Wall	44·00	10·00	Macadam	
Ham Colliery Wharf, right bank	71·894	1·50	Do.	80·00	5·80	Earth	
Do. left bank	...	1·90	Do.	163·00	30·00	Do	
Do. do.	...	1·15	Timber	32·00	10·00	Do.	
Mornimont Chemical Works Wharf, right bank	73·992	1·00	Pitching	20·00	10·00	Do.	
Franière Wharf, left bank	76·866	0·80	Natural bank	25·00	15·00	Do.	
Floreffe Landing Stage, right bank	80·366	1·35	Wall	70·00	6·00	Macadam	
Floreffe Communal Wharf, right bank ...	80·566	0·85	Pitching	50·00	16·00	Earth	
Floriffoux Wharf, left bank	82·086	...	Natural ground	Do.	10·00	Do.	
Floreffe Chemical Works, right bank... ...	83·345	1·60	Pitching	25·00	4·80	Do.	
Malonne Wharf, right bank	84·845	1·20	Wall	40·00	15·00	Do.	
Fraikin Wharf, right bank	88·396	2·25	Pitching	20·00	20·00	Do.	
Gueule-du-Loup Quarry, right bank	89·186	2·65	Natural slope	Do.	10·00	Do.	
Ronet Wharf, left bank	89·900	1·50	Do.	10·00	Do.	Do.	
Sainte Croix Wharf, left bank	92·190	1·20	Do.	56·00	20·00	Do.	
Stordoir Wharf, left bank	92·840	1·25	Do.	46·00	16·00	Do.	
Riding School Wharf, right bank	92·940	0·76	Pitching	25·00	13·00	Earth	
St. Aubain Wharf, left bank	93·329	0·65	Do.	40·00	10·00	Paving	

Scheldt (Lower) or Escaut River.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Lower Scheldt in Ghent.	Porte de Bruxelles Lock	Ghent-brugge Lock	0·720 2·660	The course of the river is very irregular		65·00 at Ghent. 100 m. at Termonde 275 m. at low water and 400 m. at high water at Tamise. 72 m. at low water and 840 m. at high water at Lillo	Irregular	About 4 m.	4·45	
From Ghent to the Dutch Frontier	0·000	114·9	114·9					Ghent 1·90 3·66 Termonde 1·90 4·57 Antwerp 4·50 8·36	2·65 low water 4·41 high water 1·25 4·32 0·02 4·03	The amplitude of tide at Antwerp is 4·40 m., at Termonde 2·77 m., and at Ghentbrugge Lock 1·55 m.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Ghentbrugge ...	0·720	5·25 below summer level 5·54 below winter level	2·45 below summer low water 4·21 below high water	2·03 summer 1·21 winter	12·50 at head 28·38 at bottom of chamber	80·00	...	...	Stone	Penstocks	10·0 m. pitching	10·0 m. pitching	See sketch on Plate 12.

Scheldt (Lower) River—continued.

WEIRS.

Name of Weir.	Distance in kiloms.	Non-Navigable Passages.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Gentbrugge Weir, built across the Diversion	0·500	5 of 6·00	Baulk	2·03 summer 1·21 winter	...	...	...	...	This weir is not used.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
				Metres.	Metres.		
Paon Wharf, near Destelbergen	4·5	Tidal river	Earth slope	95·00	14·00	Earth	Left bank,
Ferry Wharf, Heusden	9·2	...	Do.	50·00	30·00	Do.	Do.
Below Heusden Bridge...	9·5	...	Do.	15·00	50·00	Do.	Right bank.
Behind Melle Church	12·6	...	Do.	40·00	17·00	Do.	Do.
Old Ferry, Melle	13·0	...	Do.	35·00	25·00	Do.	Do.
Quatrecht, near Melle	14·8	...	Do.	Do.	20·00	Do.	Do.
Overbeke, near Wetteren	17·9	...	Do.	25·00	25·00	Do.	Do.
Powder Works, Wetteren	18·6	...	Do.	60·00	15·00	Do.	Left bank.
Communal Quay, Wetteren	20·8	...	Wall	110·00	40·00	Do.	Right bank.
Wharf opposite above	Do.	...	Earth slope	75·00	3·00	Do.	Left bank.
Communal Quay, Uytbergen	31·2	...	Do.	20·00	15·00	Do.	Do.
Bohemen Wharf, near Wichelen	35·2	...	Do.	30·00	40·00	Do.	Right bank.
Communal Quay, Schoonaerde	37·00	...	Do.	10·00	15·00	Do.	Do.
Do. Berlaere	Do.	Tidal river	Do.	15·00	24·00	Do.	Left bank.
Do. Audegem	39·4	...	Do.	55·00	25·00	Do.	Right bank.
Do. Appels	41·00	...	Do.	40·00	5·00	Do.	Do.
" Ancre " Quay, Zele	44·8	...	Do.	100·00	10·00	Do.	Left bank.
Communal Quay, Grembergen	47·2	...	Do.	15·00	20·00	Do.	Do.
Vertongen's Landing, Termonde	48·9	...	Timber	6·00	7·00	Paving	Right bank.
Communal Quay, Termonde	Do.	...	Wall	115·00	33·00	Paving and earth	Do.
Four landing stages, Termonde	Do.	...	Timber	8·00	Do.	Paving	Do.
Landing stage, Termonde	Do.	...	Do.	4·00	10·00	Do.	Left bank.
" Ancre " Wharf, Termonde	50·1	...	Earth slope	30·00	20·00	Earth	Right bank
Communal Quay, Moerzeke	54·3	...	Do.	50·00	20·00	Paving	Left bank.
Vertongen Quay, Moerzeke	56·1	...	Do.	20·00	Do.	Earth	Do.

Communal Quay, Baesrode	57·5	Do.	Wall	54·00	23·00	Paving	Right bank.
Staes Landing, Baesrode	57·7	...	Timber	7·50	3·00	Earth	Do.
Maes Quay, Baesrode	57·9	...	Earth	20·00	55·00	Do.	Do.
" Mosselkoei " Quay, Baesrode	58·2	...	Do.	84·00	19·00	Do.	Do.
Smekens Quay, Baesrode	58·7	...	Timber revetment	25·00	42·00	Do.	Do
Veuve Smekens Quay, Baesrode	59·2	...	Do.	55·00	70·00	Do.	Do.
Veuve Smekens Quay, Buggenhout	59·4	...	Do.	22·00	36·00	Do.	Do.
Vertongen Quay, Buggenhout	59·7	...	Do.	100·00	38·00	Do.	Do.
St. Amand Wharf	61·7	...	Do.	105·00	20·00 (average)	Rubble and paving	Do.
Dry Goben Quay, Hamme	67·2	...	Earth	25·00	10·00	Earth	Left bank.
Communal Quays, Tamise	...	...	Timber	85·00	12·00	Macadam and paving	Two projecting timber landing stages, 17·50 × 7·50 and 45·00 × 4·50 m.
Do. do.	72·3	...	Wall	170·00	15·00	Paving	Left bank.
Private quays, Tamise	...	Tidal river	Do.	240·00	...	...	Do.
Steendorp-Basel Quay	76·8	...	Masonry and earth	1510·00	15·00	Macadam	Do.
Brickworks Quay, Rupelmonde	...	...	Do.	485·00	Do.	Do.	Do.
Private quays, Rupelmonde	77·8	...	Walls	190·00	...	...	Do.
Communal Quay, Rupelmonde	...	...	Do.	132·00	10·00	Paving	Do.
Schelle Harbour, in Benedenvliet	79·1	...	Timber revetment	42·00	11·30	Earth	Right bank.
Basel-Callebeke Quay	81·6	...	Walls	87·00	4·00 & 10·00	Paving	Left bank.
Hoboken Harbour, in the Kiel	84·00	...	Earth slope and stone wall	43·00	15·00	Earth and paving	Right bank.
Watermolen Quay	85·9	...	Timber	110·00	20·00	Paving and macadam	Left bank.
Nieuwveer Quay	86·3	...	Do.	50·00	10·00	Macadam	Do.
Cruybeke Fort	86·7	...	...	...	...	...	Do.
Bakkersveer	86·8	...	...	70·00	10·00	Macadam	Do.
Private quays, Burght	...	Tidal river	Pitching, fascines, earth and timber	1195·00	15·00	Do.	Do.
Communal Quay, Burght	88·3	...	Timber	105·00	10·00	Macadam and paving	Do.
St. Michael Quay	91·515	...	...	120·00	...	...	...
Antwerp–Ghent Railway, Tête de Flandre ...	92·0	...	Wall	107·00	10·00	Paving and macadam	Left bank.
Quays ceded to Antwerp Town	92·015	...	...	1400·00	...	...	...
Veerdam, Tête de Flandre	92·3	...	Timber	135·00	8·00	Paving	Left bank.
Slips and yards	93·3	...	Do.	60·00	5·00 & 3·50	Macadam	Do.
Antwerp Harbour, Old Docks Lock	93·4	...	...	...	...	...	Right bank.
Rhine Quay	93·415	...	...	625·00	...	...	A landing stage 578·10 m. exists in front of quay. Atlantic liners moor here.
Fort Marie	100·8	...	Timber	14·00	7·50	Paving	...
Melkader Channels	101·0	...	Earth and fascines	70·00	Do.	Macadam	Left bank.
La Perle	102·1	Tidal river	Timber	11·00	5·90	Paving	Do.
Fort Liefkenshoek	107·8	...	Do.	20·00	6·00	Paving and macadam	Do.
Lillo Harbour	108·5	...	Do.	67·00	8·00	Earth	Right bank.
Doel	109·9	...	Timber, earth and fascines	100·00	10·00	Paving and macadam	Left bank.
Beirendrecht Harbour	112·00	...	Fascine slope	108·00	7·00 to 23·00	Earth	Right bank.

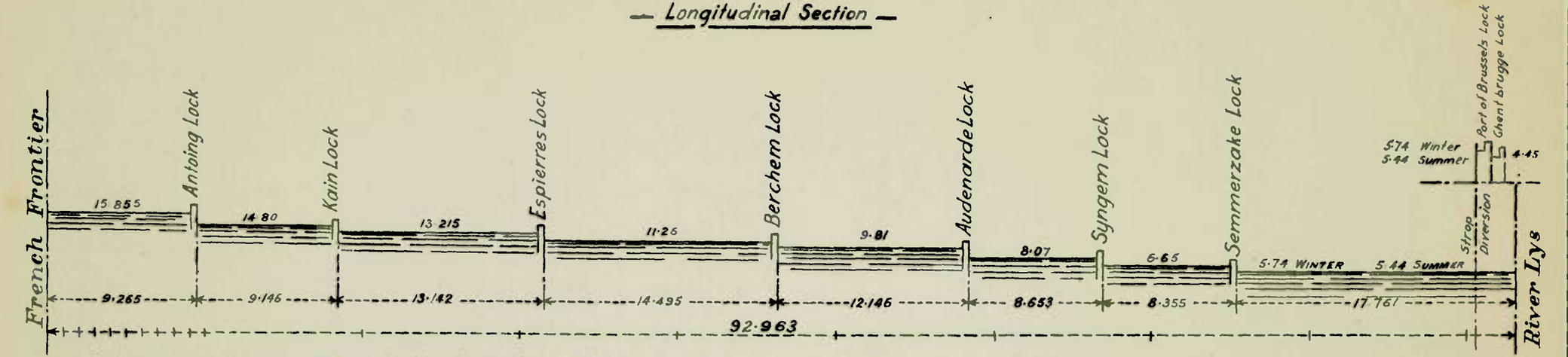
Scheldt (Upper) or Escaut River. [*See Plate* 30.]

REACHES.

