SITE	UTM CO-ORDINATES	7-½' QUAD
Lock 62 (154.16)	*17.71880.438320	Paw Paw WV-MD
Lock 63 1/3 (154.48)	17.71868.438242	"
Lock 64 2/3 (154.80)	17.71861.438248	"
Lock 66 (154.70)	17.71850.438235	"
Paw Paw Tunnel, N Portal (155.20)	E17.71802.438170	"
South (Upstream) Portal (155.78)	E17.71798.438078	"
Lock 67 (161.78)	17.71198.437760	Oldtown MD-WV
Town Creek Aqueduct (162.34)	17.71110.437755	"
Lock 68 (164.82)	17.70728.437822	"
Lock 69 (166.44)	17.70565.437922	"
Lock 70 (166.70)	17.70520.437922	"
Lock 71 (167.04)	17.70474.437935	"
Lock 72 (174.44)	17.69494.438266	Patterson
Lock 73 (175.36)	17.69440.438428	" Creek MD-WV
Lock 74 (175.47)	17.69424.438428	"
Lock 75 (175.60)	17.69425.438423	"
Evitts Creek Aqueduct (180.66)	17.69401.438836	"
Guard Lock (184.50) for Dam 5, Western Terminus in Cumberland	P17.69190.439083	Cumberland MD-PA-WV
THE ANTIETAM NAVIGATION:		
Mouth on the Potomac	18.26356.436646	Keedysville MD-WV
Unfinished; upper end unknown		
THE TIBER CREEK (WASHINGTON) CANAL (filled in):		
Eastern Lock	*MW18.32614.430450	Alexandria VA-DC-MD
Tiber Creek Lock	*MS18.32470.430855	Washington W DC-MD-VA
THE C&O CANAL'S WASHINGTON BRANCH (filled in):		
Stone Lockhouse (at Lock site)	E18.32306.430656	"
THE ALEXANDRIA CANAL:		
Tidelock in Alexandria (terminus)	C18.32298.429786	Alexandria
Lock 3	*M18.32285.429790	" VA-DC-MD
Lock 2	*M18.32272.429793	"
Lock 1	*M18.32262.429793	"
Potomac Aqueduct Pier in Virginia	P18.32041.430761	"
Pier at C&O Canal	E18.32045.430782	"
THE QUANTICO CANAL:		
Lower End (Lock?)	*18.29898.422038	Quantico VA-MD
Upper End	*18.29794.427094	"
THE DRAGON SWAMP NAVIGATION:		
Lower end at Turk's Ferry	*18.3632 .41589	Saluda VA
Head of Nav. at New Dragon Bridge	18.35035.416634	Church View VA
THE GOOSE CREEK & LITTLE RIVER NAVIGATION:		
Clapham's Lock (2-lock staircase)	E18.28555.433067	Sterling VA-MD
Guard Lock at Dam	P18.28408.433048	"
Cooke's Dam Lock (#2)	C18.28258.432780	Leesburg VA-MD
Third Lock & Dam	P18.28177.432711	"
Fourth Lock & Dam	C18.28153.432648	"
Fifth Lock and Dam	*I18.28106.432522	"
Sixth Lock and Dam	*I18.28090.432445	"
Cochran's Lock & Dam (#7)	P18.28061.432387	"
Gulick's Lock & Dam (#8)	C18.27832.432271	"
Ball's Mill Dam Guard Lock (#9)	C18.27888.432180	"
THE RAPPAHANNOCK NAVIGATION:		
Fredericksburg Basin (terminus)	E18.28440.424265	Fredericksburg
Embrey Dam Guard Lock	E18.28226.424427	" VA
Minor's Lock (#1)	*M18.28130.424470	Salem Church
Taylor's Dam Guard Lock	C18.28016.424454	" VA
Lock 2	C18.27890.424381	"
Lock 3	E18.27894.424369	"
Bank's Dam Guard Lock	P18.27884.424303	"
Lock 4	E18.27600.424582	"
Ballard's Dam Guard Lock	E18.27548.424635	"
Lock 5	E18.27308.424616	"
Scott's Dam Guard Lock	P18.27223.424628	"
Lock 6	E18.27225.424794	"
Lock 7	E18.27218.424802	"
Lock 8	E18.27212.424808	"
Lock 9	E18.27143.424940	"
Rapidan Dam Guard Lock	C18.27114.424953	"
Old Rapidan Canal, Locks head	W18.27165.424958 18.27125.424973	" "
Locks 10 & 11	W&E18.27098.425113	Storck VA
Lock 12	E18.27097.425120	"
Powell's Dam Guard Lock	P18.27050.425232	Richardsville
Lock 13	E18.27010.425241	" VA
Deep Run Dam Guard Lock	C18.26987.425433	"
Lock 14	E18.26787.425545	"
Skinker's Dam Guard Lock	P18.26678.425586	"
Locks 15 & 16	E&W18.26506.425640	"
Snake Castle Dam Guard Lock	W18.26413.425575	"
Snake Castle Rock & mill canal	18.26420.425588	"
Kemper's Ford Dam Lock (#18)	*W18.26110.425520	"
Mountain Run Dam Lock (#19)	*W18.25904.425936	Germanna
Locks 20-22	*W18.25763.426210	" Bridge VA
Locks 23,24	*W18.25760.426230	"
Wheatley's Dam Guard Gate	W18.25682.426377	"
Martin's Mill Dam Lock (#25)	*W18.2548 .42681	Remington VA
Lock 26	*M18.2523 .42697	"
Beverley's Ford Dam Guard Lock	M18.25186.427058	"
Hedgeman's Hole Dam Lock (#27)	M18.25090.427168	"
Lock 28	M18.25024.427540	"

SITE	UTM CO-ORDINATES	7-½' QUAD
Lee's Dam Guard Lock	W18.25065.427600	Remington VA
Lock 29	E18.25089.427769	"
Foxville Dam Guard Gate	W18.25088.427775	"
Sandy Ford Dam Lock (#30)	W18.24960.427953	Jeffersonton
Locks 31 & 32	W18.24898.428355	" VA
Hart's Dam Guard Lock	M18.24756.428550	"
Glen Woolen Mills Lock	W18.24507.428714	"
Blackwell's Warehouse,Head of Nav.	*18.244 .42875	"
THE HAZEL RIVER NAVIGATION:		
Mouth of Hazel on the Rappahannock	18.25178.427062	Remington VA
Welford's Outlet Lock	*W18.24852.427112	Brandy Station
Dam Guard Lock	W18.24815.427122	" VA
Jones' Outlet Lock	C18.24636.427206	"
Dam Guard Lock	W18.24626.427230	"
Hurt's Dam Lock	W18.2455 .427385	"
Settle's Dam Lock	*18.24355.427533	"
Rixey's Dam Lock	P18.24097.427610	"
Lewellen's Outlet Lock	M17.76083.427635	Castleton VA
Dam Lock	M17.76060.427655	"
Spring Valley (Middle Mills) Lock	*W17.75914.427618	"
Dam Guard Lock	*17.75852.427585	"
Ficklin's Outlet Lock	W17.75733.427553	"
Dam Lock	W17.75616.427594	"
Castle Mill, Head of Navigation	*17.75340.427563	"
THE JAMES RIVER CANAL (for batteaux):		
Lower Canal, Great Basin (Mile 0)	18.28475.415669	Richmond VA
Lower Arch at head	E18.28005.415710	"
Upper Canal, two Outfall Locks	MW*18.27782.415895	Bon Air VA
Upper Arch at head	M?*18.27764.415921	"
Blue Ridge Canal, Foot	*M17.64389.415895	Big Island VA
Head	17.63760.416460	Snowden VA
Head of batteau navigation on the James, and the beginning of the JR&K Turnpike to the Ohio River	17.58865.418330	Covington VA
Head of navigation on Craig's Creek	17.5793 .41509	New Castle VA
Head of navigation on Cowpasture	17.61083.418485	Longdale Furnace VA
Selected Sluices on the James:		
At Belt Line Bridge	E18.27971.415734	Richmond VA
Rock Island (head)	E17.71615.418220	Esmont VA
Seven Islands (head)	E17.73250.417946	Arvonia VA
Thorn Hill Falls	*17.68652.415590	Buffalo Ridge
Wreck Island	C17.68565.415378	" VA
THE JAMES RIVER & KANAWHA CANAL (excluding culverts):		
Ship Lock	E18.28605.415573	Richmond VA
Tidewater Connection Locks 4&5	E18.28470.415678	"
Locks 2&3	M18.28463.415681	"
Lock 1	M18.28457.415687	"
Lock 1 & Byrd Park Pumphouse	E18.28030.415709	"
Lock 2 & Lower Arch	E18.28009.415720	"
Lock 3 (Five-Mile Lock, Upper Arch)	E18.27764.415921	Bon Air VA
River Lock	P18.27715.416009	"
Bosher's Dam Lock	*M18.27247.416005	"
Bosher's Dam Guard Lock	P18.27250.416043	"
Old Bosher's Feeder Guard Lock?	*18.27218.416020	"
Old Middle Mouth Guard Lock?	*18.27135.415990	"
Lock 4 (9-Mile Locks)	E18.27247.416050	"
Lock 5 "	E18.27202.416055	"
Lock 6 "	E18.27174.416056	"
Junction, Tuckahoe & James R.R.R.	18.26825.416105	"
Tuckahoe Aqueduct	E18.26717.416102	Midlothian VA
Original site of Locks 4,5 & 6	*M18.26740.416096	"
Old Upper Mouth Guard Lock?	*18.26735.416095	"
Sampson's Lock	M18.25920.416415	"
Dover Aqueduct	M18.25741.416622	"
Beaver Dam Aqueduct	P18.25054.416956	Perkinsville
Maiden's Adventure Dam Locks (2)	P18.24900.416980	" VA
Lock 7	M18.24355.417519	Goochland VA
Lock 8	M18.24346.417536	"
Cedar Point Lockhouse	E18.24351.417534	"
Lock 9	P18.24162.417533	"
Lickinghole Aqueduct	E18.24155.417527	"
Lock 10	C18.23942.417058	"
Lock 11	M18.76433.417021	"
Cartersville Connection Dam	P17.75810.417200	Cartersville
Cartersville Connection Lock	E17.75760.417275	" VA
Lock 12	M17.75769.417307	"
Lock 13	M17.75605.417480	"
Byrd Creek Aqueduct	E17.75622.417918	"
Lock 14	M17.75310.418104	Lakeside Village VA
St. Andrew's St. Lock, Rivanna Nav.	E17.74935.418208	"
Columbia Aqueduct	P17.74922.418195	"
Lock 15	P17.74409.417681	"
Lock 16	M17.74186.417531	Arvonia VA
Lock 17	M17.73728.417767	"
Temperance Spring (removed)	*P17.73452.417840	"
Seven Islands Guard Lock & Lock 18	P17.73175.417972	"
Lock 19	M17.73127.417996	Diana Mills VA
Lock 20	M17.72656.418022	"
Lock 21	P17.72619.418035	"
Hardware Aqueduct	E17.72608.418034	"
Lock 22	C17.72255.418374	Scottsville VA
Scottsville Basin	E17.72062.418613	"
Lock 23	P17.71994.418472	Esmont VA
Lock 24	M17.71874.418183	"
Lock 25	M17.71507.418248	"
Lock 26	C17.71298.418168	"
Lock 27	M17.70888.419029	Howardsville

SITE	UTM CO-ORDINATES	7-½' QUAD
Lock 28	M17.70728.417861	Howardsville
Rockfish Aqueduct	E17.70727.417855	" VA
Lock 29	G17.70625.417298	"
Lock 30	G17.70426.417486	"
Lock 31	P17.70220.417214	"
Lock 32 (canal's only slate lock)	P17.70040.416792	"
Tye River Dam Lock	P17.69375.416820	Shipman VA
Tye River Towpath Bridge	M17.69348.416792	"
Locks 33 & 34	B,P17.69203.416565	Gladstone VA
Lock 35	P17.69268.416356	"
Lock 36	M17.69116.416226	"
Lock 37	M17.69220.415817	"
Lock 38	M17.69243.415670	"
Lock 39	M17.68950.415762	"
Lock 40	M17.68612.415610	Buffalo Ridge
Lock 41	M17.68587.415540	" VA
Lock 42	M17.68310.415225	"
Lock 43	E17.68168.415120	Stonewall VA
Lock 44	M17.67960.414935	"
Partridge(Porridge) Creek Aqueduct	G17.67880.414868	"
Lock 45	P17.67692.414672	Kelly VA
Stovall Creek Aqueduct,Galt's Mill	G17.67598.414808	"
Joshua Falls Dam Guard Lock	B17.67352.414404	"
Locks 46 & 47	G17.67320.414256	"
Lock 48	G17.67162.414272	"
Lock 49	F17.67168.414107	"
Archer's Creek Culvert	E17.67168.414012	"
Beaver Creek Aqueduct	E17.67174.413979	"
Lock 50 (Kelly) at Lockhouse	B17.67135.413929	"
Opposum Creek Culvert	E17.67058.413930	"
Lock 51	M17.66717.414087	"
Fishing Creek Culvert	G17.66487.414192	Lynchburg VA
8th St. Bridge, Lynchburg Basin	E17.66456.414244	"
Blackwater Creek Aqueduct	F17.66442.414266	"
Iron Hull of Packet Boat MARSHALL	17.66253.414496	"
Lynchburg Water Works Dam Lock	B17.66433.414330	"
Lock 1, Second Division	M17.66228.414526	"
Lock 2	F17.66115.414615	"
Judith's Dam Lock	G17.66032.414758	"
Lock 3	M17.65724.415179	Tobacco Row
Bald Eagle Dam Lock	M17.65568.415216	" Mtn. VA
Lock 4	G17.65356.415196	Big Island VA
Pedlar Dam Lock	E17.65330.415259	"
Lock 5	G17.65111.415145	Boonsboro VA
Coleman Falls Dam Lock	F17.65016.415168	Big Island VA
Lock 6	M17.64578.415418	"
Big Island Dam Lock	P17.64507.415540	"
Lock 7 (Battery Creek Lock)	E17.64417.415732	"
Lock 8	G17.64388.415934	"
(The 1824 Blue Ridge Canal, for batteaux, began at Blue Ridge Dam. Locks 9-17 of the JR&K are on or near the original 1824 sites.)		
Lock 9	P17.64373.415921	"
Lock 10	P17.64313.416006	Snowden VA
Cushaw Falls Dam & Lock 11	F17.64240.416174	"
Lock 12	M17.64202.416207	"
Lock 13	M17.64176.416226	"
Lock 14	*G17.64063.416342	"
Lock 15	*E17.63938.416287	"
Lock 16 & Frank Padget Monument	*E17.63833.416292	"
Lock 17	*E17.63623.416302	"
Blue Ridge/ Balcony Falls Dam Lock	G17.63760.416480	"
Towpath Bridge over North River	P17.63732.416503	"
Lock 18	M17.63486.416484	"
Quarry Falls Dam Lock	E17.63376.416438	"
Lock 19	M17.63124.416422	Arnold Valley
Lock 20	M17.63114.416368	" VA
Lock 21	M17.62900.416300	"
Lock 22	M17.62733.416369	"
Varney Falls Dam Lock	E17.62540.416017	"
Lock 23	F17.62270.415816	"
Lock 24	P17.62254.415796	"
Indian Rock Dam Lock	G17.62117.415770	Buchanan VA
Lock 25	P17.62122.415582	"
Lock 26	17.62073.415537	"
Wasp Rock Dam Lock	F17.61908.415594	"
Buchanan Gauge Dock	B17.61660.415425	"