Name of Reach	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
From French frontier to Antoing	0·000	9·265	9·265	Irregular	course.	18·60	12·00	2·20–2·50*	15·855	*2·20 m. above the Pommeroeul-Antoing Canal and 2·50 m. below it.
Antoing to Constantin (Kain) ...	9·265	18·411	9·146	...	...	19·50	Do.	2·50	14·80	
Constantin to Espierres ...	18·411	31·553	13·142	...	...	20·00	Do.	Do.	13·215	
Espierres to Berchem Lock ...	31·553	46·048	14·495	...	...	20·25	Do.	Do.	11·26	
Berchem Lock to Audenarde Lock	46·048	58·194	12·146	...	...	...	...	Do.	9·81	
Audenarde Lock to Synghem Lock	58·194	66·847	8·653	...	...	...	...	Do.	8·07	
Synghem Lock to Semmersaeke Lock	66·847	75·202	8·355	...	...	...	...	Do.	6·65	
From Semmersaeke Lock to the Lys ·										
1st Section between Semmersaeke Lock and the Strop Diversion	75·202	90·603	15·401	...	...	...	...	...	5·74 winter 5·44 summer	
2nd Section between the Strop Diversion and the Braemgaten Weir	90·603	92·403	1·800	...	...	...	7·50 minimum	2·60 summer 2·90 winter	Do.	
3rd Section: Upper Scheldt at Ghent known as the "Canal des Chaudronniers": From the origin opposite the Braemgaten Weir to the Lys	0·00	0·600	0·600	450	150	15·00 minimum	7·50 minimum	Do.	Do.	
4th Section: Strop Diversion from the origin to the Porte de Bruxelles Lock	90·603	91·554	0·951	...	0·951	15·00 about	7·50 about	Do.	Do.	

THE UPPER SCHELDT

Longitudinal Section



Depth of Water: 2·10m. Min. length of Locks: 40·30m. Min. width of Bridges & Locks: 5·30m.
Minimum clear headroom under fixed bridges: 4·25m. Under the fixed bridges on the Strop Diversion at Ghent: 2·87m.

Vertical Scale 1m.m. = 1meter
Longitudinal Scale 3mm = 1kilom.

REGULATIONS FOR THE GHENTBRUGGE LOCK

1. The Lock is opened as soon as the water level downstream of the Lock reaches or exceeds, with rising tide, the 2·75m mark (Belgian Datum). The Lock is closed when with falling tide, the level falls below 3·25m
2. The Lock is operated at night time at high water level to the extent of opening the downstream gates in order to let boats out which have come in during the day and of closing the gates as soon as the boats going upstream have entered the lock. The locking in the latter case is completed in the daytime

Plate 30.

Malby & Sons Lith

Scheldt (Upper) River—continued.

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills. Upstream. Depth below water level upstream in metres.	Mitre Sills. Down stream. Depth below water level down stream in metres.	Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks
							Min. Sec.	Min. Sec.					
Antoing	9·265	3·30	2·85	1·055	6·50	41·50	1 30	15 0	Stone pitching	Sluice valves	10·00 m. stone pitching	10·00 m. stone pitching	
Constantin (Kain)	18·411	3·00	2·50	1·585	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	
Espierres... ...	31·553	3·02	2·50	1·955	Do.	Do.	Do.	Do.	Do.	Do.	Do.	Do.	
Berchem ...	46·048	3·95	2·50	1·45	Do.	41·74	...	...	Vertical walls with brick and stone copings	Do.	10·00 m. pitching and fascines	20·00 m. pitching and fascines	
Audenarde ...	58·194	...	...	...	Do.	Do.	...	...	...	...	...	...	
Synghem... ...	66·847	3·92	2·50	1·74	Do.	Do.	...	...	Vertical walls with brick and stone copings	Sluice valves	10·00 m. pitching and fascines	20·00 m. pitching and fascines	
Semmersaeke ...	75·202	...	...	Summer 1·21 Winter 0·91	Do.	Do.	...	...	...	...	...	...	
Porte de Bruxelles Lock, on the Strop Diversion	About 1 km. from beginning of Diversion	...	...	Summer 0·99 Winter 1·29	6·50	41·50	...	...	...	...	...	...	See sketch on Plate 12.

Scheldt (Upper) River—continued.

WEIRS.

Name of Weir.	Distance in kiloms.	Navigable Passage.			Spillway.				Remarks
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Number and width of openings.	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Antoing	9·265	2 of 4·50	Baulk	2·02	...	...	...	...	
	9·307	1 of 5·20	Do.	3·30	...	...	...	...	
	...	1 of 7·40	Sluice	2·03	...	...	...	...	
	...	divided into 4 openings of 1·65 Total outlet 20·80							
Constantin	18·411	4 of 5·00	Baulk	4·44	...	...	...	...	
Espierres	31·553	2 of 5·10 2 of 5·40 1 of the latter is divided into 3 openings of 1·50. Total 20·10	Sluices in the subdivided opening. Baulks for the 3 others.	4·46	...	...	...	...	
Autryve	39 214	2 of 5·20 2 of 5·30 Total 21·00	Baulk	2·525	...	...	...	...	
Berchem	46·048	...	...	...	4 10 m. long and 5m. wide	...	Baulks	...	
Audenarde	58·194	1 of 5·90	Baulk	Variable 0·00 to 2·60	1 of 5·85	...	Do.	Variable, maximum 2·60	
Synghem	66·847	...	...	...	4 11 m. long and 5m. wide	...	Do.	...	
Semmersaeke	75·202	1 of 5·40	Baulk	Variable 0·00 to 2·00	4 of 5·20 m.	...	3 openings closed by baulks and 1 by sluices	Variable, maximum 2·00	
Braemgaeten, in Ghent, between Upper Scheldt and Reep branch (Lower Scheldt)	92·403	...	...	...	5 of 2·50 3 of 1·60	...	Sluices	2·03 summer 1·21 winter	
Porte de Bruxelles Weir	91·554	...	Baulk	...	...	...	...	...	

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction	
		Metres.		Metres.	Metres.		
Laplaigne Sugar Works Quay	0·920	2·00	Wall	39·00	30·00	Macadam	
Public Wharf, Bleharies	2·000	2·25	Earth slope	140·00	50·00	Earth	
Bleharies Sugar Works...	2·500	2·15	Do.	100·00	9·75	Macadam	
Public Wharf, Hollain Wharf	4·600	2·06	Do.	150·00	15·00	Earth	
Benoit, Coublet & Co.'s Wharf at Hollam ...	5·000	2·07	Do.	88·00	10·00	Do.	
Legrain Company's Wharf, Bruyelles ...	8·000	1·93	Do.	65·00	Do.	Macadam	
Public Wharf, Bruyelles	8·300	3·19	Do.	100·00	9·75	Do.	
Crêve Coeur Public Wharf, Péronnes ...	8·800	1·81	Do.	250·00	30·00	Do.	
Duthoit's Wharf, Antoing	9·200	2·51	Do.	50·00	10·00	Do.	
Public Wharf, Calonne	10·000	Do.	Do.	200·00	20·00	Do.	
Antoing Sugar Works Wharf	10·050	1·91	Do.	150·00	3·50	Earth	
Lenain Wharf, Calonne	10·200	Do.	Do.	50·00	10·00	Macadam	
Picha's Wharf, Antoing	10·400	1·71	Do.	40·00	15·00	Do.	
Coucou Quarries Wharf, Vaulx	10·900	1·81	Do.	300·00	40·00	Do.	
Duthoit-Dereux Quay, Calonne	11·400	1·30	Wall	97·30	30·00	Do.	
Lehon's Wharf, Vaulx	Do.	2·03	Earth slope	135·00	20·00	Do.	
Duthoit Bros. Wharf, Chercq	11·700	1·81	Do.	340·00	50·00	Do.	
Duquenne's Wharves, Vaulx	Do.	1·67	Do.	51·00	50·00	Do.	
	11·800	1·99	Do.	50·00	15·00	Do.	
Zorn, Dapsens & Co.'s Quay and Wharf, Chercq	11·900	Do.	Wall	60·00	40·00	Do.	
			Earth slope	110·00	Do.	Do.	
Dapsen's Wharf, Vaulx	12·400	1·51	Do.	300·00	50·00	Paving and macadam	
Duquenne's Wharf, Tournai	12·800	1·67	Do.	65·00	10·00	Macadam	
Delvigne's Wharf, Chercq	12·900	1·91	Do.	40·00	10·00	Do.	
Goblet & Co.'s Wharf, Tournai	13·300	1·57	Do.	320·00	100·00	Do.	
Dumont & Co.'s Quay and Wharf, Tournai ...	13·500	1·20	Wall	46·00	20·00	Do.	
			Earth slope	260·00	Do.	Do.	
Duthoit Bros. Wharf, Tournai	13·900	1·46	Do.	150·00	15·00	Do.	
Dumont & Co.'s Wharf, Tournai	Do.	Do.	Do.	46·00	20·00	Do.	
Dapsen's Wharf, Tournai	14·300	1·39	Do.	30·00	10·00	Do.	
Tournai Quays	16·200	1·70 to 3·10	Walls	1,719·00	8·20	Paving	
Gasworks Wharf, Kain	17·600	1·01	Earth slope	48·00	10·00	Macadam	
Carbonnelle Bros. Wharf, Kain	17·700	Do.	Do.	40·00	16·00	Do.	
Lefebvre Bros. Wharf, Kain	19·090	2·88	Do.	28·00	13·00	Do.	

Scheldt (Upper) River—continued.

WHARVES AND QUAYS—continued.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Constantin Public Wharf, Kain	19·100	2·88	Earth slope	18·00	9·75	Macadam	
Public Wharf, Pont-à-Chin	21·750	2·70	Do.	110·00	30·00	Do.	
Leaucourt Public Wharf, Hérinnes	25·200	2·19	Do.	40·00	9·75	Do.	
Public Wharf, Pecq	26·700	2·02	Do.	170·00	20·00	Paving and macadam	
Public Wharf, Warcoing	29·700	1·85	Do.	40·00	30·00	Earth	
Public Wharf, Hérinnes	30·800	2·05	Do.	Do.	9·75	Paving and macadam	
Helchin Sugar Works Wharf	31·900	3·29	Do.	115·00	27·00	Macadam	
Helchin Public Wharf	33·200	2·73	Do.	40·00	10·00	Earth	
Pottes Public Wharf	34·000	2·81	Do.	Do.	Do.	Macadam	
Bossuyt Public Wharf	37·300	2·69	Do.	Do.	Do.	Earth	
Autryve Public Wharf	39·200	3·21	Do.	Do.	Do.	Macadam	
Escanaffles Public Wharf	40·600	Do.	Do.	95·00	25·00	Do.	
Avelghem Wharf	41·258	No fixed level	Do.	20·00	6·00	Macadam and rubble	
Kerkhove Wharf	46·423	Do.	Do.	80·00	9·00	Earth and paving	
Berchem Wharf	Do.	Do.	Do.	50·00	10·00	Earth	
Grykoort Distillery Wharf, Berchem... ...	47·048	Do.	Do.	40·00	12·00	Macadam and rubble	
Peteghem Wharf	52·022	Do.	Do.	35·00	10·00	Do.	
Melden Ferry Wharf	53·972	Do.	Do.	20·00	2·50 to 6·00	Do.	
Leupeghem Wharf	57·094	Do.	Do.	80·00	15·00	Do.	
Audenarde Entrance Wharf	57·704	Do.	Do.	35·00	Do.	Paving	
Audenarde Harbour	59·225	Do.	Timber revetment	250·00	12·00 to 18·00	Do.	
Eenaeme Wharf	59·260	Do.	Earth slope	60·00	8·00	Macadam and rubble	
Eyne Wharf, Aucre	61·850	Do.	Do.	80·00	Do.	Do.	
Heurne Wharf, Den Heuvel	63·941	Do.	Do.	60·00	10·00	Do.	
Synghem Wharf	66·650	Do.	Do.	50·00	12·00	Do.	
De Vos Wharf, Meilegem	68·392	Do.	Do.	40·00	8·00	Do.	
Gavre Bridge	71·927	Do.	Do.	60·00	13·00	Do.	
Semmersaeke Wharf	76·217	Do.	Do.	20·00	50·00	Earth	
Vurste Wharf	77·417	Do.	Do.	50·00	12·00	Do.	
Melsen Wharf	77·917	Do.	Do.	80·00	10·00	Do.	
Seeverghem-Schelderode Wharf	80·317	Do.	Do	25·00	12·00	Do	

Swynaerde Wharf	84·158	Do.	Do.	120·00	10·00 to 20·00	Do.
Kuil Wharf, Meirelbeke	86·058	Do.	Do.	100·00	12·00	Do.
Ledeberg Wharf	89·658	Do.	Do.	30·00	15·00	Do.
Strop Wharf, Ghent	90·300	Do.	Do.	75·00	6·00	Do.
Terplaeten Wharf, Ghent	91·228	2·30	Do.	150·00	10·00	Earth and pavin
Petit Toquet Wharf, Ghent	92·178	2·00	Do.	140·00	7·00	Earth

Semois River.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
From Deleau Mill above Herbeumont to Linglez Bridge	0·000	2·755	2·755	...	Do.	Variable		0·40 minimum	...	Practically no navigation is carried out upon this river. During a few weeks in the year in autumn and spring floats of wood are brought down the river. There is no proper tow-path along the river. The openings of the weirs are such as only to permit the passage of floats. Floods usually occur in December and January, the water rising 3 m. to 3·5 m. above the ordinary level.
Linglez Bridge to Cugnon Bridge	2·755	4·898	2·143	...	Do.	Do.		Do.	...	
Cugnon Bridge to Dohan Bridge	4·898	17·658	12·760	...	Do.	Do.		Do.	...	
Dohan Bridge to France Bridge at Bouillon	17·658	31·907	14·249	...	Do.	Do.		Do.	...	
France Bridge to the Old Bouillon Bridge	31·907	32·425	0·518	...	Do.	Do.		Do.		
Old Bouillon Bridge, the boundary of Namur Province	32·425	57·136	24·711	...	Do.	Do.		Do.	...	
Boundary of Namur Province to Alle Bridge	57·136	58·511	1·375	...	Do.	45 m. minimum	Variable	0·50 minimum	...	
Alle Bridge to Vresse Bridge ...	58·511	64·814	6·303	...	Do.	35·0	Do.	0·50 to 0·60	...	
Vresse Bridge to Membre Bridge	64·814	68·665	3·851	...	Curved	45·0	Variable	...	...	
Membre Bridge to Bohan Bridge	68·665	75·476	6·811	...	Do.	35·0	Do.	0·60	...	
Bohan Bridge to French frontier	75·476	77·598	2·122	...	Do.	50·0	Do.	Do.	...	
Section forming the frontier between France and Belgium	77·598	80·584	2·986	...	Do.	Do.	Do.	Do.	...	

Semois River--continued.

WEIRS.

Name of Weir.	Distance in kiloms.	Passages. Openings in metres	Passages. Type of Weir	Passages. Difference between head and tail race in metres.	Spillway. Length in metres	Spillway. System of closing. Fixed.	Spillway. System of closing. Adjustable.	Spillway. Difference between head and tail race in metres.	Remarks.
Deleau Mill, above Herbeumont	0·000	8·00	Baulk	0·80	.	..	...	.	
Cugnon Mill	4·762	Do.	Do.	Do.	...	...	...	...	
Dohan Mill	17·115	11·00	Do.	0·95	...	...	...	...	
Pêcherie du Gaty	23·870	8·00	Do.	0·70	...	...	...	...	
Bouillon Mill	31·687	Do.	Do.	1·00	...	...	...	...	
Pêcherie Francier	34·374	Do.	Do.	0·60	. .	...	...	...	
Epine Mill	37·236	Do.	Do.	0·65	.	...	...	...	
Pêcherie Frérai	44·501	Do.	Do.	0·90	. .	...	...	...	
Poupehan Mill	48·461	Do.	Do.	0·85	.	...	...	...	
Frahan Mill	51·466	Do.	Do.	0·50	...	...	...	...	
Alle Mill	58·450	10·00	Do.	0·80	. .	...	...	...	
Bohan Mill	75·350	9·00	Do.	Do.	..	..	..	...	

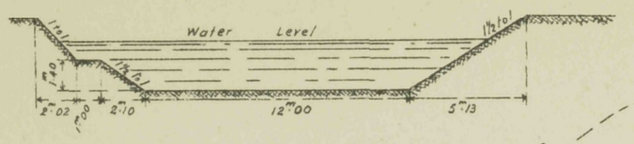
Stekene Canal.

REACHES.

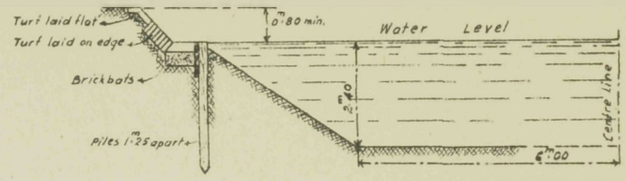
Name of Reach.	Distance in kiloms. Beginning of Reach	Distance in kiloms. End of Reach.	Length in kiloms. Total.	Length in kiloms. Straight.	Length in kiloms. Curved.	Width in metres. At water level.	Width in metres. At bed level.	Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
From Stekene to the Junction with the Moervaert	0·000	4·948	4·948	3·448	1·500	8·50	5·00	1·30 summer 1·75 winter	3·30 3·75	This canal is in free communication with the Moervaert and is also therefore subject to tidal fluctuations.

CANAL FROM TURNHOUT TO ANTWERP

TYPICAL CROSS SECTION
On 1st Section

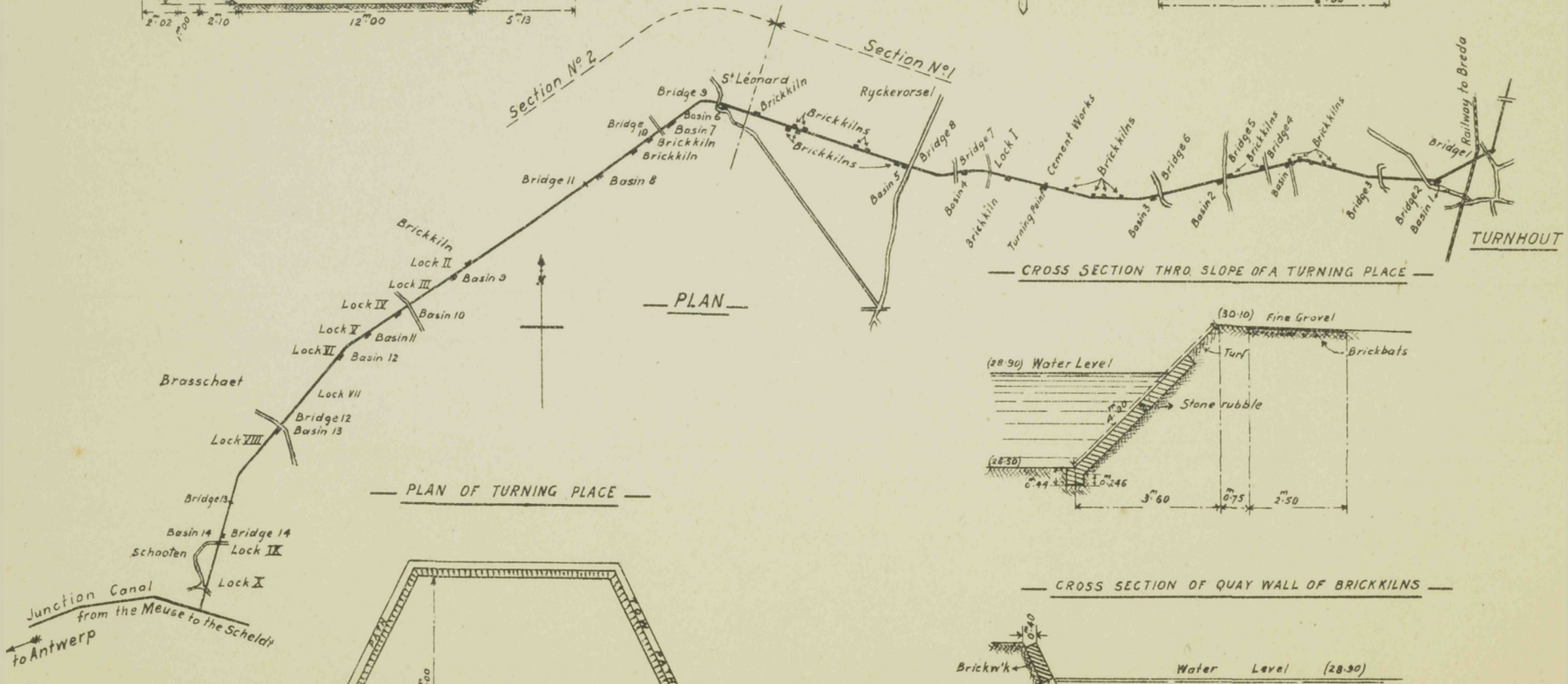


TYPICAL CROSS SECTION
On 2nd Section

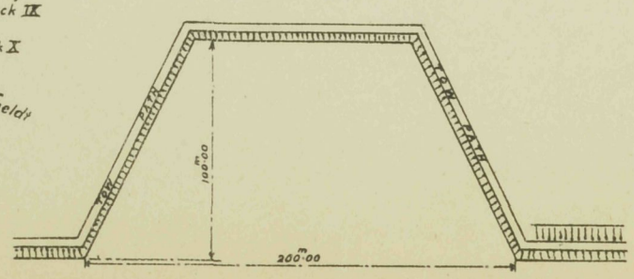


See also Plates Nos 24 & 33.

PLAN



PLAN OF TURNING PLACE



CROSS SECTION THRO. SLOPE OF A TURNING PLACE

CROSS SECTION OF QUAY WALL OF BRICKKILNS

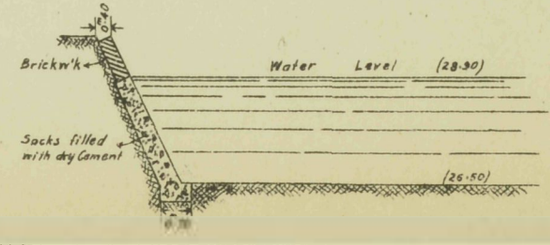


Plate 31.

Stekene Canal—continued.

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
		Metres.		Metres.	Metres.		
Stekene Quay, right bank	4·948	1·80 winter, 2·25 summer	Timber revetment	37·60	20·00	Earth	

Turnhout—Antwerp Canal. [*See Plates* 24, 31 *and* 33.]

REACHES

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total	Straight.	Curved.	At water level.	At bed level.			
Reach No. 1	0·000	12·527	12·527	11·248	1·279	14·95	10·00	2·40	29·02	
Reach No. 2	12·527	26·900	14·373	13·023	1·310	16·30	Do.	Do.	28·02	
Reach No. 3	26 900	27·650	0·750	0·750	...	Do.	Do.	Do.	25·52	
Reach No. 4	27·650	28·408	0·758	0·758	...	Do.	Do.	Do.	23·02	
Reach No. 5	28·408	29·305	0·897	0·897	...	Do.	Do.	Do.	20·27	
Reach No. 6	29·305	30·120	0·815	0·815	...	Do.	Do.	Do.	17·77	
Reach No. 7	30·120	31·088	0·968	0·785	0·183	Do.	Do.	Do.	15·27	
Reach No. 8	31·088	33·505	2·417	2·417	...	Do.	9·95	Do.	12·77	
Reach No. 9	33·505	35·923	2·418	2·128	0·290	Do.	Do.	Do.	10·52	
Reach No. 10	35·923	36·749	0·826	0·826	...	Do.	10·000	Do.	8·02	
Reach No. 11	36·749	37·332	0·583	0 583	...	Do.	Do.	Do.	4·97	

Turnhout Branch Canal. [*See Plates* 32 *and* 33.]