THE UNFINISHED DIVISION, James River & Kanawha Canal:

Lock 1	P17.61616.415403	Buchanan VA
Lock 2	P17.61596.415392	"
Culvert #1	E17.61362.415484	"
Culvert #2	E17.61140.415597	"
Jackson Dam Lock (#3?)	F17.61124.415804	"
Culvert #3	E17.61170.415790	"
Lock 4	G17.61145.415854	"
Culvert #4	E17.61142.415858	"
Lock 5	F17.61114.415918	"
Aqueduct #1 piers	E17.61103.415848	"
Locks 6 & 7	B17.61080.415958	"
Mason Tunnel E end	17.61080.415969	"
W end	17.61074.415972	"
Aqueduct #2 piers	E17.61072.415976	"
Aqueduct #3 piers	E17.61003.416098	Salisbury VA
Lock 8	E17.61001.416117	"
Marshall Tunnel E end	17.60985.416129	"
W end	17.60941.416168	"
Cabell Dam Lock	E17.60823.416146	"
Catawba Towpath Bridge Abutment	*E17.60742.416248	"
Gwynn Dam Lock (#9)	E17.60799.416386	"

SITE	UTM CO-ORDINATES	7-½' QUAD
Lock 10 and historic marker	G17.60508.416688	Eagle Rock VA
Pit for Lock 13 (unfinished)	G17.60326.417430	"
Batteau landing & Lock at Forge	*E17.60587.418520	Clifton Forge
Head of Forge Canal, and spring	17.60574.418555	" VA
Humpback Bridge on JR&K Turnpike	E17.58382.419391	Callaghan VA

THE NORTH RIVER NAVIGATION (now called the Maury River):

Cedar Grove, Head of Batteau Navig.	17.64202.419372	Goshen VA
Batteau Lock, Lexington Basin Dam	M17.63836.418382	Lexington VA
Reid's Dam Lock	E17.63966.418272	"
South River Dam Lock	E17.64230.418151	"
Lock 1	P17.64195.418078	"
Lock 2	P17.64184.418060	"
Ben Salem Dam Lock	E17.64168.417928	"
Zimmerman's Dam Lock	E17.64284.417916	"
Moorman's (Moomaw's) Dam Lock	G17.64390.417852	Buena Vista VA
Chalk Mine Run Aqueduct	G17.64445.417818	"
Lock 3	E17.64468.417795	"
Indian Gap Run Aqueduct	E17.64439.417662	"
Pedlar Gap Run Aqueduct	G17.64400.417629	"
Lock 4	G17.64381.417616	"
Lock 5	G17.64357.417601	"
Lock 6 (Loch Laird)	G17.64315.417546	Glasgow VA
Savernake's Dam Lock	P17.64312.417485	"
Lock 7	P17.64294.417458	"
Edmondson's Dam Lock	E17.64182.417420	"
Earlier Batteau Lock	17.64182.417416	"
Lock 8	G17.64094.417371	"
Goose Neck Dam Lock	E17.64015.417351	"
Lock 9	G17.63974.417242	"
Devil's Step Dam Lock	E17.63974.417188	"
Miller's Dam Lock	E17.63961.417122	"
Lock 10	E17.63778.416952	"
Lock 11	E17.63755.416926	"
Davidson Run Aqueduct	G17.63821.416845	"
Lock 12	P17.63789.416837	"
Lock 13	G17.63770.416800	"
Lock 14	E17.63748.416538	"
Mouth of North River	17.63732.416503	"

THE RIVANNA NAVIGATION:

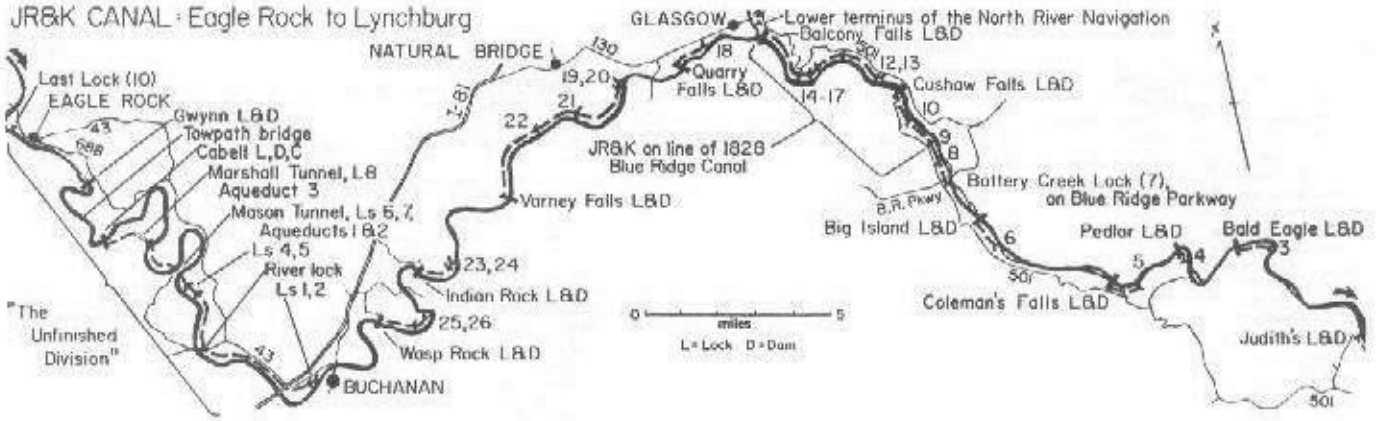
Mouth of Rivanna on the James	17.74990.418170	Columbia VA
Columbia Dam Lock	G17.74908.418194	"
Wood's Mill Lock	*M17.74810.418340	"
St. Andrew's Street Lock at JR&K	E17.74935.418210	"
Gum Creek Culvert	E17.74907.418410	"
Dog Run Culvert	E17.74800.418577	"
Rivanna Mills Dam Lock	E17.74680.418575	"
White Rock Lock	W17.74403.418762	"
Carysbrook Dam Lock	G17.74293.419002	"
Strange's Lock	W17.74200.418986	Palmyra VA
Palmyra Dam Lock	E17.74055.419333	"
Broken Island Outlet Lock	E17.73928.419733	Boyd Tavern VA
Guard Lock at Dam	E17.73936.419678	"
Union Mills outlet locks, lower	E17.73773.419960	"
upper	E17.73763.419870	"
Guard Lock at dam	E17.73532.420224	"
Crofton Lock	G17.73756.420000	"
Old Union Mills Lock	G17.73541.420230	"
Campbell's Mill Lock	W17.73095.420362	"
Lock site (?) at end of canal	*17.73139.420367	"
Stump Island Lock (?) at Dam	W17.72890.420650	Simeon VA
Henderson's Sluices	17.72826.420758	"
Milton Outlet Locks (2)	W17.72860.420902	Charlottes-
Guard Lock at dam	P17.72820.420998	" ville E VA
Jefferson's Sluice	17.72818.420866	"
Jefferson's Mill	P17.72688.420888	"
Jefferson's Canal Outfall Locks(3)	*W17.72651.420974	"
Arch and Lock	M17.72583.421016	"
Moore's Creek Dam Outlet Lock (?)	P17.72371.421075	"
Moore's Creek Dam Lock (Pireus)	P17.72348.421100	"
Sluice at Key West	17.72385.421746	"
Three Islands Lock (?)	17.72410.421800	"
Broad Mossing Ford Lock (?)	*M17.72421.421856	"
Rio Mills Locks (2)	*M17.7220 .42203	"
Hydraulic,Head of Navigation S Fork	17.7202 .42189	"
Martin's Mill, Head of Nav., N Fork	17.72733.422135	"

THE WILLIS'S RIVER NAVIGATION:

Mouth on James (Willis's Mile 0.0)	W17.75490.417415	Buckingham VA
Bonapart's Flash Lock (2.50)	W17.75363.417646	"
Long Falls Flash Lock (6.40)	W17.75084.417244	Lakeside Vill-
Flash Lock (not located) (c.9.35)	*W17.74850.417090	" age VA
Flash Lock (not located) (c.10.0)	*W17.74810.417005	"
Flash Lock to Trenton Mills	*W17.7447 .41679	"
Keeling's Mill site (c.22.5)	*17.7408 .41617	Cold Hill VA
Flash Lock (not located) (c.26.9)	W17.7385 .41570	"
Flash Lock (29.36)	W17.73740.415533	"
Cow Ford Flash Lock (31.20)	W17.73644.415385	"
Hickory Spring Flash Lock (32.30)	W17.73600.415272	Hillcrest VA
"New (Flash) Lock" (33.02)	W17.73624.415224	"
Ca Ira Canal pound locks (c.33.7)	*17.73878.415150	"
Head of Ca Ira Canal (36.2)	17.73518.414949	"
Flash Lock (42.38)	W17.72988.414592	Willis Mount-
Flash Lock on plat (43.28)	W17.72762.414587	" ain VA
Flash Lock (44.43)	W17.72685.414462	"
Curdsville Mill, terminus (46.60)	17.72548.414468	"
Little Willis's Flash Lock	W17.73013.414318	"
(indicated on a plat, probably buried)		

SITE	UTM CO-ORDINATES	7-½' QUAD
THE SLATE RIVER NAVIGATION:		
Mouth on James (Slate Mile 0.0)	17.73575.417725	Arvonia VA
Flash Lock (ca. 0.25, not located)	W17.73558.417686	"
Virginia Mills Dam (1.83)	P17.73322.417708	"
Sawmill Dam (3.00)	P17.73215.417658	"
Dam and Canal (?)	P17.73148.417818	"
Pound Lock (4.16) on Island	W17.73105.417540	Diana Mills VA
Dam site (?) (4.53) L Bank	W17.73058.417576	"
Pound Lock & Dam (?) L Bank (8.26)	W17.72822.417532	"
Pound Lock & Dam (7.60) L	W17.72780.417425	"
Diana Mills Dam (9.45)	P17.72690.417287	"
Flash Lock (12.15)	W17.72662.417025	"
Pound Lock & Dam (12.30) L	W17.72678.417011	"
Flash Lock (13.30)	W17.72603.417039	"
Pound Lock & Dam (13.73) L	W17.72564.416984	"
Flash Lock (14.20)	W17.72506.416950	"
Pound Lock & Dam (15.15) L	W17.72480.416916	"
Pound Lock & Dam (16.40) R	W17.72378.416800	"
Pound Lock & Dam (16.97) R	W17.72340.416762	"
Pound Lock & Dam (18.10) R	W17.72176.416768	"
Chambers Mill Dam (19.25)	P17.72190.416636	Dillwyn VA
Pound Lock & Dam (23.00) R	W17.71846.416573	Buckingham VA
Flash Lock (24.40)	W17.71932.416420	"
Slate River Mills Dam (25.65)	P17.71784.416329	"
Possible Head of Navigation (28.50)	17.71700.416130	"
THE MUDDY CREEK NAVIGATION (for batteaux, no locks):		
Mouth on James River	17.75825.417161	Cartersville
Muddy Creek Mill, Head of Nav.	17.75780.417082	" VA
THE SALLEES CREEK - DEEP CREEK NAVIGATION:		
Mouth on James River	18.23777.416805	Powhatan VA
Possible Lock and Dam site	W18.23717.416763	"
Canal outfall at Belmead (locks?)	18.23606.416730	"
Stone Dam at head of canal	E18.23589.416634	"
Upper terminus (?) at mill	17.76462.416282	Trenholm VA
THE TUCKAHOE CREEK NAVIGATION:		
Junction with J&AK	18.27248.416040	Bon Air VA
Lower Lock	W18.26720.416122	Midlothian VA
Feeder Ditch at J&AK, to Upper Ln.	18.26738.416100	"
Upper Locks (2), on canal	W18.26832.416182	Bon Air VA
Guard Gate, on canal	*W18.26848.416334	"
Upper terminus at Broad Branch	18.26595.416898	Midlothian VA
THE DUTCH GAP CANAL (center)	18.29104.413908	Dutch Gap VA
THE PROVIDENCE FORGE CANAL:		
Lower end at Hully Landing	18.32050.414425	Providence
Present upper end	18.31885.414455	" Forge VA
Old terminus,Jones' Creek nr. Forge	18.31884.414543	"
WALKER'S DAM LOCK (working)	E18.32852.414151	Walkers VA
THE ASHTON CREEK CANAL:		
Outfall on Appomattox	18.29140.413240	Hopewell VA
Possible Head of Navig. at Mill	*18.29000.413252	"
THE LOWER APPOMATTOX NAVIGATION (no locks):		
Lower end at Port Walthall	18.29270.413220	"
Head of Nav. at Petersburg Harbor	18.28680.412360	Petersburg VA
THE UPPER APPOMATTOX NAVIGATION (with selected wing dams):		
Petersburg Basin (lower terminus)	E18.28545.412260	"
Indian Town Creek Aqueduct	PS18.28349.412205	"
Toll Locks (4)	PS18.28340.412206	"
Upper Appomattox Canal Guard Gate	W18.27800.412210	Sutherland VA
Low Wall Sluice	E18.27606.412190	"
Caudle's Lock	W18.27600.412178	"
Caudle's Dam	I18.27493.412275	"
Short Wall Sluice	I18.27568.412229	"
Traylor's Wall	I18.27498.412277	"
Piney Wall Chute	I18.27400.412285	"
Black's Lock	I18.27273.412290	"
Black's Wall	I18.27253.412328	"
Bolt's Dam	I18.27190.412416	"
Exeter Mills and Lock	I18.26948.412564	Beach VA
Gould's Falls Lock and Dam	I18.26752.412766	"
Eppes Falls Lock & Dam	W18.25913.413022	Winterpock VA
Deep Creek Shoals Wing Dams	G18.25155.415195	Matoaca VA
Holcomb's Shoals Wing Dams	G18.25103.413324	"
Genito Mills Lock	G18.24646.414905	Clayville VA
Mossingford's Lock and Dam (not located)		Chula VA
Tucker's Ford Lock & Dam (?)	P18.24038.415148	"
Royaltown Mills Lock & Dam	W18.23738.415269	"
Brackett's Bends Lock & Dam (?)	*W17.76450.415360	Ballsville VA
Randolph's Gravel Lock & Dam (?)	*P17.76018.414940	"
Clement Town Mills Locks (2)	W17.75882.414786	"
Wood's (Island) Ford Lock & Dam(?)	W17.75060.414790	Cumberland VA
Stony Point Mills Locks (2)	W17.74770.414558	"
Webber's Ford Lock & Dam	*W17.74402.413935	Deatonville VA
Routn's Sluices Lock & Dam (?)	W17.74175.413670	Rice VA
Jamestown Lock & Dam	*W17.73884.413428	"
Bush River Lock & Dam (Flat Book)	*W17.7371 .41323	"
Venable's Mill Locks (2)	W17.73468.413180	"
Bypass canal, Farmville, head	17.73049.413221	Farmville VA
Morton's Mill Lock	P17.72985.413337	"
Good Sluices & Wing Dams	E17.71550.413788	Prospect VA
Head of Navigation, Plantagenet	E17.71328.414124	Andersonville VA

SITE	UTM CO-ORDINATES	7-½' QUAD
THE DEEP CREEK NAVIGATION:		
Holcomb's Mill Canal Lock	W18.25104.413217	Mannboro VA
THE JUNCTION CANAL ROUTE (unfinished):		
Terminus on Staunton R., Randolph	17.70532.408382	Saxe VA
Terminus on Appomattox, Farmville	17.73047.413210	Farmville VA
THE DISMAL SWAMP CANAL:		
Gilmerton Lock (stone)	E18.38306.407062	Norfolk S VA
Gilmerton Guard Gate (stone)	G18.38078.406805	"
Cross Lock	G18.38044.406753	Deep Creek VA
Deep Creek Lock	E18.38035.406736	"
Wilkins Lock	*WM18.37893.406290	"
North West Lock	M18.37655.405238	Lake Drummond
Lake Drummond Feeder Canal Lock	M18.37128.405075	" VA-NC
Temporary Lock	WM18.3783 .40415	L. Drummond SE
Culpeper Lock	M18.38128.403331	South Mills NC
Spences Lock	W18.38073.403480	"
South Mills Lock	E18.38128.403331	"
Old South Mills Locks	B18.38122.403334	"
Turner's Cut, South End	18.38470.402760	"
THE NORTH WEST CANAL:		
Mouth on Northwest River	18.38817.405094	Lake Drummond
Outfall Locks (2), lower end	W18.38618.405090	" SE VA-NC
Culvert	*W18.38153.405136	"
Upper Lock	*W18.37742.405224	"
Junction with Dismal Swamp Canal	18.37668.405280	Lake Drummond VA-NC
THE JERICHO DITCH:		
Lake Drummond Terminus	18.36830.405390	"
Shingle Creek Terminus, Original?	18.36115.406667	Suffolk VA
Present	18.36130.406652	"
THE WASHINGTON DITCH:		
Lake Drummond Terminus	18.36830.405390	Lake Drummond VA-NC
Eastern Terminus	18.36101.405670	Suffolk VA
THE ALBEMARLE & CHESAPEAKE CANAL:		
Great Bridge Lock on VA Cut	E18.38850.406474	Fentress VA
North Carolina Cut, at bridge	18.41445.402223	Coinjock NC
THE KEMPSVILLE CANAL:		
West end of swamp cuts	18.3950 .407576	Kempsville VA
Visible remains in 1989 from	18.39745.407760	"
to	18.39630.407785	"
Proposed East End, Thalia Creek	18.39945.407855	"
THE ROANOKE RIVER NAVIGATION SYSTEM:		
THE ROANOKE CANAL:		
Foot of Flight (8), Weldon Basin	W18.26780.403399	Weldon NC
Weldon Basin	B18.26740.403436	"
Chockoyotte Creek Aqueduct	E18.26614.403517	"
Locks 3 & 4, Roanoke Rapids	P18.26283.403861	Roanoke Rapids
1 & 2, "	E18.26276.403964	" NC
Guard Lock, head of Roanoke Canal	I18.25834.404033	"
THE ROANOKE RIVER:		
Eaton's Falls Lock	I18.25218.404066	Thelma NC
Pugh's Falls Lock (not located)	*I18.24220.4044837	Gasburg VA-NC
THE STAUNTON RIVER (with selected Sluices):		
Lower Cat Rock Sluices (Nat. Reg.)	E17.68136.410141	Brookneal VA
Upper "	G17.68100.410156	"
Forrest's Fish Traps Sluice	G17.67818.410066	"
Flat-Land Falls(Blasting Hole) Sl.	G17.67494.410135	Long Island
Lunch Rock Sluice	G17.67352.410150	"
Pannill's Falls Sluice	G17.67242.410178	"
Little River Sluice	G17.66907.410348	"
Navigation Co. Bldg. site, Sales	M17.58322.412743	Salem VA
Head of Navigation?, on South Fork	17.58660.411945	Ellinton VA
THE DAN RIVER (with selected sluices):		
Lock Flight (4) in Danville	*M17.64412.405026	Danville VA-NC
Head of Canal, "	B17.64332.405076	"
Eagle Falls Lock	* 17.6083 .40319	SW Eden NC
Jacob's Creek Landing	G17.59998.402766	Mayodan NC
Gravel Shoal Sluice	G17.59872.402790	"
Slink Shoal Sluice & Wing Dams	E17.59533.402706	"
Cross Rock Rapid Sluice	G17.59508.402685	"
Robertson's Fish Trap Shoal Sluice	G17.59464.402732	"
Mayo River Sluice	G17.59388.402740	"
BANISTER RIVER, mouth, nav. 25 mi.	17.69700.406353	Omega VA
THE SMITH'S RIVER NAVIGATION:		
Martinsville Fish Dam / Sluice	E17.60183.405680	Martinsville E
Head of Nav. at Blue Falls	I17.58200.407920	Philpott \VA Reservoir VA
THE NEW RIVER NAVIGATION (selected sluices):		
Lead Mines Division head, Buck Dam	17.5051 .40735	Austinville VA
Two sluices at Ivanhoe	G17.50460.407440	"
Lead Mines Div. foot, Austinville	17.5071 .40785	"
New R. Bridge Div. head, Allisonia	17.5236 .40881	Hiwassee VA
foot, Radford	17.5370 .41096	Radford N VA
Greenbrier Div.head,Shumate's Falls	17.51196.41375	Peterstown
Wylie Falls sluice & wing walls	E17.5122 .414041	" WV-VA
(Other known sluices are in this Division in VA-WV)		
Greenbrier Div. foot, Hinton	17.5093 .41694	Hinton WV
THE NORTH FORK OF THE HOLSTON:		
Lock at David Ross' Mill, Kingsport	*17.3554 .40466	Kingsport TN-VA
Head of Navigation at Chatham Hill	*17.45344.408992	Chatham Hill VA



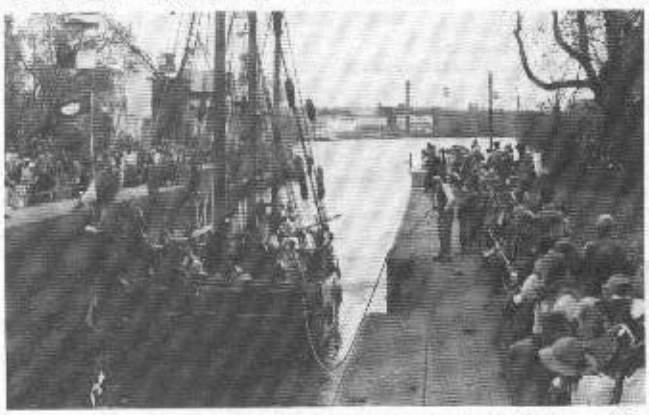
THE JAMES RIVER & KANAWHA CANAL

In its day the James River and Kanawha Company was one of the largest corporations in America. It began as the James River Company two centuries ago, in 1785, with George Washington as its first (although honorary) president. By the end of 1789, the James River Canal, actually two canals around the major falls in Richmond, was in operation, making it the nation's first operating navigation canal system with locks. The Lower Arch at the head of one of these canals is now in a city park. Above Richmond, more than 250 miles of the James and its branches were improved by wing dams and sluices for batteau navigation.

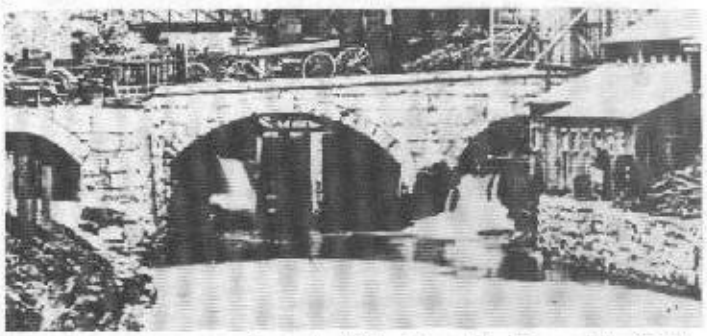
In 1851, after reorganization as the more ambitious James River and Kanawha Company, the company completed 197½ miles of towpath canal - called for short the JR&K, or Kanawha Canal - from Richmond to Buchanan. The company's works also included a mile-long Tidewater Connection Canal from the canal basin in Richmond down to the tidewater James; a 20-mile branch to Lexington; a connecting branch to the Rivanna River; road bridges over the James; a steamboat navigation system along the Kanawha River; and a 200-mile turnpike road over the Alleghany Mountains to link the canal with the Ohio River.

A westward extension of the canal beyond Buchanan was begun in the 1850's but was abandoned unfinished. Even up to the last moment in 1880, when the canal was sold to what is now the Chesapeake & Ohio Railway, the company hoped to complete its goal of a "Great Central Water Line" across the mountains from the James to the Kanawha, but in the end the Iron Horse won at last.

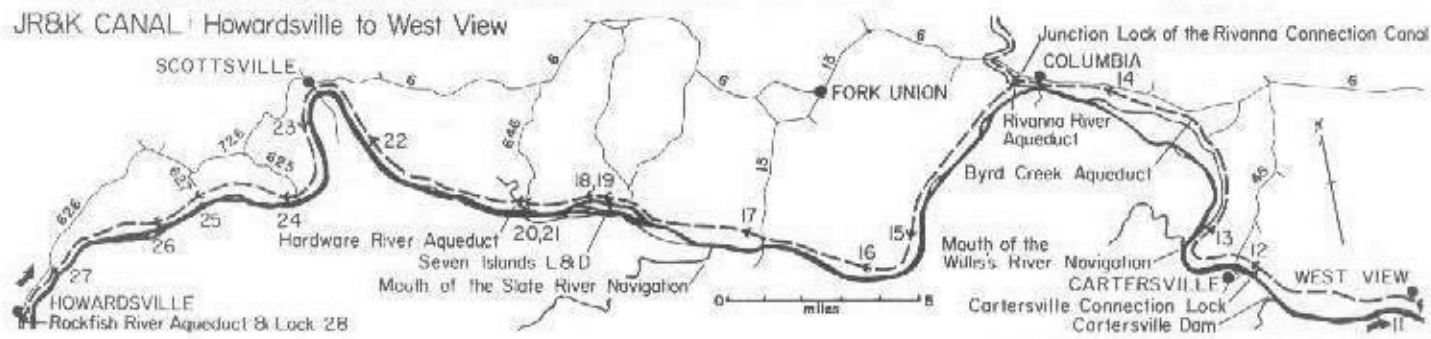
For a detailed automobile guide, see A GUIDE TO THE WORKS OF THE JAMES RIVER & KANAWHA COMPANY, FROM THE CITY OF RICHMOND TO THE OHIO RIVER, by W.E. Trout, III. For a canoeing and historic guide to the batteau and canal sites between Lynchburg and Richmond, see THE JAMES RIVER BATTEAU FESTIVAL TRAIL, by W.E. Trout, III. Both are available from VC&NS. For a general overview see WATERWAY TO THE WEST by James J. Kirkwood, National Parks and Conservation Association (1963) available from NPS or VC&NS. For a detailed history see HISTORY OF