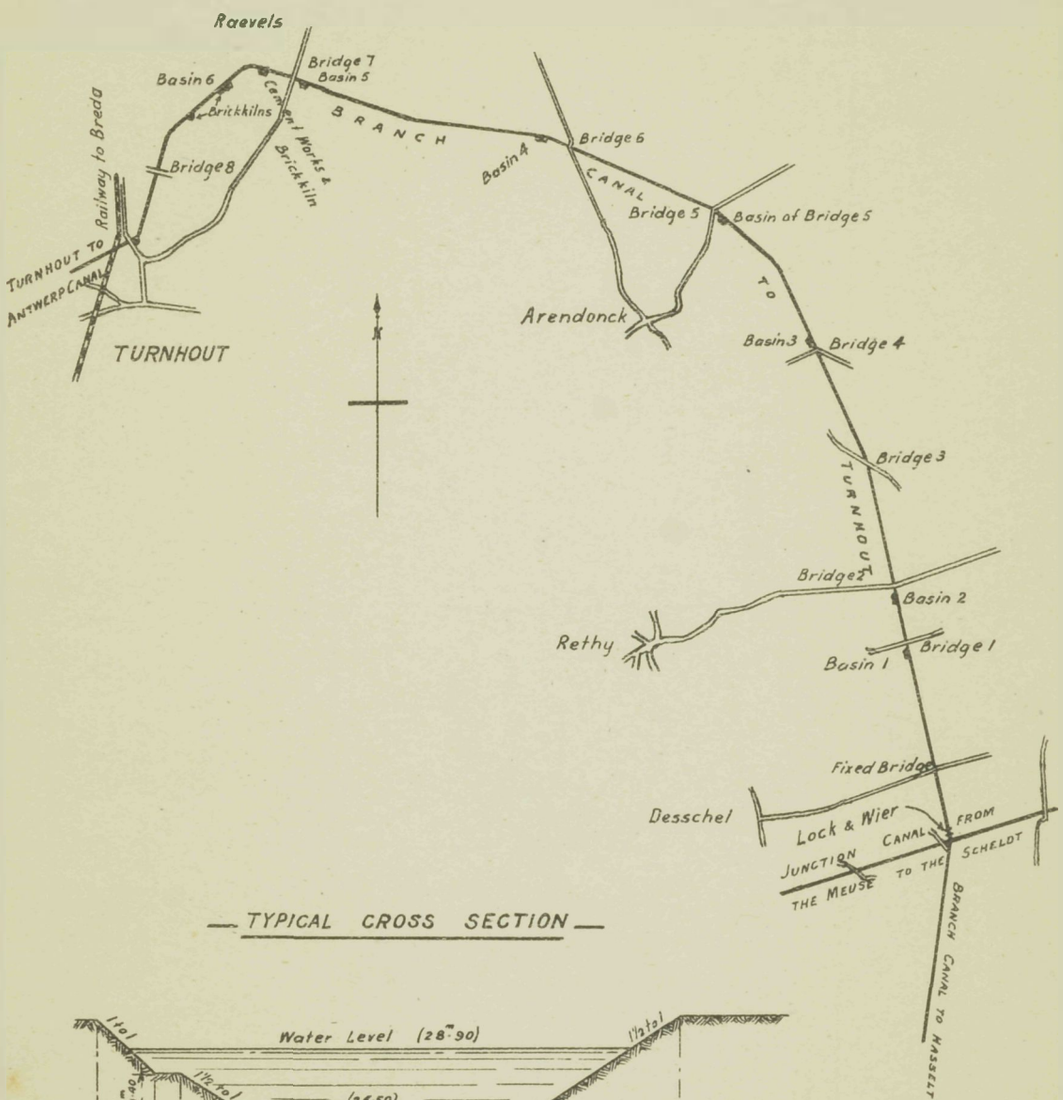
REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Origin at the Junction with the Meuse-Scheldt Junction Canal to the junction with the Turnhout-Antwerp Canal	0·000	25·825	25·825	22·950	2·875	19·00	12·00	2·40	29·02	

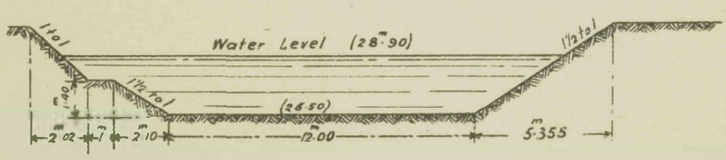
LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Desschel	0·00	2·10	...	0·45	5·50	44·60	Min. Sec. 7 0	Min. Sec. 30 0	Brick	1 sluice to each leaf, 1·00 m. × 0·80 m.	...	...	The lock is generally open, there being no more fall.

BRANCH CANAL TO TURNHOUT.



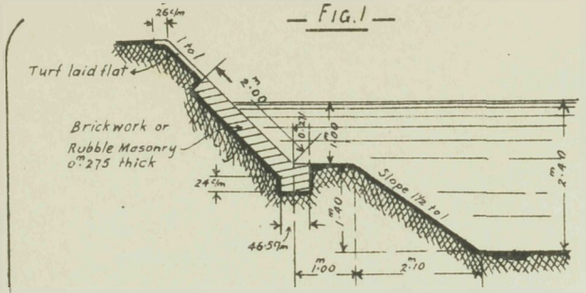
TYPICAL CROSS SECTION



Type of Bank Protection — Branch Canal to Turnhout

These Types of Protection are also used on the first 18·5 kilos of THE TURNHOUT TO ANTWERP CANAL

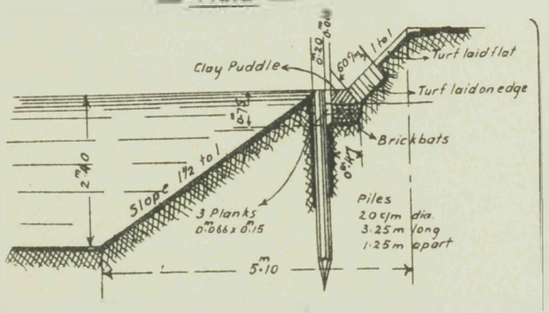
— Fig. 1 —



— Soil —

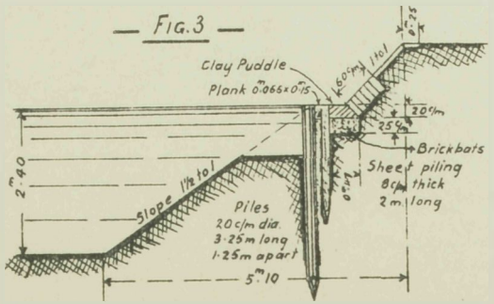
Sand impregnated with water and resting at times on banks of clay

— Fig. 2 —

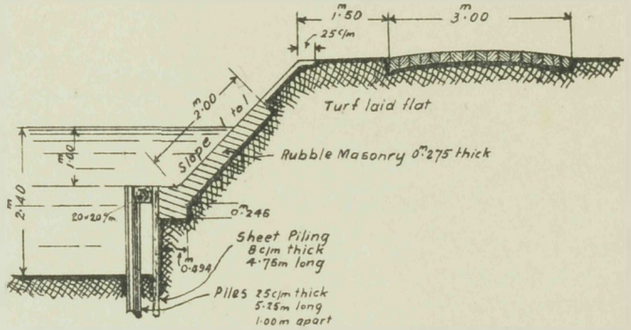


for first 8 Kilos

— Fig. 3 —

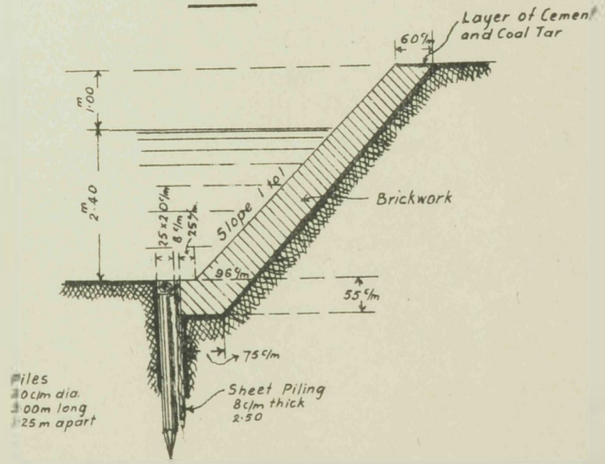


— Fig. 4 —



— Protection in a Lay-by —

— Fig. 5 —



— Unloading Basin —

Plate 33.

Turnhout Branch Canal—continued.

WEIRS.

Name of Weir.	Distance in kiloms.	Spillway. Number and width of openings in metres.	Spillway. Type of Weir.	Spillway. Difference between head and tail race in metres.	Spillway. Length in metres.	Spillway. System of closing. Fixed.	Spillway. System of closing. Adjustable.	Spillway. Difference between head and tail race in metres.	Remarks.
Spillway at Springsputloop	0·40	1 of 2·00.	Baulks in grooves	Level of Canal	...	...	...	...	These spillways are built above the siphons, and are covered by arches, the width of which equals that of the towpath.
Spillway on the Aa	22·800	1 of 1·00.	Do.	Do.	...	...	...	...	

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay. Width.	Quay. Construction.	Remarks.
		Metres.		Metres.			
Desschel Dock	3·667	1·00	...	200·00	50·00	Natural ground	Area of 4,500 sq. m.
Rethy Dock	4·722	Do.	...	175·00	Do.	Do. Approach paving 85·00 × 3·00	Do. 5,000 do.
Arendonck Dock	9·736	Do.	...	250·00	Do.	Natural ground	Do. 6,510 do.
Raevels Dock	20·850	Do.	...	238·00	62·00	Do. Approach paving 155·00 × 3·00	Do. 7,500 do.
Turnhout Dock	25·825	Do.	...	450·00	50·00	Do. Approach paving 440·00 × 3·00	Do. 25,400 do.

Ypres—Yser Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Ypres Dock to Boesinghe Lock	0·000	6·503	6·503	...	...	36·0 at Ypres Dock 36·0 near Boesinghe Lock	... 18·0	2·25	9·80	
Boesinghe Lock to Junction with the Yser	6·503	15·241	8·738	...	...	16·0	6·0	1·70	3·08	

LOCKS.

Name of Lock.	Distance in kiloms.	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock-wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks.
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
Boesinghe ...	6·503	3·90 upstream lock. 6 71 sill of middle gate	1·70	6·72	6·50	37·00	In summer with reservoirs 45 m. In winter without reservoirs 30 m.	In summer with reservoirs 1 h. 30m. In winter without reservoirs 55 m.	Brick, with stone copings	2 feeding penstocks. 2 discharge penstocks. 1 sluice in each of the upstream and downstream gates.	7·0 m. wood	20·0 m. wood	This lock has 3 pairs of gates. The 2 upstream pairs are 3 m. one from the other.

Yser River.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Rousbrugge to Nieuport ...	0·000	45·277	47·277	15·280	29·997	11·00 from the frontier to the Yperlee 14 m. to Crekelbeek 20 m. to Nieuport	7·00	1·30 m. Rousbrugge to Fintelle 1·40 Fintelle to Dixmude 1·75 Dixmude to Nieuport	3·081	Boats frequenting the Yser are generally 13 m. long and 3·80 m. beam. Sometimes boats 40 m. long and 5 m. beam use this waterway.

LOCKS.

Name of Lock.	Distance in kiloms	Mitre Sills.		Fall in metres.	Width of Lock in metres.	Useful length of Lock in metres.	Time taken to fill the Lock.	Time taken to pass through Lock.	Type of Lock wall.	Whether Sluice Valves or Penstocks are provided.	Up stream approach to Lock.	Down stream approach to Lock.	Remarks
		Upstream. Depth below water level upstream in metres.	Down stream. Depth below water level down stream in metres.										
"Ypres" Lock at Nieuport	45·277 from French Frontier	3·02 below low water	4·702 below l.w.s.t.	Varies	8·50	45·10	Min. Sec. 10 0	Min. Sec. 20 0	Wall of bricks, sills of stone	4 penstocks, 8 sluices	7·5 m. fascine and pitching	7·65 m. concrete, covered by brick and pitching	This lock has 2 pairs of flood and 2 pairs of ebb gates. Adjacent to this lock is a drainage lock.

Yser River—continued.

WEIRS.

Name of Weir.	Distance in kiloms.	Spillway.			Navigable Passage.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in metres.	Length in metres	System of closing.		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Fintelle Spillway	13·290	4 of 2·0	Sluice	Generally 0·70 but varies	...	...	...	...	
Knocke Bridge Weir... ...	19·780	3 of 6·0	...	...	...	...	...	...	
Niewendamme Spillway ...	44·772	...	Sluices	Generally 2·18 but varies	...	...	...	...	This spillway is for draining the Yser into the Niewendamme Moat.
Drainage Lock adjacent to the "Ypres" Well at Nieuport	45·277	5 of 2·10	Do.	Varies	...	...	...	...	This lock serves to drain the Yser into the outer harbour

WHARVES AND QUAYS.

Name of Wharf or Quay.	Distance in kiloms.	Level of Wharf above normal water level.	Type of Wharf or Quay wall.	Length of Wharf or Quay.	Quay.		Remarks.
					Width.	Construction.	
	From French Frontier.	metres.		metres.	metres.		
Rousbrugge, right bank	3·200	1·75	Brick revetments	30·00	10·00	Earth	
Rousbrugge, left bank	Do.	2·00	Wall Brick revetments 2 timber stages	12·00 62·00 4·00	20·00	Paving	
Stavele, right bank	8·085	1·50	Brick revetments	45·00	10·00	Earth	
Elsendamme, right bank	12·010	1·80	Earth embankment	35·00	9·00	Do.	
La Fintelle, left bank	13·290	2·30	Do.	...	8·00	Do.	
Knocke, left bank	19·780	2·50	Do.	...	Do.	Do.	
Dixmude, right bank	27·720	2·00	Do.	160·00	10·00	Paving	
Dixmude, left bank	Do.	2·25	Do.	...	...	Sanded	

Tervaete, left bank	34·177	Do.	Earth embankment, timber staging	3·50	7·00	Earth	
Schoorbakke, left bank	38·117	2·00	Earth embankment	...	7·00	Paving	
Mannekensvere, right bank	42·077	1·90	Do.	...	6·00	Earth	
St. Georges, right bank	42·577	1·65	Earth embankment and landing stage	3·75	5·00	Do.	
Nieuport, right bank	44·797	Do.	Do.	Do	15·00	Do.	