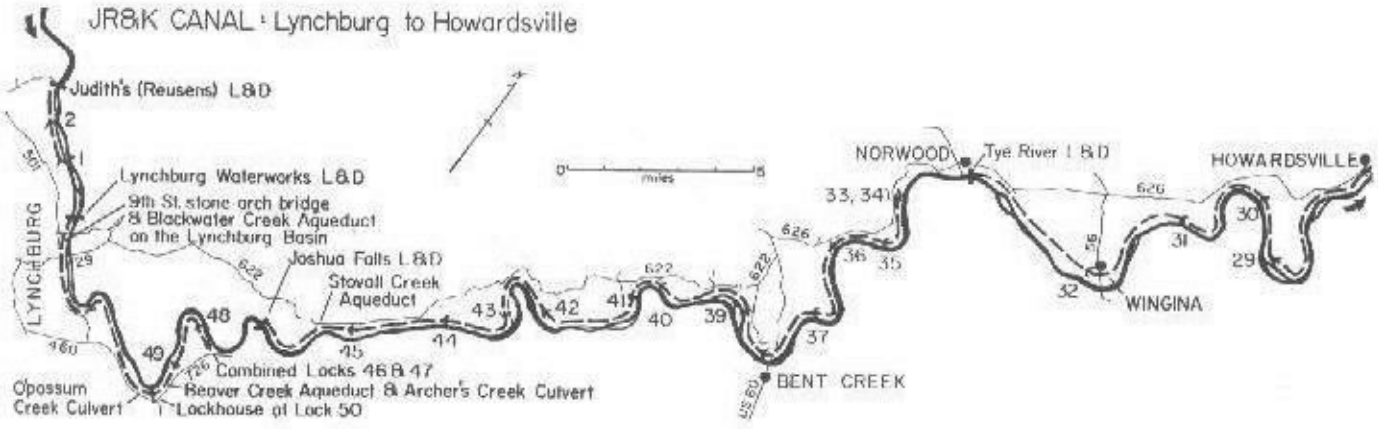


The schooner ALEXANDRIA entering Richmond's Great Ship Lock in 1989. (George Rawls photo)



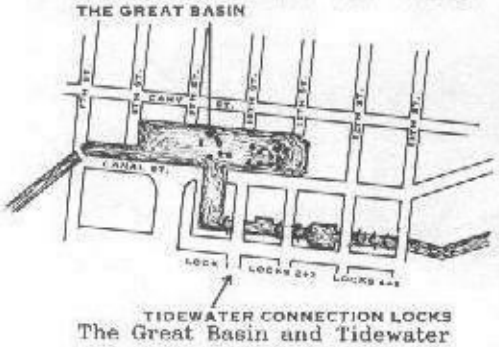
The three stone arches at 13th Street in Reynolds Metals Tidewater Connection Locks Park. The center arch was for canal boats; the right arch was for a mill race; and the left arch was for a branch canal into a mill. (Civil War photo, Reynolds Metals Collection)





THE JAMES RIVER AND KANAWHA COMPANY, by Wayland F. Dunaway (Columbia University Studies in the Social Sciences, #236, 1922, reprinted by AMS Press, 56 E. 13th St., NY NY 10003). See also THE BEST FROM AMERICAN CANALS I:27-32, II:39-44, and III:34-40.

The major libraries for Virginia canal research are the Virginia State Library and the Virginia Historical Society in Richmond. For more on the JR&K see the Chesapeake & Ohio [Railway] Historical Society archives, P.O. Box 79, Clifton Forge, VA 24422, 1-800-453-COHS.



The Great Basin and Tidewater Connection Locks in downtown Richmond. The dots indicate the locations of some of the boats discovered during the excavation.

THE CANAL IN RICHMOND

Only the major canal sites are listed here; for more sites and details see A GUIDE TO THE WORKS. At the eastern end of the canal is the 1854 GREAT SHIP LOCK (drive east on Cary Street to the end, then right to the river), in a city park, at the end of a 10-block stretch of intact canal called the RICHMOND DOCK. In 1989 the lock was brought back to life by volunteer work, as the first part of an effort to re-establish the canal as an important part of the renaissance of downtown Richmond.

George Rawls excavating the bow of one of the iron-hulled packet boats discovered in the Great Basin.

At 12th and Byrd streets are two of the TIDEWATER CONNECTION LOCKS, in an excellent park with interpretive displays developed by Reynolds Metals Company. Here at the foot of 12th Street is also part of Richmond's CANAL WALK, a 1¼-mile self-guided walking tour of the city's historic canals and industries. Take it west along the HAXALL CANAL, a mill race slated to become part of the new navigable canal system, past a canalboat exhibit to a statue of a batteauman in a batteau. Up the hill below the white headquarters buildings of Ethyl Corporation is an intact section of the original James River Canal bed, whose future is uncertain (See the Nov. 1989 AMERICAN CANALS). The walk circles back to the GREAT BASIN which is now filled with high-rise buildings.

Richmond's Great Basin (1800-1880) was a graveyard for lost batteaux, canal boats and cargo which were rediscovered in building excavations in 1983-85. (HARPER'S NEW MONTHLY MAGAZINE, September 1857)

It was here in the three-block long Great Basin that dozens of boats were discovered during building excavation in the 1980's. Since then over two dozen replicas of James River Batteaux have been built and navigated down the James during the annual James River Batteau Festival (See General Information). In the Omni Hotel in the Basin is interesting canal art includ-

ing a painting at the front desk, a bronze map of the canal on the floor of the atrium, a rendering of the basin excavation in the glassed-in elevator shaft, and a batteau in the clock tower beside lock stones laid out to form lock "footprints."

Drive west through Richmond to Rt.161 (The Boulevard) to Pump House Drive, just north of the river. The Victorian Gothic BYRD PARK PUMP HOUSE (1883) ran its pumps on canal water. It is now in a city park under development, including two stone THREE-MILE LOCKS (being three miles from the Great Basin) and the LOWER ARCH (1789), the ceremonial gateway to the original batteau canal of George Washington's time.

THE CANAL WEST OF RICHMOND

West of Richmond, the C&O Railway was laid along the canal towpath. The canal bed is usually visible beside the tracks. Take care because this is an active line and train's can't stop for you. Accessible highlights on the JR&K, in order west of Richmond are:

LICKINGHOLE CREEK AQUEDUCT: Take Rt.607 to the tracks and walk 0.4 miles west.

BYRD CREEK AQUEDUCT: Take Rt.608 to the tracks and walk 0.7 miles west. This and the Lickinghole aqueduct are beautifully preserved, each a single cut-stone arch.

THE RIVANNA CONNECTION CANAL: Visible beside Rt.6 west of Columbia. The Junction Lock, whose gates faced in both directions, is now barely visible between Rt.6 and the tracks at the end of St. Andrews Street. The remains of the JR&K's Rivanna Aqueduct are nearby. Columbia could become Virginia's historic canal village - COLUMBIA CANAL TOWN - by restoring the Rivanna Connection Canal.

HARDWARE RIVER AQUEDUCT: Take Rt.646 to the tracks and walk west 0.3 miles. Two stone arches and 1838 inscription.

SCOTTSVILLE: No sign of the canal now, but there are some canal items in the museum in the Barclay House. An excavation of the canal basin here is in order!

ROCKFISH RIVER AQUEDUCT: Beside Rt.6. Had a wooden trough.

STOVALL CREEK AQUEDUCT at Galt's Mill on Rt.622. Two arches, well preserved.

LYNCHBURG

Lynchburg has one of the best stretches of canal for an automobile tour. From Lynchburg, take US 460 west to the Mount Athos Road (Rt.726) exit then 2½ miles to the Babcock & Wilcox ball field (left).

Behind the back fence (private) are COMBINED LOCKS 46 AND 47, excavated in the 1980's by Gibson Hobbs. These raised boats from the Joshua Falls Dam pond into the canal to Lynchburg. They are of rough stone backing once lined with plank.

Drive back on Rt.726 for 1.7 mile to ARCHER'S CREEK CULVERT. This is a well-preserved stone arch with a 14-foot span.

After another 0.1 mile is BEAVER CREEK AQUEDUCT, just up the stream. This had a wooden trough with a 40-foot span. After canal days it was used by the road and perhaps the railway.

On the approach to West 460 turn right at the gravel road into a rail yard. LOCK 50 is under the rail yard; next to it the wooden C&O building may be the only remaining wooden LOCKHOUSE on the canal. Efforts are being made to preserve the lockhouse by Bill Moore of Moore's Country Store.

Continue onto West 460 for 0.6 mile to a turnout just before crossing a creek. This is OPOSSUM CREEK CULVERT, the canal's second largest, with a 24-foot span.

After 1.7 mile turn right onto the Concord Turnpike (Rt.1011) to the railway crossing. FISHING CREEK CULVERT is in a deep hole just up the tracks. Cross over the tracks and continue west.

From here to 9th Street was Lynchburg's LOWER BASIN, now used by railways and industry. Follow the road left across the tracks, then right on Jefferson St., right at 9th Street (originally Water Street) down to the tracks.

The road crossed the NINTH STREET BRIDGE, a well-preserved stone arch which spanned the canal, complete with an inscription, "BUILT AD 1839 BY J.S.KING." Towropes have worn grooves in the ring stones. Walk across the tracks to a huge boulder with a plaque marking the site of LYNCHBURG'S FIRST HOUSE and LYNCH'S FERRY. Behind the boulder in the creek are the piers and abutments of BLACKWATER CREEK AQUEDUCT, which had five 20-foot wooden spans. Efforts are underway to create an urban canal park here.

The hull of the packet boat MARSHALL, which carried Stonewall Jackson's body up the canal to Lexington, is in Riverside Park off Rivermont Ave. (Alt 501). From the parking lot go north up the hill to the chain-link fence.

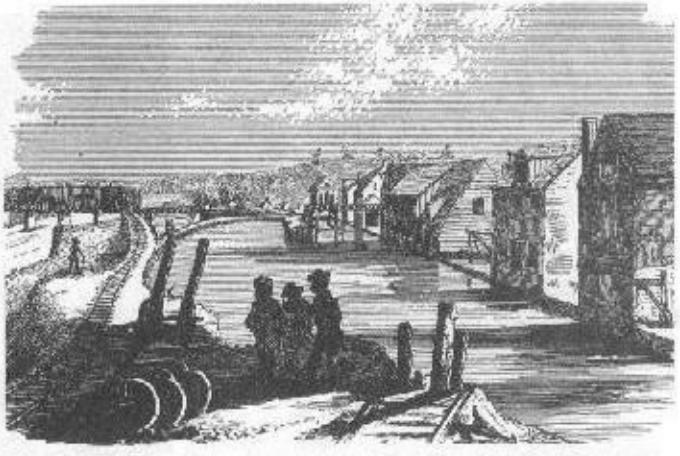
THE BLUE RIDGE GORGE

From Lynchburg west, the canal was a slackwater navigation, with 12 dams with locks and canals. Follow US 501 west through the Blue Ridge Mountains, where most of the canal dams are still in use for hydropower and water supply.

COLEMAN'S FALLS DAM is visible from US 501. No sign of lock.

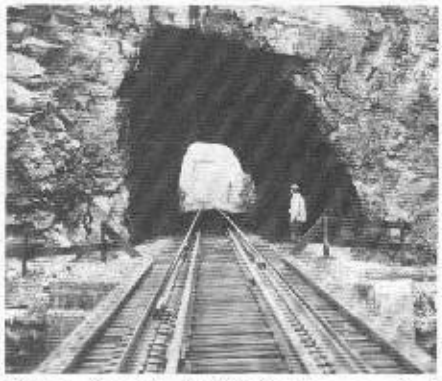
BATTERY CREEK LOCK, a fine cut-stone lock under the BLUE RIDGE PARKWAY has been carefully restored by the National Park

The Lower Arch on the first operating canal system in the US (1789) was visited by George Washington in 1791, as envisioned in this 1990 painting by Art Markel.



The JR&K Canal basin in Lynchburg, showing a gauge dock (center). A riverfront park is planned nearby. (HARPER'S NEW MONTHLY MAGAZINE, September 1857)

Service, and is the only lock now with wooden gates in Virginia. The information center, open in season, has canal displays and information including WATERWAY TO THE WEST, the NPS publication for this restoration. This was an outlet lock, once with a towpath bridge across the lower end. Only the lower end of the canal is watered now. Efforts are underway to make the lock operable again so batteaux can use it for special events.



Mason Tunnel, built for the canal, is used by the C&O Railway, which raised the height of part of the arch. Looking east from Aqueduct #2. (Alexander C. Brown photo, 1970)

West of here US 501 was the canal company's BLUE RIDGE TURNPIKE (1824) around the rapids in the Blue Ridge Gorge. The road crosses the James at CUSHAW FALLS DAM, which once fed the canal down to Battery Creek Lock.

From overlooks on US 501, look down into the gorge where rapids made batteau navigation hazardous before the seven-mile, 11-lock BLUE RIDGE CANAL was built in 1824. It was replaced by the JR&K in 1850. It was here that in January 1854 a canalboat broke its tow rope and was swept over the dam and down the rapids. Frank Padget, a slave, lost his life rescuing the passengers. A monument (now inaccessible) was erected to him. A copy should be at an overlook or at the Blue Ridge Parkway.

At Glasgow, a branch line ran up to Lexington. See the NORTH RIVER NAVIGATION section.

BUCHANAN was the head of canalboat navigation on the James, the western terminus of the JR&K Canal. The only riverfront site was the BUCHANAN GAUGE DOCK, which is now completely underground beside the boat ramp and deserves to be restored to give Buchanan a canal-related riverside park. The BUCHANAN COMMUNITY HOUSE at Washington and Water streets was a warehouse in canal days and has for sale copies of Edward Beyer's famous 1855 painting of Buchanan's waterfront when it was full of batteaux and canalboats.

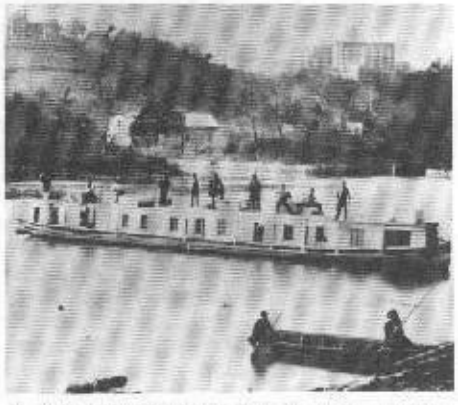
THE UNFINISHED DIVISION

West of Buchanan a 15-mile section of canal was begun in 1853 but never completed. This rare section of canal, which we now call the UNFINISHED DIVISION, is especially valuable because the unfinished structures show how canal works of that time were being constructed; finished works usually leave us less evidence of construction techniques. This is especially true of the unfinished Marshall Tunnel, which needs a through archaeological study of the fragile signs of construction before it can be opened to visitors; therefore the tunnel has not been included in this guide. The entire unfinished division deserves preservation and investigation as a unique archaeological resource.

The other canal tunnel, MASON TUNNEL, was completed, is now used by the C&O Railway, and might become part of the AMTRAK route. From Rt.43, take Rt.630 across the river, right on Rt.625 and right on Rt.690 for 1.4 miles to a narrow ridge on top of the tunnel. To east and west the railway crosses the James on piers built for canal aqueducts with wooden troughs.

One of the most imposing structures on the James is GWYNN LOCK AND DAM, 2.4 miles east of Eagle Rock on Rt.688. The ground is strewn with cut stones, perhaps left by the masons when they abandoned it in the middle of construction. The lock is impressive and there is also an opening beside the river which let batteaux through the dam while it was under construction.

The westernmost lock on the canal was 0.3 miles west of the lime kilns in Eagle Rock. Never finished, its rough stone walls still wait to be lined with plank or cut stone. The Eagle Rock Garden Club has created a fine canal park here, complete with a monument to the "Last Lock."

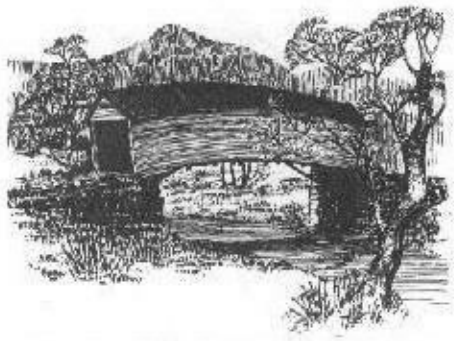


A Kanawha Canal packet boat at the Lexington Docks about 1870-1880, with the war-damaged VMI barracks in the right background. (Ruth Anderson McCulloch Branch, Association for the Preservation of Virginia Antiquities)

THE JAMES RIVER & KANAWHA TURNPIKE

The Kanawha Canal was never opened beyond Buchanan, 197½ miles from Richmond, but the canal company built a 200-mile JR&K Turnpike to connect it with the Ohio River. The only original bridge remaining from canal days (1857) is in HUMPBACK BRIDGE WAYSIDE, at the Callaghan exit of I-64 west of Covington. Saved by the Covington Business and Professional Women's Club and the Highway Department, it is the only surviving example of the wooden trussed arch in America.

West of here was to be engineer Edward Lorraine's visionary 9-mile canal tunnel through the Alleghanies, linking the east coast with the American interior. For details see A GUIDE TO THE WORKS.



Humpback Bridge was part of the canal company's 200-mile turnpike connecting the canal line with the frontier on the Ohio River. (Robert Rose drawing, courtesy of VA Department of Transportation)

THE NORTH RIVER NAVIGATION

The North River in Rockbridge County is now known as the Maury, renamed after Matthew Fontaine Maury, "Pathfinder of the Seas" in 1873. By 1801 the James River Company had improved 20 miles of it for batteau navigation, up to Lexington; the head of batteau navigation was 10 miles further upstream near Goshen Pass.

Once the JR&K Canal was under construction past the mouth of the Maury, the North River Navigation Company began, and the JR&K finished, a 20-mile canal and slackwater navigation in 1841-1862, for mule-drawn boats from the James up to Lexington. This had 9 stone dams, one crib dam, 9 stone guard locks, 14 stone lift locks, 2 stone guard gates (half-locks), 5 small aqueducts with timber troughs, 22 bridges, 4 ferries (to carry mules across when the towpath changed banks), and 12 lockhouses.

Locks and Dams on the North River Navigation

Today, the navigation is one of the best preserved in Virginia and the easiest to tour by car. For a detailed tour see THE MAURY RIVER ATLAS, by W.E. Trout, III, available from VC&NS.

Sites of special interest on this tour are (from the downstream end), LOCK 14 (private), visible from U.S.501; the ruins of LOCK 13 at the Rt.130/501 junction; MILLER'S LOCK AND DAM, DEVIL'S STEP LOCK AND DAM, and GOOSE NECK DAM beside Rt.663; and BEN SALEM LOCK AND DAM on U.S.60 in Ben Salem Wayside, one of Virginia's best known canal parks.

The head of navigation was at THE LEXINGTON DOCKS on VMI Island just upstream of the U.S.11 bridge. From here down to U.S.60 at Buena Vista the towpath is generally followed by the 7-mile CHESSIE NATURE TRAIL along an old railway bed donated by the C&O Railway, now CSX. Hiking this trail is the way to see REID'S LOCK AND DAM, SOUTH RIVER DAM, and ZIMMERMAN'S LOCK AND DAM. An excellent FIELD GUIDE TO THE CHESSIE NATURE TRAIL is available from the Historic Lexington Foundation, 8 E. Washington St., Lexington, VA 24450, (703) 463-2552.

Handy for canoeing is the James River Basin Canoe Livery, Rt.4, Box 125, Lexington VA 24450, in the big Tea Pot near Ben Salem Lock and Dam.

The river from Lexington to the James deserves to be designated a State Scenic River. Also, Rt.663, one of the best county roads in Virginia for canal touring, deserves special consideration and protection as an historic riverside trail. Perhaps it could be part of an extended Chessie Nature Trail down to the James.

Many thanks to Royster Lyle, Tom Kastner, Tom Henson, D.E. Brady and the late Richard Fletcher for help with this section.

THE RIVANNA NAVIGATION

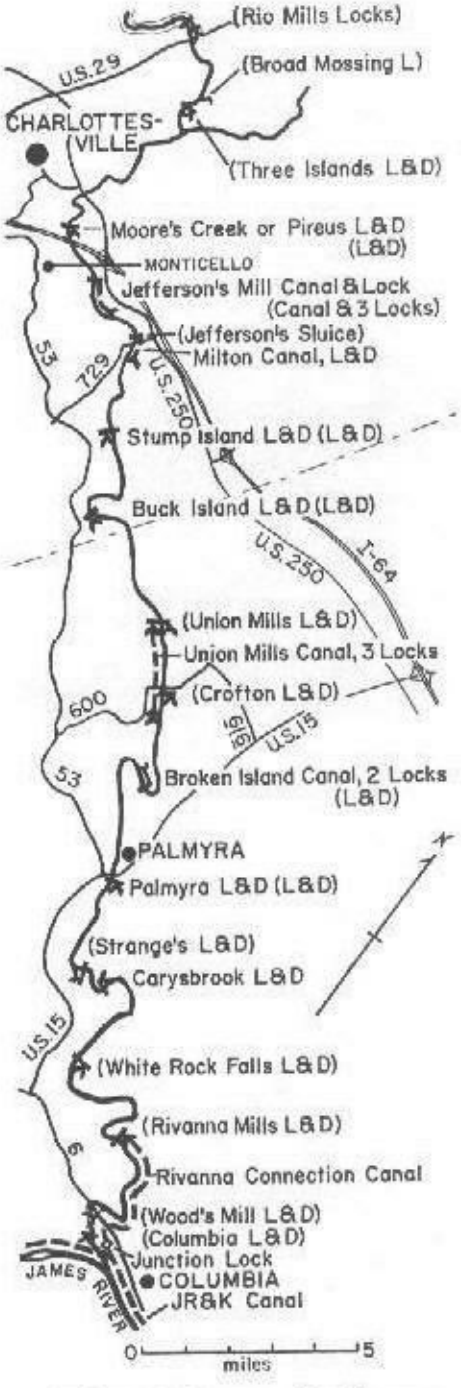
Thomas Jefferson was proud of the fact that he began his career in public life by organizing the first navigation improvements on the Rivanna, in 1763. His sluice above Milton can still be run by canoes and batteaux. In 1805 the work was taken over by the Rivanna Navigation Company, which built sluices and wing dams, and four wooden locks, along some 43 miles of the Rivanna, from above Charlottesville down to the James. By the 1830's there were 20 locks and at least 13 dams, all for batteaux.

When the JR&K Canal reached the Rivanna, it spurred a complete rebuilding of the navigation for mule-drawn boats in the 1850's. The lower 20 miles, in Fluvanna County, had 4 dams, 8 stone locks, and 3 miles of canal, and was connected to the main line of the Kanawha Canal by the RIVANNA CONNECTION, a 4½-mile canal with a dam, two stone locks and two culverts, built by the JR&K Company.

In the 1870's the navigation was extended to Charlottesville in Albemarle County by a less expensive 10-mile system of 5 dams and 9 locks, but the railroad era had arrived and it was short-lived. The works in Fluvanna County lasted, after a fashion, until 1908 when they were replaced by a railway up the Rivanna valley. Now even the railway is gone.

Sites accessible by road, beginning at the downriver end, are:

The bed of the RIVANNA CONNECTION CANAL, parallel to Rt.6 from Columbia west to the Rivanna



Locks and Dams on the Rivanna (Batteau Era locks in parentheses)

bridge, where it goes under Rt.6 and follows the bluffs upriver. This 4½-mile canal is a prime candidate for a riverside park with a hiking trail and eventual rewatering, to create COLUMBIA CANAL TOWN at the junction of the Rivanna and the JR&K.

PALMYRA LOCK is visible just downstream of the US 15 bridge in Palmyra. Canal exhibits are in the OLD STONE JAIL MUSEUM in Palmyra, open in season, and outside are paddlewheels reconstructed from the remains of a homemade sidewheel canal boat found on the Rivanna.

From US 15 4½ miles north of

Palmyra, turn L on Rt.616 for 2 miles, then L on Rt. 600 to the Rivanna. Just downstream of the east end of the bridge, visible at low water, are the remains of CROFTON LOCK, a stone lock for batteaux, dating from the 1830's and preserved by the highway department when the bridge was rebuilt. Across the bridge is the UNION MILLS CANAL, built in the 1850's for canal boats. A 1/4-mile towpath trail developed by the Lake Monticello Residents Association runs downstream to the two stone outlet locks, one completely silted over. Two miles upstream, at the other end of the canal, is Union Mills Lock (private), where there was a dam.

Theodore Haxall's scale model of the Rivanna Navigation's steamboat - an open freighter powered by a wood-burning steam engine. The paddle wheels are on display in Palmyra.

THOMAS JEFFERSON'S SLUICE is off Rt.729 near Shadwell. Walk 0.2 mi. up the north bank to the falls. There is a cut near the south bank and a shallow one in the center. The shallow one may be Jefferson's, the other made later by the navigation company, but canoeists intending to run Jefferson's Sluice should run both! In the 1870's there was a lock and dam here at the head of the 0.7-mile MILTON CANAL. The wooden lock site can be seen blasted out of the cliff on the north bank, but little is left of the canal.

The rest of the locks and canals on the Rivanna are best seen by canoe. Almost all of the sites are now points of interest along the RIVANNA STATE SCENIC RIVER, the state's first scenic river, designated in 1975. There are canoe ramps and parking areas at Milton, Crofton, Palmyra and Columbia.

For details see THE RIVANNA SCENIC RIVER ATLAS, by W.E. Trout, III, available from VC&NS, and "The Rivanna Navigation Company" by Minnie Lee McGehee, BULLETIN OF THE FLUVANNA COUNTY HISTORICAL SOCIETY, October 1967.

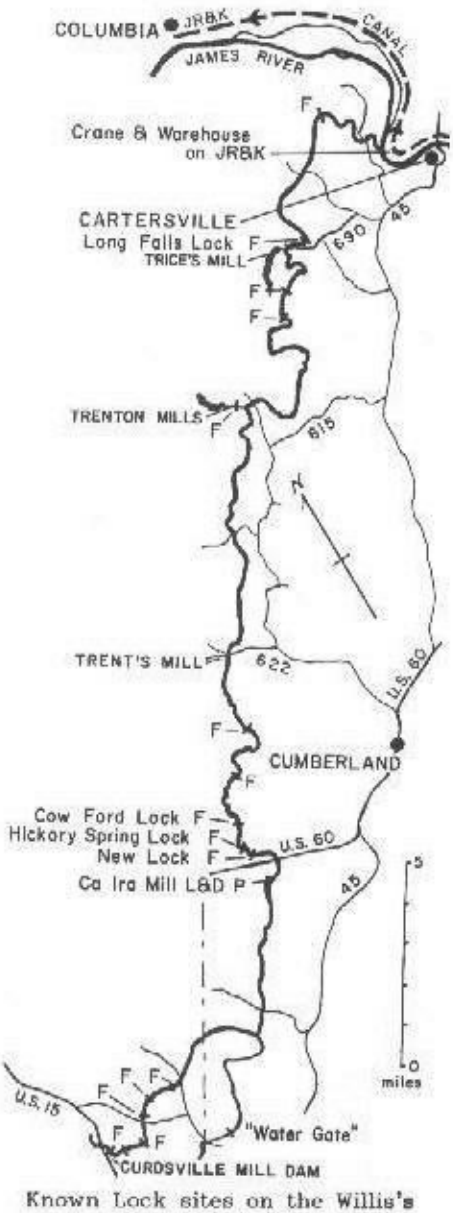
THE WILLIS'S RIVER NAVIGATION

The Willis's River Navigation was a county project, built and maintained by Cumberland County as part of their road system. The first 40 miles, from the James up to Ca Ira at US 60, was completed in 1775-1797. It was later extended 10 more miles upstream to Curdsville in Buckingham County.