Zuidleede Canal.

REACHES.

Name of Reach.	Distance in kiloms.		Length in kiloms.			Width in metres.		Depth of water in metres.	Level of water referred to Belgian ordnance datum.	Remarks.
	Beginning of Reach.	End of Reach.	Total.	Straight.	Curved.	At water level.	At bed level.			
Junction with the Moervaart to Spletterspput Pass on the Durme	0·000	12·730	12·730	...	...	7·00	4·00	1·10 summer 1·50 winter	*Upstream.* 3·80 summer 4·20 winter *Downstream* 3·55 summer 3·85 winter	The Zuidleede is subject to tidal fluctuations at its downstream end and is in free communication with the Moervaert Canal and the Durme. Boats frequenting the Zuidleede have generally the following dimensions: Above Etbosch Bridge, 8 to 15 m. long, 2·15 m. beam, and 0·85 to 1·10 m. draught. Below Etbosch Bridge, 8 to 15 m. long, 3·60 to 4·15 m. beam and 1·0 to 1·25 m. draught. The clear headroom under bridges and the variation in water level determine the size of boat.

WEIRS.

Name of Weir.	Distance in kiloms.	Passage.			Spillway.				Remarks.
		Number and width of openings in metres.	Type of Weir.	Difference between head and tail race in Metres.	Length in Metres.	System of closing		Difference between head and tail race in metres.	
						Fixed.	Adjustable.		
Saffelaere	3·984	1 of 3·80	Baulk	...	...	...	...	...	Only used for irrigation purposes.

TIDAL TABLES.

OBSERVATIONS OF TIDES IN THE SCHELDT IN 1909.

Observation Stations.	January Average.		February Average.		March Average.		April Average.		May Average.		June Average.		July Average.		August Average.	
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.
Lillo	4·78	0·35	4·77	0·23	4·77	0·28	4·78	0·21	4·66	0·16	4·75	0·22	4·87	0·39	4·84	0·31
Fort Philippe	4·76	0·30	4·77	0·23	4·78	0·28	4·79	0·21	4·69	0·15	4·74	0·23	4·88	0·39	4·84	0·32
Anvers (Kattendijk)	4·79	0·35	4·77	0·24	4·79	0·29	4·80	0·21	4·70	0·16	4·75	0·23	4·89	0·39	4·85	0·31
Anvers (Quai St. Michel)	4·77	0·36	4·75	0·24	4·76	0·29	4·78	0 21	4·67	0·16	4·73	0·24	4·85	0·37	4·83	0·32
Hemixem	4·75	0·39	4·73	0·29	4·76	0·33	4·75	0·25	4·65	0·19	4·71	0·25	4·88	0·38	4·81	0·34
Tolhuis (Rupel)	4·76	0·43	4·73	0·34	4·76	0·38	4·75	0·28	4·64	0·21	4·69	0·26	4·85	0·43	4·79	0·36
Tamise	4·73	0·51	4·67	0·41	4·71	0·46	4·71	0·35	4·60	0·27	4·66	0·34	4·81	0·48	4·74	0·40
Baesrode	4·64	1·18	4·61	**1·15**	4·67	1·22	4·62	1·04	4·52	0·93	4·57	0·96	4·73	1·15	4·66	1·04
Termonde	4·54	1·71	4·46	1·63	4·52	1·75	4·51	1·54	**4·37**	1·38	4·40	1·41	4·57	1·61	4·49	1·49
Schoonaerde	4·28	2·17	4·19	2·01	4·30	2·19	4·29	1·94	4·07	1·74	4·08	1·73	4·30	1·92	4·18	1·78
Uitbergen	4·30	2·31	4·05	2·09	4·26	2·33	4·23	1·99	**3·99**	1·75	3·98	1·75	4·20	1·98	4·06	1·85
Wetteren	4·13	2·54	4·02	2·28	4·23	2·60	4·20	2·24	**3·85**	1·91	3·82	1·89	4·10	2·13	3·94	1·97
Melle	4·23	2·78	4·20	**2·54**	4·35	2·88	4·33	2·46	3·99	2·03	3·92	1·98	4·23	2·27	4·10	2·06
Gentbrugge	4·30	2·99	4·26	2·67	4·46	3·13	4·46	2·66	4·10	2·02	4·04	1·94	4·37	2·34	4·18	2·05

N.B.—The levels are referred to a point 2·978 m. above the sill of the Kattendyck sea-lock at Antwerp. This differs little from the datum of the Belgian Ordnance Survey.

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TIDAL TABLES—continued.

OBSERVATIONS OF TIDES IN THE SCHELDT IN 1909—continued.

Observation Stations.	September Average.		October Average.		November Average.		December Average.		Annual Mean Tide.		Mean Amplitude of Tide.	Highest Tides. High.		Lowest Tides. Low.	
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.		Dates.	Levels.	Dates.	Levels.
Lillo	4·77	0·28	4·87	0·36	4·84	0·40	4·93	0·42	4·80	0·30	4·50	26/3	6·23	4/4	— (0·38)
Fort Philippe	4·77	0·28	4·86	0·35	4·85	0·40	4·94	0·42	4·81	0·30	4·51	26/3	6·25	4/4	— (0·38)
Anvers (Kattendijk)	4·76	0·29	4·90	0·37	4·85	0·40	4·94	0·43	4·83	0·31	4·52	26/3	6·25	4/4	— (0·37)
Anvers (Quai St. Michel)	4·75	0·29	4·86	0·37	4·82	0·40	4·93	0·43	4·79	0·31	4·48	26/3	6·23	4/4	— (0·38)
Hemixem	4·74	0·33	4·86	0·42	4·82	0·46	4·92	0·53	4·78	0·35	4·43	26/3	6·15	4/4	— (0·32)
Tolhuis (Rupel)	4·74	0·35	4·86	0·45	4·83	0·52	4·92	0·59	4·78	0·38	4·40	26/3	6·15	4/4	— (0·27)
Tamise	4·70	0·40	4·83	0·52	4·79	0·60	4·87	0·69	4·73	0·45	4·28	26/3	6·03	4/4	— (0·20)
Baesrode	4·64	1·07	4·74	1·18	4·68	1·24	4·82	1·52	4·66	1·14	3·52	26/3	5·85	1/1	0·62
Termonde	4·47	1·52	4·61	1·69	4·57	1·78	4·81	2·30	4·53	1·65	2·88	26/3	5·63	27/5	1·13
Schoonaerde	4·18	1·83	4·34	2·03	4·33	2·13	4·62	2·83	4·26	2·03	2·23	26/3	5·20	28/6	1·50
Uitbergen	4·03	1·90	4·21	2·19	4·17	2·27	4·58	3·26	4·17	2·14	2·03	26/3 29/12	5·01	10/9 28/6	1·53
Wetteren	3·94	2·01	4·19	2·31	4·28	2·48	4·64	3·56	4·11	2·33	1·78	29/10	5·05	28/5–6	1·67
Melle	4·02	2·13	4·32	2·45	4·40	2·70	4·77	3·88	4·21	2·51	1·73	29/12	5·18	28/5–6	1·77
Gentbrugge	4·17	2·14	4·41	2·64	4·50	2·97	4·97	4·40	1·35	2·66	1·69	29/12	5·48	28/5	1·72

N.B.—The levels are referred to a point 2·978 m. above the sill of the Kattendyck sea-lock at Antwerp. This differs little from the datum of the Belgian Ordnance Survey.

TIDAL TABLES.

OBSERVATIONS OF TIDES DURING 1909 IN THE TRIBUTARIES OF THE SCHELDT.

Affluents.	Observation Stations.	January Average.		February Average.		March Average.		April Average.		May Average.		June Average.		July Average.		August Average.	
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.
Rupel ...	Boom	4·77	0·69	4·73	0·68	4·75	0·67	4·74	0·51	4·65	0·41	4·69	0·45	4·85	0·65	4·79	0·59
	Rumpst	4·77	1·21	4·73	1·25	4·74	1·22	4·77	1·01	4·65	0·86	4·69	0·87	4·86	1·06	4·80	0·99
Nèthe inférieure	Duffel	4·80	1·98	4·75	2·04	4·78	1·97	4·82	1·82	4·67	1·61	4·72	1·57	4·93	1·78	4·85	1·76
	Lierre	4·56	2·60	4·67	2·90	4·65	2·72	4·69	2·59	4·51	2·29	4·51	2·08	4·75	2·40	4·68	2·42
Grande Nèthe	Gestel (Boeckt) ...	4·66	4·20	4·84	4·41	4·76	4·24	4·75	4·04	4·47	3·92	4·30	3·89	4·72	4·14	4·67	4·15
Petite Nèthe ...	Emblehem	4·80	3·82	4·89	4·08	4·81	3·91	4·85	3·85	4·68	3·65	4·63	3·68	4·91	3·97	4·89	3·96
Dyle	Malines	4·75	2·22	4·78	2·37	4·78	2·25	4·95	1·94	4·81	1·83	4·83	1·74	4·99	2·10	4·89	1·96
	Rymenam	5·91	5·34	6·06	5·54	5·88	5·29	5·59	4·96	5·48	4·62	5·46	4·59	5·72	5·02	5·56	4·76
Senne	Hombeek	5·08	3·10	4·85	3·09	4·82	3·18	4·95	3·06	4·85	2·99	4·88	2·93	5·04	3·02	4·99	2·95
Durme... ...	Thielrode	4·69	0·72	4·63	0·65	4·67	0·68	4·66	0·54	4·55	0·47	4·65	0·56	4·78	0·68	4·72	0·59
	Waesmunster ...	4·49	1·48	4·44	1·37	4·54	1·31	4·68	1·11	4·54	1·00	4·61	1·02	4·77	1·16	4·69	1·08
	Daknam	3·77	3·41	3·82	3·44	3·92	3·45	4·07	3·44	3·93	3·07	3·86	2 82	4·00	3·00	3·95	2·93
Moervaert ...	Sinaybrug	3·72	3·55	3·76	3·66	3·73	3·57	3·86	3·62	3·66	3·21	3·52	2·99	3·66	3·21	3·60	3·15
	Coudenborn ...	3·71	3·60	3·78	3·62	3·81	3·66	3·81	3·66	3·53	3·31	3·36	3·10	3·61	3·32	3·57	3·19
Zuidlecde ...	Steenebrug ...	3·54	3·53	3·58	3·56	3·58	3·56	3·64	3·62	3·38	3·37	3·11	3·10	3·30	3·29	3·26	3·25

N.B.—The levels are referred to a point 2·978 m. above the sill of the sea-lock of the Kattendyke at Antwerp. This differs little from the datum of the Belgian Ordnance Survey. At Rymenam there are rarely proper tides. The levels given refer to the highest and lowest water lines noted from day to day.

TIDAL TABLES.—continued.

OBSERVATIONS OF TIDES DURING 1909 IN THE TRIBUTARIES OF THE SCHELDT.—continued.