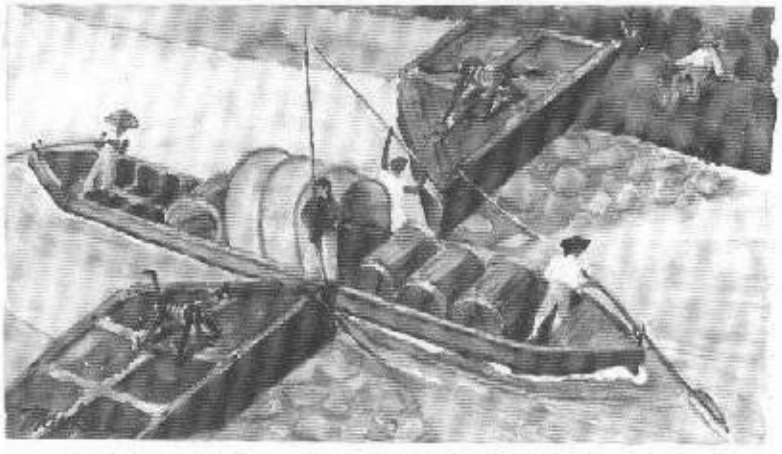
This was a unique navigation system, for instead of the usual pound locks (pound referring to impoundment of water in a lock chamber) it had a series of 15 or 20 FLASH LOCKS especially suited for small streams. They were so successful that engineers recommended Willis's River Flash Locks for other streams but so far they have been discovered only on the Willis's, and on the Slate River in neighboring Buckingham County.

A Willis's River Flash Lock is a falling gate like a truck tailgate, about three feet high and 10 feet wide, set between rock-filled wood cribs in each bank. After the gate was closed, batteaux waited upstream for the pond to fill, then the gate was dropped suddenly to flush boats down to the next lock. It was a simple, inexpensive expedient which served the county well, from Revolutionary times almost into this century. In retrospect, it was just the thing for the economy of the county until railways came along, and unlike many more ambitious systems, it even paid good dividends for a long time.

The best site which is reasonably accessible by car is at mile 42.4, 0.3 miles upstream of the Rt.654 bridge in Buckingham County. The crib structures have rotted aboveground, leaving a pile of rock on each bank. Between them on the river bottom is a timber to which the gate was hinged, proving that this was a flash lock and not just a pair of wing dams forming an open channel. It would be worthwhile to compare this type of lock with similar navigable water gates around the world.



Known Lock sites on the Willis's River Navigation
(P = Pound locks, F = Flash Locks)



A batteau loaded with hogsheads of tobacco, riding on the flood of water just released by the drop gate of a Willis's River Flash Lock. Engineers recommended this type of lock for other small rivers in Virginia. (From a 1992 water color by Art Markel)

For details see THE SLATE AND WILLIS'S RIVERS ATLAS by W.E. Trout, III (in preparation) and "A Willis's River Flash Lock" in the February 1975 issue of AMERICAN CANALS.

THE SLATE RIVER NAVIGATION

Work on this unfortunate waterway began three times, in 1794, 1819, and 1851, but all for nothing. Five mill dams blocked the navigation and the owners refused to install locks. In a resulting court case, the mill owners won.

Today, along 30 miles of river can still be found wing dams probably from the 1790's, flash locks from the 1820's, and wooden pound locks from the 1850's.

No map is known of the navigation so our knowledge is based primarily on field work. Those who wish to see something of the navigation remains would do best to canoe some of the stretches, especially that between Rt.20 and Rt.622 at Melita.

Known Lock Sites on the Slate River (P = Pound Locks, F = Flash Locks)

For details see THE SLATE AND WILLIS'S RIVERS ATLAS, by W.E. Trout, III (in preparation, 1992) and "The Slate River Navigation: Buckingham County's Unfinished Waterway," by W.E. Trout in the Spring 1976 GOOCHLAND COUNTY HISTORICAL SOCIETY MAGAZINE.

The Slate River Company had a magnificent seal showing a laden batteau, but it never finished the Slate River Navigation. (From a manuscript in the Virginia State Library)

THE SALLEE'S CREEK – DEEP CREEK NAVIGATION

If dreams were realities, one of the state's most interesting landmarks of transportation history would now be on Salle's Creek in Powhatan County. In 1836 a company was formed to make a 5½-mile batteau navigation, using flash locks, from the James up Deep Creek and then up its branch Salle's Creek, to mills near U.S. 60. After accomplishing all or most of this, the company became more ambitious and was authorized by the state to extend its waterway to the Appomattox River navigation by a 4½-mile tramway line.

The vision was to tap the commerce of the Appomattox River valley by hauling batteaux and cargo over to the James River for shipment down to Richmond. It would also have tapped the vast Roanoke River basin through the state's proposed JUNCTION CANAL between the Roanoke and Appomattox rivers.

Unfortunately for canal historians neither the tramway nor the Junction Canal was ever built. There are a few signs today of the company's navigation work, but it needs more research and exploration.

For more details see THE SLATE AND WILLIS'S RIVERS ATLAS, by W.E. Trout, III (in preparation).

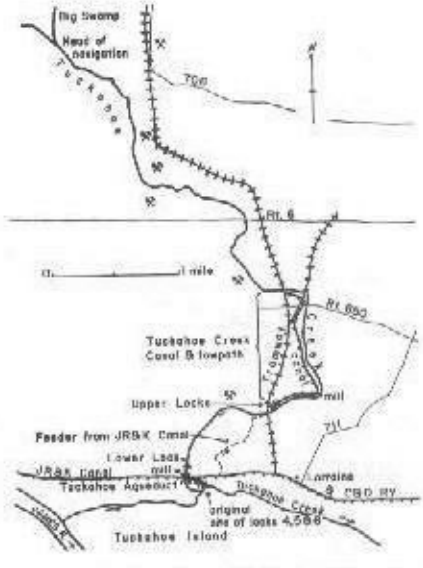
THE TUCKAHOE CREEK NAVIGATION

When the James River Company was organized in 1785, one of its first goals was to reach the Richmond coal fields, which straddled the river only 12 miles west of Richmond. In 1827-28 the Tuckahoe Creek Navigation Company built a 6½-mile batteau navigation up Tuckahoe Creek to the Carbon Hill mines. The system included the 1-3/4-mile Tuckahoe Creek Canal, a dam, three wooden locks, and an unusual mile-long flume to supply water to the canal from the JR&K.

The navigation was probably the most successful in the state, with the most valuable canal stock in Virginia at the time (yielding 33% annually), and it provided the James River Canal (later the JR&K) with a rich source of traffic and tolls. In 1840 it was replaced by the Tuckahoe and James River Railroad, on which mule-drawn cars carried coal down to a wharf on the JR&K.

Today, Tuckahoe Creek is in a fast-developing part of suburban Richmond which could use more thoughtful planning. The creek, its wetlands, the coal pits, the navigation channel, the canal, and the lock sites should be carefully preserved in a nature preserve or park. The canal towpath and the old railroad line together would make an ideal circular trail south of Rt.6. Above Rt.6 the swamp (including coal pits perhaps serviced by batteaux) will be preserved in an historical area by West Creek development.

For details see "The Tuckahoe Creek Navigation," by W.E. Trout in the Autumn 1974 GOOCHLAND COUNTY HISTORICAL SOCIETY MAGAZINE.



The Tuckahoe Creek Navigation into Richmond's Coal Field

THE DUTCH GAP CANAL

The Dutch Gap Canal began as a palisaded ditch built in 1611 by Sir Thomas Dale across a narrow neck in the James River, to protect the town of Henricus. It is said that the ditch was considered "Dutch" because Dale had worked in the Netherlands and used a Dutch technique. It is unlikely that the ditch went down to river level.

During the War of Northern Aggression, Union General Benjamin F. Butler decided to cut a navigable canal there across the 174-yard neck to bypass seven miles of river and the Confederate batteries on Trent's Reach, as part of his attempt to capture Richmond.

Begun on August 10, 1864, work on the canal proceeded under heavy artillery fire. Dredges and steam pumps were used; spoil was carried off in barges. A narrow bulkhead at the upriver end was left uncut to the last. It was mined and blown out on January 1, 1865, but most of the spoil settled back in the canal, which was never made navigable during the war.

In 1871 the cut was opened up for commercial traffic and now carries the entire flow of the James River. What is left of Henricus, after canal building and river widening, is a Chesterfield County park beside the Dutch Gap Canal, accessible from Rt.10 east of I-95.

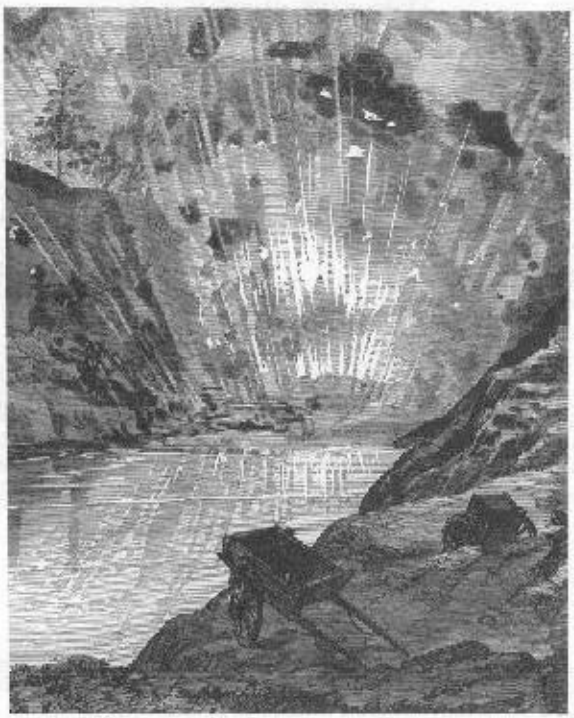
Long after the War, three other cuts were made across other bends in the river, the 1620-yard AIKEN SWAMP-DUTCH GAP CUTOFF, the 1200-yard JONES NECK CUTOFF, and the 1300-yard TURKEY ISLAND CUTOFF. These are on the USC&GS James River navigation chart.

For more details see THE HISTORY OF HENRICO COUNTY by Louis H. Manarin and Clifford Dowdey, U. Press of VA, Charlottesville, 1984; CHESTERFIELD COUNTY, by Jeffrey M. O'Dell, Chesterfield County, 1983; and THE APPOMATTOX RIVER ATLAS, Second Edition.

THE PROVIDENCE FORGE CANAL

The Chickahominy was one of the first rivers explored by Captain John Smith, and it was certainly his most memorable one, for tradition says he ran into difficulties there with the local inhabitants and had to be saved by Pocahontas. The head of navigation for all but canoes has always been 30 miles from the James at Holly Landing, just below Providence Forge, which was an active community in Colonial times with a forge, two grist mills, stores, a bakery, a saw mill and granary, and later tobacco warehouses.

It was in Colonial times that a canal was built through the swamp to extend navigation for lighters from Holly Landing up to the vicinity of the forge and mills. It may be this canal which is still in existence today, a 1.2-mile cut through the swamp, crossed by the Forge Bridge (Rt.155). A branch canal extended closer to the present town of Providence Forge, but this part has been obliterated by gravel operations.



The Dutch Gap Canal was built under fire by Federal soldiers attempting to capture Richmond. On January 1, 1865 the remaining protective bulkhead was blown up. From "Blowing out the Bulkhead of the Dutch Gap Canal" in THE SOLDIER IN OUR CIVIL WAR.

Above this canal there are numerous cuts through the Chickahominy River swamp, probably for lumbering and drainage, but they have not been explored for navigation remains. At least two canal companies were formed to clear the river at least to present US 360, but there is no evidence that anything was ever done.

WALKERS DAM LOCK, 9 miles down the Chickahominy from Providence Forge and 22 miles from the James, is the most recent small lock constructed in Virginia, and one of the few operating locks left in the state. It was built in 1941 to let small craft through a dam which impounds fresh water for Newport News. The lock has a 15 by ca. 65 foot chamber and a lift of three feet at mean water level. New iron miter gates with vertical slide valves were installed in 1973.

Walker's is a good example of the type of small, simple modern locks which could be used to reopen historic canals needing a new lock or two.

For details see "Report on Navigation of Chickahominy River," by John W. Knapp and Tyson Van Auken, for the Norfolk District, Corps of Engineers. Additional material was provided by Lyle E. Browning.

COLONIAL WILLIAMSBURG'S CANAL SCHEME

One of Virginia's canals which never was, would have cut across the peninsula between the York and James rivers through the middle of Colonial Williamsburg, shortening the distance for commerce between these two major rivers by some 60 miles and bringing added prosperity to Williamsburg. Proposed in 1771 while Williamsburg was still the capital of Virginia, it was one of the commonwealth's earliest canal proposals.

By 1772, five thousand pounds had been raised by subscription; Royal Governor Dunsmore gave 500 pounds to start it off. The Revolution prevented further pursuit of the project, which was not taken up again after the war. The route is roughly followed today by the Colonial Parkway, which tunnels under Colonial Williamsburg where the summit cutting would have been.

See "Colonial Williamsburg's Canal Scheme," by Alexander C. Brown, VIRGINIA MAGAZINE OF HISTORY & BIOGRAPHY, Jan. 1978.

OTHER COASTAL RIVERS

Most of Virginia's coastal rivers were no doubt used by batteaux and other small craft as far upstream as possible. For example, it is said that on the Pamunkey in Colonial days, batteaux were at times lined up for a mile, waiting to unload their tobacco into the warehouses at Hanovertown. All the coastal rivers need to be explored for signs of early navigation.

Locks and Dams on the Appomattox and its Navigable Branches

THE LOWER APPOMATTOX CANAL

Petersburg's outlet to the James River, and to the sea, was the Lower Appomattox Canal, ten miles long, of which at least half was a silted stream meandering among numerous tidewater islands. By 1788 the Lower Appomattox Company had begun to train the water into a main channel five miles long and at least seven feet deep, by building jetties from each shore "as on the Rhine," making cuts, and placing dams between islands. The navigation was turned over to Petersburg in 1850. Today parts of the canal can be explored by small craft. Its route is clearly shown on modern topo maps and on the James and Appomattox River navigation chart (NOS 530/531, New # 12251).

THE UPPER APPOMATTOX NAVIGATION

The Upper Appomattox Navigation, begun in 1795 and first completed in 1807, was a 123-mile sluice navigation for batteaux, from Petersburg up to what is now the ghost town of Planterstown, 23 miles above Farmville.

There were four bypass canals with locks around mill dams, and a 5-mile Upper Appomattox Canal around the falls to a canal basin in Petersburg. In the 1830's and 1870's the sluice system was updated by a lock-and-dam system with at least 19 dams and 26 locks, still for batteaux.

The most impressive part of the system was the UPPER APPOMATTOX CANAL around the falls in Petersburg. Built by slaves by 1807 and in use through the 1890's, this canal was the company's major work and an engineering marvel of its time. It began at a dam across the river, wound high along the hillside, crossed several streams over stone culverts, descended a stone four-lock staircase, crossed Indian Town Creek on a huge stone-arch aqueduct and embankment, then ran into Petersburg to the canal basin.

The upper two miles of the canal is still watered in Appomattox Riverside Park on Rt. 600 across from Matoaca, and is navigated by batteaux every October on Batteau Day, held by Chesterfield and Dinwiddie counties and Petersburg.

A batteau crossing Indian Town Creek Aqueduct after it was destroyed by a flood in 1865 and was replaced by a rickety wooden trestle which lasted until 1902. Today the stonework badly needs stabilization before it can become the focus of a park. (Painting by Art Markel from a Library of Congress photo)

The site of the locks and aqueduct (private) is accessible only on organized tours but is looked after by Virginia Power. A diorama of it is on display in Petersburg's Siege Museum. These ruins comprise one of the most important batteau sites in the country, which needs to be stabilized and eventually developed as a riverside park along the falls, which has been designated a State Scenic River. The canal basin in Petersburg, long filled in, needs to be monitored as a future archaeological site.

For information on Appomattox Canal tours, and two flyers, "Upper Appomattox Canal" and "Appomattox River Canoe Guide" to the falls, write the Chesterfield County Parks and Recreation Department, P.O. Box 40, Chesterfield, VA 23832, (804) 748-1623. For information on Batteau Day call the Petersburg Department of Tourism, Petersburg, VA 23803, (804) 733-2402.

Little is visible aboveground of the rest of the navigation, except the remains of dams at mill sites, and some wing dams below Genito. Many sites were inundated in 1967 by Lake Chesdin, and more will be inundated by a proposed high dam at Genito. Following the pioneer voyage of the batteau replica LORD CHESTERFIELD down the river in 1987, efforts have begun to have batteau ramps installed to revive batteau traffic on the Appomattox.

At the upper end of the navigation near the town of Appomattox and the ghost town of Planterstown, HOLLIDAY LAKE STATE PARK has a permanent batteau navigation exhibit and offers interpretive batteau rides on the lake during the summer. For information call (804) 248-6308.

Three branches of the Appomattox were navigated by batteaux. BUFFALO CREEK at Farmville was navigable for at least 12 miles and was to be the route of the never-begun JUNCTION CANAL linking the Roanoke and Appomattox rivers. FLAT CREEK was navigable for ten miles. The Deep Creek Navigation Company made at least 11 miles of DEEP CREEK navigable, with one lock at a mill dam. There may have been flash locks on these branches but they have not yet been rediscovered.

For a detailed guidebook to the Appomattox and its branches, see THE APPOMATTOX RIVER ATLAS; APPOMATTOX RIVER SEAY STORIES: REMINISCENCES OF THE LAST APPOMATTOX RIVER BATTEAUMAN; and THE FALLS OF THE APPOMATTOX ATLAS (in preparation, 1992), by W.E. Trout, available from VC&NS.

THE DISMAL SWAMP CANAL

Over the last two centuries, the Great Dismal Swamp region has become a maze of canals, most of them for a combination of navigation, timbering (especially for shingles), and drainage. The most famous of these is the 22-mile long DISMAL SWAMP CANAL, the oldest surviving artificial waterway in continuous use in the U.S., begun in 1793, open for shallow craft (including batteaux) in 1805 and still used by pleasure craft along the Atlantic Intracoastal Waterway.

During its lifetime it has been enlarged several times, with seven wooden locks at first, then four stone ones in the 1820's, two large wooden ones in the 1890's, and the present two steel and concrete locks in 1940. These enlargements have wiped out all traces of the early locks except for two wooden ones on the Northwest Canal, and a stone lock and stop gate on the Gilmerton Cut.

The northern end of the Dismal Swamp Canal is now at Deep Creek, but between 1843 and 1899 it had a 2¼-mile long extension known as the GILMERTON CUT. The only stone lock remaining in the Dismal Swamp region is still in excellent condition at the north end of this cut. The cut can be seen from the Military Highway (US 13) 0.5 mi. E of Canal Drive (Rt.196) but the lock is not at present accessible to the public because of the possible danger to liquid natural gas tanks beside it. However, the Atlantic Energy Company has taken great care to preserve the lock so it will be intact in the far future when the LNG facility is discontinued. The park potential of this canal should never be forgotten.

Near the southern end of the cut, accessible by water from Deep Creek, is the GILMERTON CUT STOP GATE (1849), which had one set of gates to keep Deep Creek floods out of the cut. The stop gate and canal right-of-way should be carefully preserved in this developing area.

Gilmerton Lock (private) is the only stone lock remaining in the Dismal Swamp canal system. (1964 photo)

The Dismal Swamp Canal now ends at the town of Deep Creek. On the north side of the town on the George Washington Highway (US 17) is the City of Chesapeake's excellent DEEP CREEK LOCK PARK, complete with observation towers, at the modern DEEP CREEK LOCK (58x300', 1940). This is the latest in a long series of Deep Creek Locks; nothing remains aboveground of the earlier wooden and stone ones at this site.

Locks and Major Navigable Canals in the Dismal Swamp Region

Extending straight north from Deep Creek Lock, in the park, is a long, low earthen dam dating from the canal's great rebuilding in 1899. When the Gilmerton Cut was abandoned, the channel of Deep Creek was used instead, and a dam backing it up was removed. The 1899 dam was built to keep the upper reaches of Deep Creek backed up to the town's wharves and up the Gilmerton Cut. Now this dam is breached too, and the basin is lined with private homes. A CROSS LOCK (about 9x100'), which passed small craft through the dam, is built of squared timbers like a log cabin, with cast-iron hollow quoins and resurfaced with concrete. It would be exciting to repair the dam and put this lock and the Gilmerton Cut back to work.

The George Washington Highway is the descendant of the canal's original toll road, completed in 1804, and it still follows the east bank all the way into North Carolina.

At Wallaceton, 1.6 miles N of the Feeder Canal, the NORTH WEST CANAL (1830) once ran seven miles east into the Northwest River, providing access to Currituck Sound and the swamp timber. Abandoned in the 1860's, it still has remains of two of its three wooden locks, one preserved underwater - the only early wooden locks left in the Dismal Swamp. These are not accessible to the public, and are being carefully protected by their owner, the Triple-R Ranch, for future archaeological research.

Further south is Arbuckle's Landing opposite the canal's FEEDER DITCH from LAKE DRUMMOND. You can take your small boat up to the Corps' picnic area at the spillway, where there was once a stone lock. Now a marine railway carries small boats over the spillway into the lake.

The George Washington Highway continues south across the North Carolina line, where the Lake Drummond Hotel "serving all purposes of life, such as drinking, eating, sleeping, marrying and duelling" once straddled the line.

Three miles south of the state line is the DISMAL SWAMP CANAL VISITORS' CENTER, open Tues.-Sat. (subject to change) 9-5, closed Thanksgiving and Christmas Day. Serving visitors from both the canal and the highway, it opened in 1989 when the canal was placed on the National Register and made a National Historic Civil Engineering Landmark. Moor your yacht here and stop for a picnic. Brochures available include the Corps' "Cruising into History," the Center's "Dismal Swamp Canal," and a North Carolina Boating Guide, from the Center 2356 N. HWY 17, South Mills, NC 27976, (919) 771-8333. The establishment of the Center should do much to prevent the abandonment of navigation on the Dismal Swamp Canal, which has been a recurring threat over the years.

The canal's other operating lock, SOUTH MILLS LOCK, at the southern end of the canal, is similar

"Tracking a Boat-Load of Railroad Ties" on the Dismal Swamp Canal, from HARPER'S WEEKLY, June 14, 1873. This man-hauling technique was also used by batteaux on other canals in Virginia.

to the Deep Creek Lock, and is likewise the descendant of several earlier locks now gone. Don't miss a look through the periscope which let the lockmaster see up the canal. Further south is ELIZABETH CITY, a handy layover point for yachts using the Dismal Swamp Canal route.

For details see THE DISMAL SWAMP CANAL, by Alexander C. Brown, Norfolk County Historical Society of Chesapeake, 1970, now out-of-print.

WASHINGTON'S DITCH AND OTHER SWAMP CUTS

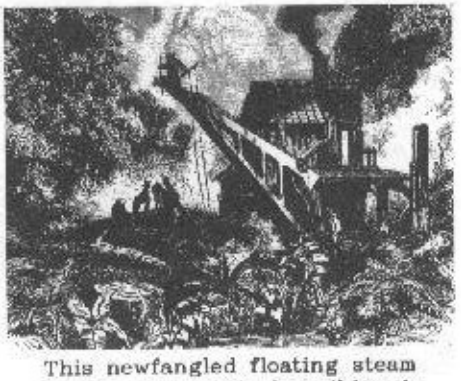
One of the first ditches for carrying timber out of the swamp was built in the 1760's by the "Adventurers for Draining the Great Dismal Swamp," with which George Washington was connected, and which is now known as the WASHINGTON DITCH, five miles long. Another, the 9-mile JERICHO CANAL (1810) carried shingles and tourists between Lake Drummond and Suffolk, on boats up to 8' wide and 60' long. Many more miles of cuts penetrate the swamp; they all need to be searched for early water gates and signs of navigation and industry.

Thanks to the work of the late Alvah Duke, The Wilderness Society, the National Parks and Conservation Association, the Nature Conservancy, and especially the Union Camp Corporation, much of the Great Dismal Swamp is now the GREAT DISMAL SWAMP NATIONAL WILDLIFE REFUGE, managed by the U.S. Fish and Wildlife Service. The Feeder Ditch serves as a water access route to the Refuge; and from the western side of the swamp, one can drive south from Suffolk on White Marsh Road (Rt.642) and park (watch for signs) to follow the Jericho or Washington ditches to Lake Drummond by foot or bicycle. Most of the 158 or so miles of swamp canals are clogged by fallen trees; some should be opened to canoes, and it would be exciting to have guided nature tours by batteau. The Refuge is open every day during daylight; the Visitors' Center, located south of the Washington Ditch access, is closed weekends and holidays. For a flyer and information on self-guided tours and guided tour reservations call (804) 986-3705 or write to P.O. Box 349, Suffolk, VA 23434.

THE ALBEMARLE & CHESAPEAKE CANAL

The Albemarle and Chesapeake Canal was one of the world's first modern sea-level canals when completed in 1859 as a rival to the Dismal Swamp Canal. Magazine articles of the time described in detail the amazing digging machines, known to us as steam shovels.

Today, both canals are operated for the Corps of Engineers as alternate routes on the Intracoastal Waterway. The A&C is larger and uses open water, designed for modern commercial traffic; the DSC is sheltered and historic, more suitable for yachts. A three- to five- day, 125-mile cruise down one canal and up the other is the ideal way to experience these two historic waterways. Both canals are shown on Nautical Chart 829-SC (New #12206), "Norfolk to Albemarle Sound via North Landing River or Dismal Swamp Canal," available from NOS. For A&C details see JUNIPER WATERWAY by Alexander C. Brown, University Press of Virginia, 1981. See also THE BEST FROM AMERICAN CANALS I:33 and II:45.



This newfangled floating steam dredge was worth describing in detail when the A&C was under construction in 1858. From HARPER'S NEW MONTHLY MAGAZINE, V.18, p.752. (Virginia State Library)

Instead of cutting through the swamp, the A&C makes use of coastal backwaters and has only two cuts, the 8½-mile VIRGINIA CUT through Great Bridge, VA at the Great Bridge Lock, and the 5½-mile NORTH CAROLINA CUT, without a lock, through Coinjock NC.

GREAT BRIDGE LOCK is W of Business Rt.168 at Great Bridge, where the City of Chesapeake has thoughtfully erected a grandstand in Great Bridge Lock Park for those watching locking operations. This 72 by 600' concrete and steel lock dates from 1932, replacing the original 1859 stone lock. Note that it has four pairs of wooden miter gates, two pairs facing in each direction. Which way the lock faces depends on the state of the tide in the Elizabeth River, and the level of shallow Currituck Sound, which changes with rainfall and wind direction. Convenient to the lock is a restaurant which ought to have historic canal exhibits on the walls.

THE KEMPSVILLE CANAL

Back in 1813, Thomas Jefferson proposed a canal linking the Elizabeth River with Lynnhaven Bay, as an escape route for gunboats harassing British ships blockading the mouth of Chesapeake Bay. The Kempsville Canal Company was organized in 1840 and again in 1851 to build the canal, this time for drainage and local transportation. It was intended to be four miles long with several locks. By 1860, two miles had been completed and the third was partially excavated, but work was stopped by the Civil War and little was done thereafter.