Affluents.	Observation Stations.	September Average.		October Average.		November Average.		December Average.		Annaul Mean Tide.		Mean Amplitude of Tide.	Highest Tides. High.		Lowest Tides. Low.	
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.		Dates.	Levels.	Dates.	Levels.
Rupel	Boom	4·77	0·57	4·86	0·65	4·82	0·69	4·93	0·91	4·78	0 62	4·16	26/3	6·07	4/4	0·08
	Rumpst	4·76	1·00	4·89	1·10	4·84	1·15	4·97	1·58	4·79	1·11	3·68	26/3	6·00	14/5	0·60
															24/6	
Nèthe inférieure	Duffel	4·81	1·77	4·96	1·91	4·90	1·95	5·09	2·41	4·84	1·88	2·96	26/3	5·98	14/5	1·38
	Lierre	4·63	2·42	4·81	2·63	4·85	2·75	5·07	3·51	4·70	2·61	2·09	29/10	5·55	24/6	1·94
													13/11			
Grande Nèthe	Gestel (Boeckt) . .	4·67	4·12	4·84	4·22	4·87	4·22	5·17	4·94	4·73	4·21	0·52	29/12	5·54	13/5	3·67
Petite Nèthe ...	Emblehem	4·82	3·77	5·00	3·95	4·98	3·98	5·30	4·75	4·88	3·95	0·93	29/12	5·69	23/1	3·30
Dyle	Malines	4·83	1·93	4·97	2·03	4·90	2·06	5·05	2·80	4·88	2·10	2·78	29/10	5·96	27/6	1·40
	Rymenam	5·60	4·76	5·82	4·93	5·75	4·92	6·52	6·08	5·78	5·07	0·71	29/12	7·37	21/6	3·99
Senne	Hombeek	4·95	2·99	5·06	3·17	5·03	3·10	5·07	3·60	4·96	3·10	1·86	5/2	6·12	23/7	2·72
Durme... ...	Thielrode	4·67	0·58	4·80	0·70	4·75	0·79	4·83	0·96	4·70	0·66	4·04	26/3	5·91	4/4	0·13
	Waesmunster ...	4·69	1·13	4·80	1·27	4·62	1·56	4·65	1·76	4·63	1·27	3·36	26/3	5·68	28/1	0·80
	Daknam	3·99	3·08	4·06	3·35	3·89	3·52	4·00	3·83	3·94	3·28	0·66	1/9–	4·25	29/6	2·68
													9/10			
Moervaert ...	Sinaybrug	3·67	3·30	3·84	3·56	3·84	3·72	4·01	3·94	3·74	3·46	0·28	30/12	4·12	28/6	2·89
	Coudenborn ...	3·63	3·37	3·80	3·66	3·83	3·78	4·00	3·99	3·70	3·52	0·18	30/12	4·09	28/6	3·00
Zuidleede ...	Steenebrug ...	3·42	3·41	3·60	3·59	3·71	3·71	3·88	3·88	3·50	3·49	0·01	9/12	3·96	29/6	3·03

N.B.—The levels are referred to a point 2·978 m. above the sill of the sea-lock of the Kattendyke at Antwerp. This differs little from the datum of the Belgian Ordnance Survey At Rymenam there are rarely proper tides. The levels given refer to the highest and lowest water lines noted from day to day.

Tidal Tables of Belgian North Sea Ports.

TIDES OBSERVED IN 1909. MEAN DAILY OBSERVATIONS.

Stations.	Level.		Amplitude.	Duration.		Propagation.			
						High Tide.		Low Tide.	
	H.	L.				Duration.	Speed per Section.	Duration.	Speed per Section.
	m.	m.	m.	h. m.	h. m.	mins.	m.	mins.	m.
Dunkirk (tide gauge)	4·61	0·19	4·42	5 41	6 41	...	...	...	...
Nieuport (East breakwater)	4·32	0·33	3·99	5 38	6 51	15	38·7	15	38·70
Ostend :—									
1. Commercial Dock...	4·20	0·37	3·83	5 19	7 07	...	...	...	...
2. Tide gauge	4·19	0·34	3·85	5 27	6 44	...	...	...	...
Heyst (locks)	4·25	0·58	3·67	5 47	6 38	51	10	35	23·30

Stations.	Spring Tides.							Neap Tides.							High Tide.		Low Tide	
	Level.		Amplitude.	Hour.		Duration.		Level.		Amplitude.	Hour.		Duration.					
	H.	L.		H.	L.	Rising.	Falling.	H.	L.		H.	L.	Rising.	Falling.	Highest.	Lowest.	Highest.	Lowest.
	m.	m.	m.	h. m.	h. m.	h. m.	h. m.	m.	m.	m.	h. m.	h. m.	h. m.	h. m.	m.	m.	m.	m.
Dunkirk (tide gauge)	5·17	0·26	5·43	1 01	8 14	5 16	7 01	3·89	1·05	2·84	7 10	1 25	6 16	6 23	5·92	3·39	1·84	−0·76
Nieuport (East Breakwater)	4·85	0·19	5·04	1 29	8 08	5 19	Obs.	3·69	0·94	2·75	7 16	1 10	5 56	6 30	5·50	3·10	1·30	−0·42
						21 Obs.	insuff.						19 Obs.	16 Obs.				
Ostend :—																		
1. Commercial Dock	4·72	0·23	4·95	0 55	7 50	5 17	7 09	3·46	1·10	2 36	7 12	1 33	5 24	6 55	5·30	3·00	1·70	−0·60
2. Tide gauge	4·50	0·27	4·77	1 09	8 14	5 19	6 37	3·50	1·15	2·35	7 20	1 36	6 08	6 21	5·30	3·00	2·10	−0·60
Heyst (locks)	4·80	0·02	4·82	1 20	8 05	5 36	6 45	3·55	1·23	2·32	7 22	1 25	5 59	6 36	5·54	3·04	1·77	−0·24

N.B.—The levels refer to the ordinary low neap tides at Ostend datum at 1·48 m. above the sill of the Commercial Docks. For this purpose the datum for Dutch and French reference is taken at 2·50 m. and — 0·865. The spring and neap tides in this table are the highest and lowest registered at these seasons. Hours are given in average Greenwich time.

SUBSTRATA OF RIVER AND CANAL BEDS

(N.-E. FRANCE AND BELGIUM).

NOTE.—This information has been compiled from geological maps and can only be regarded as approximately correct.

Aa River	The sea to Watten : Clayey, loam in places covering a bed of peat 1 m. thick. Watten to St. Omer : Loam covering peat (latter 0·7 m. thick) covering sand.
Aire Canal	Aire : Loam, clayey in places. Near Molinghem : Brick-earth and possibly some gravel. To Mt. Bernenchon : as at Aire. To Hinges : Plastic clay. Thence half-way to Bethune : Clayey brick earth (A). To Bethune : Clayey brick earth, with peat in places (B). At Bethune : Clayey brick earth (like A). Bethune–Givenchy : Clayey brick earth, with peat in places (like B). Givenchy–La Bassée : Brick earth, clay and sand, with peat.
Bergues–Furnes Canal	Bergues–Hondschoote : Clayey, loam, with peat in places (like lower part of Aa River). Hondschoote–Furnes : As before, but rather sandier.
Blaton–Ath Canal ...	Blaton to Stambruges : Sand and sandstone, with hard mountain limestone a short distance below, though probably not within 1 m. of the surface. (Along much of the course the canal is on an embankment.) Bois de Stambruges : For a distance of 1¼ kiloms. clayey brick earth overlying hard mountain limestone. The brick earth varies in thickness up to about 6·0 m. and the limestone may come to the surface in places. Along this part of the course, also, the canal seems to be carried on an embankment. The limestone below the brick earth is certain to be fissured and would let the water through if not puddled. Bois de Stambruges–Beloeil : Sand and sandstone in most, if not all, places, covered with several metres of clayey brick earth. Beloeil–Ladeuze : The underlying rocks are as from Bois de Stambruges to Beloeil, but the canal is on an embankment. Ladeuze, point N.W. of Chièvres : For this distance (about 4½ kiloms.) the canal is generally on an embankment. The underlying soils are : Brick earth, 1–4 m. thick, resting on sand, fine and coarse, or on hard mountain limestone. The limestone, however, is represented in one place as at the surface beside the canal for a distance of a few yards. The brick earth would probably not hold water and the underlying rocks would certainly not. On to Ath : The canal is on an embankment practically all the way. To Maffle : On brick earth, up to several metres thick, resting on sand. Maffle–Ath : On hard mountain limestone. At Ath (to the junction with the Dendre) : Deposited material (several metres) :— Silt and gravel, possibly 2 m. Sand Do. 2½ m.
Bossuyt–Courtrai ...	Bossuyt–Keyberg : Sandy clay with or without hard lumps. Keyberg : The canal goes through a tunnel, apparently in the sandy clay all the way, but the hill is capped with very fine sand. Keyberg–Nieuwkappaerd : Canal, partly on embankment, on sandy clay. Nieuwe Kappaerd : Brick earth, several metres, on sandy clay and very fine sand. Nieuwe Kappaerd–Courtrai : A variable mixture of brick earth and sand. Courtrai (junction with Lys) : Clayey silt.
Bourbourg Canal ...	Sandy loam, on the whole without peat.
Bruges–Ecluse Canal	At Bruges : Loose sand. Near Damme : Loose sand with clayey streaks. To Oostkerke : Clayey sand and clay, 2 m. resting on peat. To Frontier : Clay, 2 m., resting on sand and peat.
Brussel–Rupel Canal	Brussels–Pont Brulé : Sandy and clayey silt, probably a little gravel. To Hoekdonck : Brick earth. To Willebroeck : Loose sand ; some brick earth. Near the Rupel : Silt, probably sandy.
Calais	At Calais : Loam, and at St. Pierre, shingle. For the rest : Like the Aa River from the sea to Watten.
Canal du Centre ...	Green sand, fine sand, and sandy clay.

Charleroi–Brussels ...	At Charleroi and to Pont-à-Celles : Silt and possibly some gravel. Pont-à-Celles–Gonglez Piéton : Plastic or sandy clay. W. of Fléchère : For 1 kilom. sandstone in the bottom of the canal ; the sides clay and loam. To Soudromont : Plastic or sandy clay (a tunnel at Godarville, but all through clay). At Soudromont : For ½ kilom. the underlying rock is hard mountain limestone (*see also* note at Feluy–Arquennes). To Seneffe : Plastic or sandy clay. Seneffe–Feluy–Arquennes : For this distance (about 7 kiloms.) the canal is near the bottom of a valley in mountain limestone. In places it is embanked. The limestone is near the surface. At Arquennes : For 2 kiloms. of the distance (7 kiloms.) the canal is represented as resting on the alluvium at the bottom of the valley. Here, presumably, it is entirely on an embankment, as it is carried over the stream. To Pont de Soignies :- About 2 kiloms. The underlying rocks include hard sandstones as well as limestones. Otherwise the situation (canal on alluvium in bottom of valley and partly or wholly embanked) is as near Feluy–Arquennes. To Virginal–Samme : The canal is on the flat alluvial bottom of the valley, on an embankment, and touches the hard rocks in the sides in a few places only. At Ronquières for 0·8 kilom. the canal is confined between a steep bank of hard slate, sandstone and quartzite and the river. To Clabecq : The valley narrows and at many places the canal is carried on or touches the banks. The latter are made of hard slates, sandstones and quartzites and are steep in places. At Virginal–Samme : A lock lies between the steep bank of the hard slates and sandstone. Clabecq–Sollemberg : Canal partly on alluvial flat, which is probably composed of gravel as well as clay and sand ; partly on the bottom of the side slopes of the valley. The valley has opened out and although the underlying hard slates, quartzites and sandstones may show through in a few places, they are largely covered with gravel, clay and brick earth to a depth of several metres at least. To Brussels : On alluvial flat (upper part of the alluvium is clay and brick earth to a depth of several metres) or on loam covering bottom slopes of valley to a depth of several metres. Possibly some gravel here and there.
Colme Canal	Loam in places with peat.
Demer River... ...	Loam, possibly some gravel.
Dendre River ...	Termonde–Lessines : Loam with some peat, and possibly gravel in places. Lessines : For a distance of 3–4 kiloms. the alluvial flat through which the river flows is flanked on the East, and also underlain, by granite. Lessines : The bridge at La Croix near Rebaix. For this distance (6–7 kiloms.) the situation is similar, but hard slates and sandstones take the place of granite, and it is possible that they appear at the surface at many points along the river. The sides of the river are loam, possibly with some gravel, and whatever hard rock occurs in the bed is likely to be local. Rebaix–Ath : Loam or silt, possibly with gravel.
Deule Canal	Clay and loam with some peat. For about 1 kilom. at Dourges brick earth and possibly gravel.
Dyle River	Sand, clay and loam.
Espierres Canal ...	Loam and sand.
Furnes Canal... ...	(Dunkerque–Furnes) : Loam and mud or clay ; some sand.
Ghent Junction Canal	Sand, loam and peat.
Ghent–Ostend Canal	Ghent : Loam and peat. Near Mariakerke : Sand, some brick earth. To Appensvoorde : Loam. To Aeltrebrugge : Sand, with some brick earth. To Beernem : Sand with slabs of sandstone. To Bruges and Nieuweghe : Sand with some brick earth. To Ostend : Sand and clay, many times repeated.
Ghent–Terneuzen Canal	To Veldekens : Loam. To Langerbrugge : Sand. For 4 kiloms. to N.E. : Loam and sand. To Selzaete : Sand, with some brick earth. To Terneuzen : Sand and clay.
Lens Canal	Clay, loam and some peat.
Liège–Maastricht Canal	On loam and gravel throughout. From Lanaye to the Frontier (3 kiloms.) between a steep bank of chalk on the west and an embankment on the alluvial plain of the Meuse on the east.
Louvain–Dyle Canal...	To Thildonck : Loam, sand and brick earth. At Thildonck (for 1½ kiloms.) : Clay. To Waelhem : Brick earth and sand.