The route can still be traced. Cuts in the Elizabeth River to Kempsville, probably from the canal, are still used by small craft, and part of the route has been deepened and dammed and is now a long pond in a residential neighborhood. Until 1988, a remarkable section northeast of the intersection of Holland Swamp (Euclid) Road and the Norfolk & Southern Railway (Southern Boulevard) was intact, showing trenching, spoil piles and other clues to 19th-Century canal construction methods in this part of the country.

CANALS IN VIRGINIA BEACH

There are a number of modern drainage and navigation canals behind the coastal beaches in this low-lying region. LYNNHAVEN BAY itself is said to have been created by a canal, cut across a sandbar at its mouth a couple of centuries ago. Tidal action changed the sluggish stream into a large bay, inundating a cemetery in the process.

The VIRGINIA BEACH SCENIC WATERWAY SYSTEM is a 28-mile canoe network along creeks and cuts, including CANAL # 2 between Lynnhaven Bay and the North Landing River, and the LONG CREEK-BROAD BAY CANAL, a 3/4-mile cut built in 1949 by Virginia Beach sportsmen to allow small craft access to the bays behind the beach front. A booklet is available from the City of Virginia Beach, (804) 427-4111. Planners envision a 120-mile system.

A canoe outfitter in the Virginia Beach-Dismal Swamp area is Wild River Outfitters, 111 S. Witchduck Rd., Virginia Beach, VA, 23462, (804) 497-4890.

Many thanks to A.C. Brown, Mrs. Bernard G. Barrow, Carl Betterton, Richard A. Davis, Kelly Wood, and the late Judge C.B. Cross Jr.

THE ROANOKE RIVER NAVIGATION SYSTEM

Patrick Henry helped pass the first authorization for the Roanoke Navigation Company, but it was not until 1815 that North Carolina and Virginia cooperated to form a single interstate corporation, and got to work. The worst obstacle to navigation was the falls between Roanoke Rapids and Weldon, in North Carolina, which were bypassed by the 9-mile Roanoke Canal in 1817-1823. For a map of the Roanoke Canal see Part 2 of THE AMERICAN CANAL GUIDE.

In 1984 the non-profit Roanoke Canal Commission (City Hall, Roanoke Rapids NC 27870) was formed to create a park along the canal, using land donated by Champion International Corporation. The Commission published an excellent book, THE ROANOKE CANAL, by Peggy Jo Cobb Braswell, available from them at $7 ppd. The Roanoke Canal promises to be one of the best canal parks in the South. For information and a free flyer, ROANOKE CANAL TRAIL, call 1-800-522-4282.

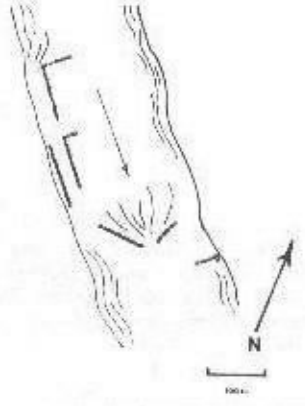
Except for some local attempts to run shallow-draft steamboats, the Roanoke Navigation was strictly for whitewater batteaux. It reached its peak in 1828 when it was complete from Salem VA (above Roanoke) to Weldon (244 miles); from Leaksville NC on the Dan down to the Roanoke (82 miles), and up the Bannister River to Meadville (25 miles).

Other than on the Roanoke Canal, there were only 9 locks on the whole 351-mile system; none are visible today. On the Roanoke in NC there were two locks, at Eaton's Falls and Pugh's Falls, both now inundated by modern dams. There may have been a lock in Persinger's Mill dam, supposed to be 5 or 6 miles below Salem - now in the middle of Roanoke.

A "rude lock" was at Eagle Falls on the Dan in North Carolina. Danville had a 3/4-mile canal with a guard lock and four lift locks, all of wood, on the south bank. The canal lasted into recent times as a power canal, and should have been retained to liven up Danville's downtown, but it was filled in to make a parking lot in 1970. It could, of course, be dug out again!

Fortunately, some of the best wing dams and sluices still remain on the system and can even be run by modern batteaux. One of the most extensive collections of batteau navigation improvements known in America is on the Staunton River (also called the Roanoke) between Long Island and Brookneal. In 1827, this 11½-mile section, the worst navigation obstruction on the Staunton, was made navigable by a cumulative total of over two miles of wing dams and a half-mile of towing walls. Towing walls, seldom seen elsewhere, were broad stone walls paralleling the sluices so boatmen going upstream could get out and tow batteaux against the current.

After only ten years, this section of river was abandoned, but the sluices are still intact, making an exciting, historic one-day run for modern batteaux and canoes. Thanks to the FRIENDS OF THE STAUNTON (c/o J.T. Davis, Jr., Rt.4, Box 217, Nathalie, VA 24577, (804) 376-5480), this section was saved from proposed dams and it was designated a State Scenic River in 1978. There are now public boat landings at each end. An historic batteauman's guide to this section is in preparation by the Appomattox County Batteau Committee, P.O. Box 2016, Appomattox, VA 24522.



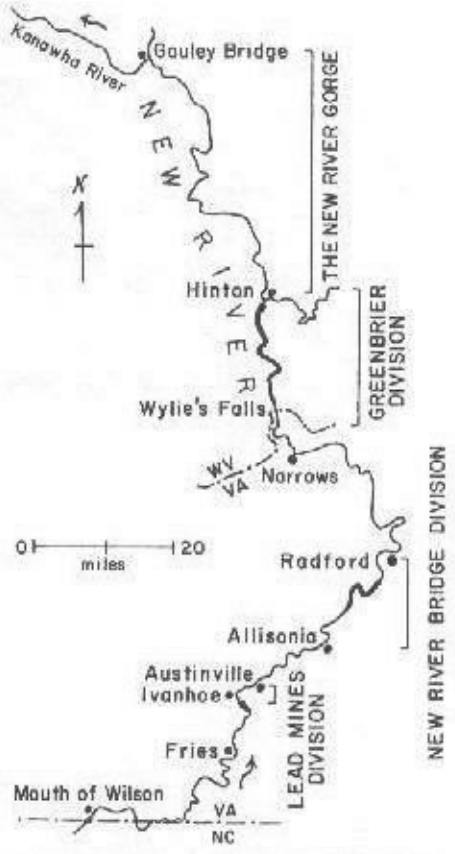
ROBERSON'S FISH TRAP SLUICE

Not all of the batteau navigation sluices on the Roanoke, New and other southern rivers are as well-preserved as this one illustrated in Lindley Butler's DAN RIVER NAVIGATION STRUCTURES. The sluice (L) is lined with long piled-stone walls; downstream is a V-shaped fish trap.

There is also an impressive series of sluices and wing dams on the upper Dan, in Rockingham County, North Carolina, below Madison. Only a few fallen trees prevent all of them from being navigable by batteau. A good collection of sites, placed on the National Register, is in the first two miles below the Rt.704 bridge. See THE DAN RIVER NAVIGATION STRUCTURES IN ROCKINGHAM COUNTY, NORTH CAROLINA, by Lindley S. Butler, 131 Cedar Lane, Reidsville NC 27320.

The rest of the Roanoke Navigation system needs to be examined for wing dams and sluices. Some of them are shown on old Corps of Engineers surveys.

For more details see "The Roanoke Navigation: Taming the River of Death," by W.E. Trout, III, JOURNAL OF ROCKINGHAM COUNTY HISTORY AND GENEALOGY, October, 1978, $2.50 ppd. from the Rockingham County Historical Society, Box 84, Wentworth NC 27375.



The New River Navigation in Virginia and West Virginia

THE SMITH'S RIVER NAVIGATION

Quite late in the game, in the 1850's, the Smith's River Navigation Company reported that it had spent $6,000 to make the river navigable for batteaux, for 50 miles from the Dan up to the Blue Falls, now under Philpott Reservoir in Fairy Stone State Park.

According to the company's president, the navigation was little used, to say the least. He reported that the navigation had been tested by two loaded batteaux which descended the navigation, but that the boatmen were too lazy to pole back upstream!

The Smith's River needs to be investigated at low water for signs of navigation works. A substantial Indian fish dam of piled river stone blocks the river in Martinsville; it was probably navigated by running over it or by removing a few stones.

THE NEW RIVER NAVIGATION

Surrounded by mountains and far from the sea, the New River Valley's natural outlet is to the west through the New River Gorge to the Kanawha and the Ohio.

We know little about the early batteau improvements on the river, which were used by the Confederacy for military purposes. When the Corps of Engineers began to build batteau navigation improvements in 1878-1892, they remarked that the Confederate improvements were poorly sited and constructed, so this means that some of them may still be distinguishable from the later Corps structures.

The Corps divided the river into three Divisions and worked on each until the railways arrived to replace them. Of the Lead Mines Division, 6 miles was completed down to The Lead Mines (now called Austinville); of the New River Bridge Division, 29 miles was completed for carrying iron from furnaces around Allisonia down to the railway depot at Radford; and of the Greenbrier Division, 26 miles was completed from Shumate's Falls in the Narrows down to Hinton.

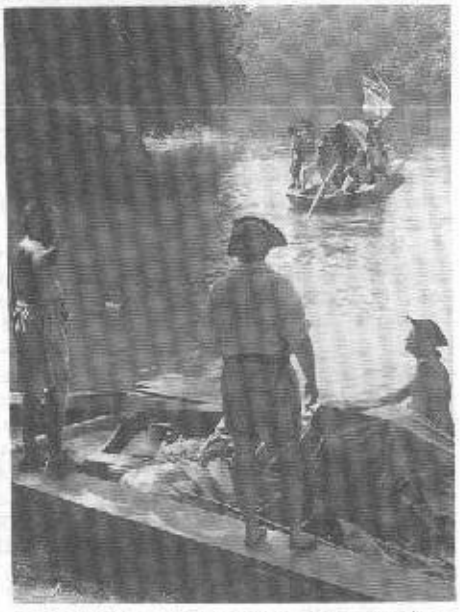
Along these three sections there are definite cuts through rock ledges. On the Greenbrier Division, the cuts, all on the right bank, are lined with rock walls to form a gentle water slope intended for steamboats as well as batteaux. On this division ran the CECILIA MILLER, a steamboat equipped with a steam capstan to help her winch up through the sluices. Many of these sites can still be explored by canoe in the backwaters of Bluestone Lake. See "The Canoeists' and Sportsman's Guide to the New River," by River Maps Ltd., available from the New River Canoe Livery, P.O. Box 188, Ripplemead VA 24150. One can drive opposite the sluice in Wylie's Falls at the state line, down a dirt road which follows the left bank from Glen Lyn.

A number of sluices have been found outside of these divisions by the crew of the batteau APPOMATTOX, so these date back at least to Confederate times.

Downstream in West Virginia, the New River Gorge, now a national park, was navigated to some extent by batteaux carrying tourists and cargo. Chief Justice John Marshall ran the gorge in 1812 to make a survey for the James River Canal; Collis P. Huntington went down it in 1869 to see where his railway, now the C&O, was to go. Now it is attempted only by white-water rafters in its rough sections.

James River Batteaux like this were used for two-way voyages on the "White Water Ocean" in Virginia and on other southern rivers. The type was invented by Anthony and Benjamin Rucker in 1771 and later patented; the family had agents in southern towns, trying to collect fees. This dramatic scene is "Running the Rapids of the New River in Virginia," from HARPER'S WEEKLY, February 21, 1874. (Virginia State Library)

The New needs to be investigated at low water to map all the navigation structures. Many of them are inundated by Claytor Lake and Bluestone Dam, so will only be seen during a drawdown. Twenty-nine miles of the river, from Galax to Pulaski, are now paralleled by the NEW RIVER TRAIL on the old Norfolk Southern railway bed. The sluices along this section need to be found and interpreted for a trail guide.



A more tranquil scene at Slate River Landing, as the batteau replica LORD CHESTERFIELD approaches the RICHMOND ROCKETT during the 1990 James River Batteau Festival.

For more details see MEN MOUNTAINS AND RIVERS by Leland R. Johnson, USGPO 1977, pp.114-5. Many thanks to Neal Tuggle for help with this section.

THE HOLSTON RIVER

In the southwest corner of Virginia, the CLINCH and POWELL RIVERS and the North and Middle forks of the HOLSTON were early routes down into Tennessee to the Ohio and the Mississippi. Perhaps the most important Virginia town on this system was Saltville, on the North Fork of the Holston in Smyth County, 16 miles below the head of navigation at Chatham Hill.

According to W. B. Kent's HISTORY OF SALTVILLE, Saltville shipped more than salt, land plaster, and iron ore: "Farm people up the valley from Saltville would transport their produce of maple sugar, beeswax, homespun, feather ticks, molasses and other non-perishable farm products down the river, usually to places in Tennessee, and sell not only the cargo, but the raft as well, and then walk back home. This was done at springtime and early summer when the river would flow many times its usual volume." There was a boatyard across the river from the furnaces near Perryville; some of the rafts were said to be nearly 100' long and 15' wide.

Only one lock is known to have been on this navigation, in David Ross's Mill dam near Kingsport, constructed in 1805 with funds from both Virginia and Tennessee. This lock was probably wooden, and was 36 by 80 feet in the chamber, so some of the larger rafts mentioned by Kent could have used it. This site needs to be located and inspected, and the whole river - plus the Clinch and Powell - should be explored for signs of navigation and the remains of boats.

For details see ENGINEERING ON THE TWIN RIVERS, by Dr. Leland Johnson, Nashville District, Corps of Engineers, 1978; and A HISTORY OF SALTVILLE, by William B. Kent, Commonwealth Press, Radford, 1955, pp.27-28. Many thanks to Dr. Johnson and T.T. Brady for additional information.