Lys River	Aire–Merville : Loam. Merville–La Gorgue : Clay. La Gorgue–Ghent : Loam, brick earth, with some sand or peat.
Maastricht–Bois - le - Duc Canal	S. Frontier to Vucht : Gravel, sand and loam. Vucht to E. Frontier : Sand and gravel, a little clay and peat.
Meuse and Scheldt Junction Canal	Veldhoven–Neerpelt : Sand and gravel. Neerpelt Branch to Beverloo : Sand and gravel, with dunes of loose sand on surface in places. Beverloo Branch–Grobbendonck : Sand with little gravel ; a few sand dunes. Grobbendonck–Antwerp : Sand ; peat or clay in a few places. At Antwerp : Clay and sand.
Meuse River	Namur–Dutch Frontier : Throughout this part of its course the river is bordered on one or both sides by an alluvial flat, and there is no indication that bare rock exists either in its banks or bed away from the main banks of the river. The alluvial flat is composed of brick earth overlying coarse or fine gravel intermixed with sand. The thickness of brick earth on the north side of Liége is about 4 m. Elsewhere it is not given, but is thick enough to be dug for bricks. It may be assumed that the bed of the river as a rule is gravel.
Mons–Condé Canal ...	Brick earth, loam and sand.
Nèthe, Petite...	Loam ; sand, partly gravelly ; and peat.
Nèthe, Grande ...	Loam ; sand, partly gravelly ; and peat.
Nèthe Inférieure ...	Loam and sand.
Neuffossé Canal ...	Brick earth, clay and, possibly, gravel.
Nieuport–Dunkirk Canal	Clay, loam and sand. (For Furnes–Dunkirk Section, *see* Furnes Canal.)
Nieuport–Plasschendaele Canal	Clay, loose sand in a few places.
Ourthe River... ...	Near Houffalize–near Laroche : The river flows at the bottom of a deep gorge in hard slates and sandstones ; in places with no alluvial flat, in others with a narrow one. The alluvium is probably gravel. From 2 kiloms. above Laroche–Durbuy : River is still at bottom of a deep valley in a variety of hard rocks (slates, sandstonees and limestones), but is bordered by a wide alluvial flat. Alluvium is probably loam as well as gravel. At Durbuy and to 4 kiloms. below : River again in narrow gorge, with little or no alluvial flat alongside. Rocks of gorge as before. To Vieuxville : Valley as between Laroche and Durbuy. At Vieuxville and to 4 kiloms. below : River again in narrow gorge of hard rocks, but alluvial flat alongside most of way. To Comblain-Fairon : Valley as between Laroche and Durbuy. To Comblain La Tour : A gorge, in hard rocks as before, of 2 kiloms. To Liège and the Amblève from Aywaille to the Ourthe at Comblain-au-Pont : River throughout in a deep valley of the same hard rocks as before. A strip of alluvium alongside throughout, probably largely gravel.
Pommeroeul–Antoing Canal	Pommeroeul–Harchies : Brick earth and sand. At Harchies : Clayey sand. S. of Blaton : For 1 kilom. chalk marl with flints. At Blaton : Sand with sandstone. Mountain limestone below, the whole probably permeable. Blaton–La Saule : In hard mountain limestone, probably fissured and therefore permeable. For 1½ kiloms. W. of La Saule : Bottom of canal in similar rock ; sides in chalk marl. To Roucourt : 1 kilom. in chalk marl. To Antoing : Loam, brick earth, sand and possibly some sandstone.
Roubaix Canal ...	Brick earth and a little clay.
Roulers–Lys Canal ...	Sand with some brick earth.
Sambre River ...	In France and from the Frontier to Fontaine Valmont : On loam and gravel at the bottom of a valley in hard rocks. Loam and gravel alongside the river. To Landrecies : The valley is a gorge and in places there is no alluvial flat alongside the river. To Namur : The valley widens considerably except for a short distance near Namur, where it is a gorge in hard sandstone. The river flows over an alluvial flat of loam and gravel.
Scarpe River... ...	Arras–Vitry : On loam and gravel. At Vitry : For 2 kiloms. through chalk and brick earth. To Douai : Loam and gravel.

Scheldt River	...	From Le Catelet: Loam, sand and in the higher reaches some gravel. Peat below Termonde.
La Sensée Canal	...	Loam, brick earth and possibly some gravel.
Turnhout – Antwerp Canal and Turnhout Branch Canal		Sand, in places hardened with iron oxide, or gravelly; clay in places.
Ypres–Yser Canal	...	Clay and sand.
Yser River ...	...	Clay, peat and sand.

Notes on Water Supply of Belgian Canals.

GENERAL.

The canal system of Belgium extends over about 960 kiloms., made up of 730 kiloms. of main waterways and 230 kiloms. of waterways of secondary importance. The greater portion of the system has been constructed within the three basins of the Yser, Escaut and Meuse, and it is exceptional, so to speak, for canals to cross main or secondary summit levels. Thanks to this situation, the supply for the greater part of the canal system is procured naturally by direct utilisation of the tributaries of the main waterways, which are discharged into the canals by ordinary inlets opened when they are required. Leaving out the Charleroi–Brussels Canal for which, however, the artificial supply is very small and only utilised in a portion of the whole length, the canals at present supplied from artificial sources are only 87 kiloms. long in all, or 9–100 only of the whole system. Moreover, these canals during a part of the year are more or less supplemented by natural streams met with along their course.

The question of water supply for Belgian canals, therefore, is relatively of secondary importance; yet it may be useful to describe in summary fashion the methods used for bringing water to canals entirely supplied from natural sources and for supplementing the supplies existing in the district, or providing such supplies by artificial means where they are totally wanting.

CANALS WITH NATURAL WATER-SUPPLY.

The natural supply for Belgian canals has in no case required important constructional work. Generally the canals are supplied from streams which are distributed over their course and discharge into them the waters of the adjacent land. In some cases the waters of these rivers and streams discharge wholly or partially into the canal by simply baulk or sluice weirs, which require no special description. In other cases the river is in free communication with the canal and no regulating weir exists; thus, for example, at Ghent the waters of the Lys and Escaut freely enter the Ghent–Ostend Canal. This latter canal in its turn supplies other navigable waterways with which it is directly connected.

It is obvious that in such circumstances it is impossible to ascertain even approximately the amount of water used in these canals, especially as in many cases—notably the navigable waterways of the Yser Basin—the canals are used in the wet season for carrying off flood water from the surrounding country.

There is, however, one peculiarity worth notice in the supply of the navigable waterways of the Yser Basin. During the dry season it often happens that the sources of the Yser dry up completely and in this case the supply for this river and its tributary canals is drawn from the waters of the Escaut Basin through the Ghent–Ostend Canal. This supply is effected by a difference of height in the various low water levels.

By means of a simple operation at the weirs, water may be sent from one basin to another, thanks to the existence of the Ghent–Ostend Canal, which passes through the low-lying plains of North Flanders round the summit line separating the Yser and Escaut Basins.

A natural supply, although eminently economical, presents nevertheless certain disadvantages owing to its irregularity. It sometimes happens in summer, when the discharge from springs diminishes after a dry season, that the canals suffer considerably and their water-level falls to a point prejudicial to navigation. In winter, too, an excess of water and the necessity of rapidly draining off flood water form a serious hindrance to navigation.

This double disadvantage is particularly felt on the navigable waterways of the Yser Basin and on some of those of the Escaut Basin; in the other canals this disadvantage does not exist. This is notably the case with the Campine Canal system and the Maastricht–Bois-le-Duc Canal, where these canals are fed by an inlet channel from the Meuse at Maastricht, but they are not used for draining off flood water.

The system of canals supplied by the Maastricht inlet conduit is about 364 kiloms. long, including about 112 kiloms. in Holland; it has a water area of about 2¼ square miles. Experience shows that the amount of water used in all these canals is 4 cubic m. per second, or a little more than 12 litres per second per kilometre. This consumption therefore represents a water section 6 or 7 cm. every 24 hours for the whole system. No exact data are available as to how this total consumption is distributed among the various elements composing it or what volume of water is required to meet on the one hand the consumption for navigation purposes and on the other the permanent losses, such as evaporation, leakage through embankments, &c.

ARTIFICIALLY-FED CANALS.

In Belgium the canals artificially supplied are six in number :—

(1) Pommeroeul–Antoing Canal.
(2) Blaton–Ath Canal.
(3) The Belgian portion of the Espierres Canal.
(4) Bossuyt–Courtrai Canal.
(5) Roulers–Lys Canal.
(6) Charleroi–Brussels Canal.

All these canals, except the Roulers–Lys, are summit level canals.

1. Pommeroeul–Antoing Canal.

Description.—This summit level canal crosses the subsidiary summit separating the Escaut and Haine Basins and serves as a junction between the Mons–Condé Canal and the Escaut without leaving Belgian territory. It has a total length of about 25 kiloms., 15 kiloms. belonging to the summit level reach ; in this reach the depth is kept at 2·40 m. above the bed.

The first reach of the canal is in free communication with the Mons–Condé Canal ; the difference of level between this and the summit level reach is rectified by five locks 400 m. distant one from the other. The supply is certain for the greatest part of the year (except in times of drought and when the reach is filling after being unemployed) from springs discovered at the time of the excavation of the summit reach in the limestone strata between Blaton and Péruwelz.

Machinery at Harchies.—When the natural supply becomes inadequate it is supplemented by pumps constructed at Harchies near the third lock. For this supply the water of the Mons–Condé Canal is used ; a conduit about 800 m. long brings the water to the pumping engines, it is then raised and discharged into another higher conduit of the same length taking it to the summit level reach. It should be noticed that the Mons–Condé Canal is always amply fed by the waters of several streams.

The old supply machinery dating from the opening of the canal was replaced in 1881 by a new set fitted up in the same building. Experience had shown that in normal times pumps furnishing a discharge of 12 cub. m. a minute were quite sufficient for supplying this canal. The pumping plant consists of two plunger pumps working together or separately and each capable of raising 12 cub. m. of water per minute. The total height of lift, excluding frictional head, is 9·50 m.

Each pump is worked by a direct single-acting steam engine placed above it, the plunger and the steam piston being direct coupled. The stroke of the plunger is 2·50 m. and the number of strokes per minute is 6, so that with each stroke 2 cub. m. are lifted.

The body of the pump is entirely of cast iron and has a corrugated surface strengthened by ribs. The cylinder walls have a uniform thickness of 35 mm. The valves between the body of the pump and the vertical conduit have clacks, the valve chamber being 1·75 m. high by 1·60 m. wide. The clacks, 21 in number, are of leather covered with sheet-iron and fall against the cast-iron frame. The combined section of the clacks, measured perpendicularly to the flow, is equal to the area of the plunger, the diameter of which is 1·10 m.

An air escape valve is fitted to the body of the pump to prevent air interfering with the downward stroke of the plunger.

Steam is supplied by three 30-h.p De Nayer boilers placed near the engines.

On leaving the pump the water is raised in a special cast-iron conduit 1·10 m. in diameter to the upper channel.

2. Ath–Blaton Canal.

This canal connects the canalised Dendre with the Pommeroeul-Antoing Canal, and through this latter with the Mons–Condé Canal. The summit length of the canal is 5·990 kiloms.

At Ladeuze there is a steam pumping plant which takes water from the 15th Reach and delivers it into the summit reach. The 15th Reach is itself supplied by : (1) the Hunelle ; and (2) the pumps at Maffle drawing off water from the Dendre.

3. Espierres Canal (Belgian Section).

This canal is 8·4 kiloms. long in Belgium and joins up at the French Frontier with the Roubaix Canal, which is really a continuation of it. It consists of four reaches of which the lowest is at the level of the Scheldt and the highest at the level of the Roubaix Canal, where they meet.

The water supply is on the one hand from the Roubaix Canal, and on the other from the Scheldt, raised successively from reach to reach by three steam-driven archimedian screw-pumps.

4. Bossuyt–Courtrai Canal.

This canal connects the Lys and the Scheldt and passes through a tunnel 615 m. long at Moen. The summit reach is 14.87 m. above the Lys low-water level and 13·75 m. above the Scheldt low-water level.

The top reach receives its water supply from a steam pumping plant at Bossuyt, drawing water from the Scheldt.

5. Roulers–Lys Canal.

Description.—This canal does not cross any summit ; from Roulers it follows the valley of the small river " La Mandel " and continues in an almost straight line to the Lys, at the village of Oyghem. At the commencement it consisted of a single reach with horizontal bed about 16½ kiloms. long, ending towards the Lys in a three-chambered lock, compensating a fall of about 7·10 m. The width of the bed is 6 m. and the regulation depth 2·50 m.

The canal is supplied during about two-thirds of the year from the waters of the Mandel, which flow freely into it at Roulers. When the discharge of this river became insufficient, it was supplemented until recently by a steam-driven centrifugal pump drawing water from the Lys and discharging into the canal.

Old machinery at Oyghem.—This was housed in a building at the mouth of the canal, near the Lys, at the site still occupied by the new engines. The centrifugal pump and the steam engine driving it have been retained as reserve in the new establishment.

The water from the Lys is brought to a pump well and is first discharged into a second well and thence by another conduit into the canal.

The old centrifugal pump operating on a suction head of 1·17 m. takes in water through a cast-iron pipe 35 cm. in diameter and 10 m. long, furnished with a foot valve, and delivers to a head of 5·9 m. through a cast-iron pipe 60 cm. diameter and 61 m. long.

Working nominally at 65 revolutions per minute, the pump discharged 50 gallons a second.

The motion is transmitted to the pump by a fly-wheel provided with a toothed rim. The teeth of fly-wheel and pinion are of wood. To prevent any injurious shock from the introduction of a foreign body into the pump the pinion is not keyed on the shaft but is provided with a spring-regulated friction coupling.

Cachtem water-wheel.— Soon after the opening of the canal the improvement of the navigation conditions was decided on and the single reach was divided into two by the construction of a new lock at Cachtem, 4 kiloms. from the commencement of the canal. The water level of the upper reach was fixed at 75 cm. above that of the reach between Cachtem and the Lys, so that the maximum depth in the first reach was increased to 3·25 m. above the bed, whilst it remained at 2·50 m. in the second reach.

Local conditions readily lent themselves to the raising of the water-level, the canal largely consisting of cuttings on this route. This alteration likewise presented the following advantages: it had been observed since the construction of the canal that the bed excavated in shifting sand for a certain distance from the commencement had a constant tendency to rise under the action of springs, the area of land supplying the water being above the original water-level, and hence frequent dredging was necessary. By raising the water-level 75 cm. it became easy to counterbalance the water pressure of the springs and overcome this disadvantage. On the other hand the channel being only 6 m. wide at the bed and the most important harbour being Roulers, at the very commencement of the canal, it was in this reach that boats most frequently met and they were obliged to enter sidings to leave the passage free. Delay and inconvenience arose as the traffic became more intense and the raising of the water-level put an end to this state of things by allowing boats to pass each other anywhere in the reach.

In order to maintain the new water-level at all times in the first reach, it was again necessary to have recourse to mechanical means for raising the water.

It was decided to take the water from the second channel and discharge it into the upstream channel. In view of the slight difference of level, a steam-driven water-wheel was installed, taking water from the downstream reach and pumping it by means of paddles working in a circular trough.

The building is erected on the left bank of the canal at the side of the Cachtem Lock and consists of a wheel room, machine room, boiler room and coal stores.

The wheel is entirely of iron and is 4·40 m. outside diameter. The vanes, 20 in number, are 1·60 m. long and 0·55 m. wide.; they are made of shaped iron plates 3 mm. thick, riveted on flat irons fixed on a cast-iron crown. The trough is of stone and the clearance between the wheel and the facings of the trough is small. With the object of reducing the space as much as possible the bearings of the axle may be slightly raised by means of keys, and the vanes are fitted on the outside with wooden strips. The trough is not raised to the height of the upstream reach, but has an automatic door opening upstream which prevents the return of water when the wheel is at rest. As soon as the wheel moves this door opens.

The motion is transmitted by a toothed wheel 3 m. in diameter, worked by a pinion mounted on a pulley axle, which in its turn is driven by a belt from the fly-wheel of the engine.

The steam-engine is a 6-h.p. horizontal condensing engine with variable expansion. The diameter of the cylinder is 225 mm., the stroke of the piston is 45 cm., and the normal number of revolutions is 30 per minute. The revolutions of the wheel are in the proportion of 1 : 10 to the revolutions of the engine. The feed-pump for the boilers can be regulated by a cock placed near the boilers without having to go into the machine room.

There are two boilers working at six atmospheres pressure, each of which has a heating surface of 14 sq. m. and can each furnish separately the pressure necessary for working.

New machinery at Oyghem.—Since the completion of the work of raising the water line of the upper reach of the canal and in view of the increase in navigation, the old engine at Oyghem was no longer capable of suitably supplying the canal. Experience having proved that the old engine was costly to maintain owing to transmission by wooden teeth—a system which was not compatible with the speed of the pump—it was resolved to have an entirely new installation.

The old buildings containing the first plant have been enlarged and taken over for the new apparatus.

The steam is produced by three De Nayer multitubular boilers, working at three atmospheres nominal pressure, each having a heating area of 102 sq. m. and able to produce 1,100 kilogs. of steam per hour at a pressure of seven atmospheres. Each boiler has its own stop valve, so that any one of the boilers can provide the steam for any one of the engines. A common steam pipe feeds the old engine as well as the two new ones.

The boilers are fed by a small Worthington pump, which discharges the water into a heater before its introduction into the boilers.

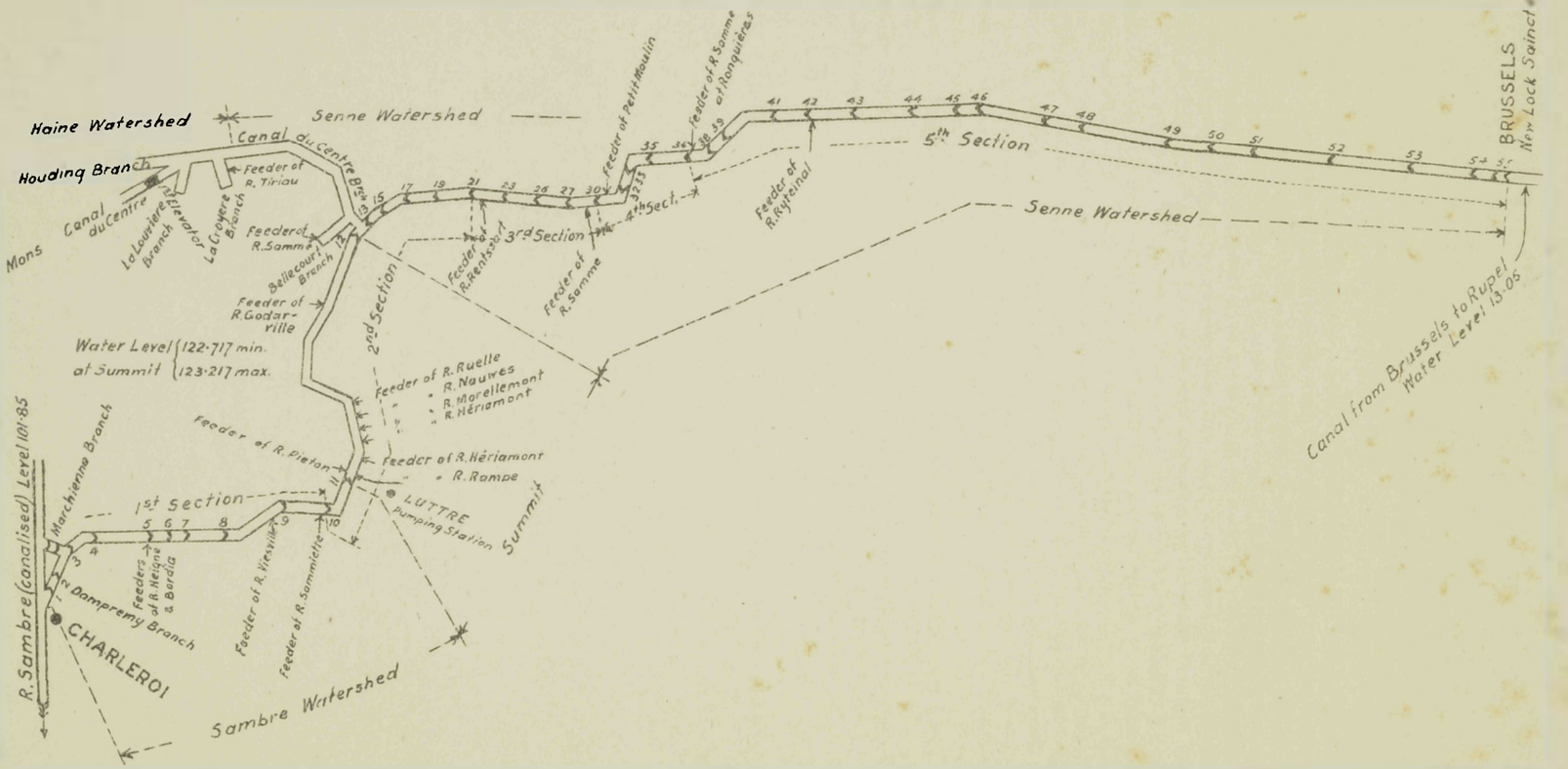
The flues of the three boilers open into a common chimney.

The pumps are centrifugal pumps, each capable of raising about 350 litres per second to a height of 7·10 m. at a speed of 340 revolutions a minute. The rotor is 390 mm. in diameter and the width of the opening is 40 mm. Each pump is provided with a suction pipe coming from the intake well and a delivery pipe discharging into the delivery well. A steamer ejector mounted on each pump allows water to be drawn in 8 minutes. A cock fixed on the top of the syphon allows the whole column of water to fall when the engine stops.

Each pump is worked by a compound non-condensing engine, comprising a small vertical cylinder and a large horizontal cylinder; the two connecting rods work on the same crank and the pipe connecting the two cylinders acts as a steam reservoir.

Canal from Charleroi to Brussels

Diagram of Water Supply



The principal dimensions for the large cylinder are : diameter, 530 mm. ; stroke, 45 cm. ; and for the small cylinder : diameter, 33 cm. ; stroke, 45 cm. The number of revolutions is 135 a minute. The power is transmitted from the engine to the pump by a belt drive.

The daily consumption of water was estimated at 36,000 cub. m. ; in the most unfavourable circumstances the three centrifugal pumps can easily give together 900 litres per second and consequently furnish the total amount of water necessary to meet the above estimate in 11 hours.

Further, the depth of the lower reach being 2·50 m. or about 30 cm. more than what is required for navigation, it is easy to constantly store the quantity furnished by the " Mandel " and lighten the work of the engine by this amount.

6. Charleroi–Brussels Canal. [*See Plate* 34.]

Description.—The canal from Charleroi to Brussels connects the Sambre with the Brussels–Rupel Canal ; it has a summit level reach and crosses the summit level separating the Escaut and Meuse Basins ; its length is about 74 kiloms.

When it was opened in 1832 it had a small section throughout, but the importance of this way of communication soon led to its progressive transformation into a large section canal.

The supply for this canal, which is largely natural, is still what it was at the commencement, but the important changes that the waterway has undergone, as well as the building of the Centre Canal intended to connect the Charleroi–Brussels Canal with the Mons–Condé Canal, have completely modified the first conditions of supply and shown the necessity of improving and greatly enlarging the supply to be furnished.

From the point of view of water supply the canal was divided into five sections, chosen in accordance with the streams encountered, used or capable of utilisation.

The canal now possesses a large section from the Sambre to Lock 44; it is the same with the branches of the Centre, which extend from above Lock 13 to the docks of Bellecourt, la Croyère, la Louvière and Houdeng and end at the la Louvière lift, forming the upstream end of the Centre Canal.

Normally the summit level of the Brussels–Charleroi Canal is supplied from two impounding reservoirs adjacent to the same, and by the Piéton River. The water supply on this canal is difficult owing to the loss by infiltration into the fissured rock formation through which it is cut. Various streams have been diverted to supply the two slopes at various points and a reservoir for storing water has been constructed at Ronquières.

Only one artificial source of supply exists, that of the Rampe, whose waters are raised to the summit level reach during times of drought by means of an archimedean screw worked by a steam engine at Luttre, near the site of Lock No. 11.

Steam is supplied by two cylindrical boilers in which the pressure does not exceed one atmosphere per sq. cm., to a low pressure double-acting engine with a speed of 50 revolutions per minute. The screw is 8·00 m. long, 1·80 m. in diameter and furnished with three propellers.