Analyses of rocks in Essex County.

No	SiO_2	Al_2O_3	Fe_2O_3	FeO.	MgO.	CaO	Na_2O.	K_2O	H_2O+	H_2O-	CO_2.	TiO_2	P_2O_5	MnO	BaO	Sum	Sp gr	Inclusive.	Norm	Locality.	Analyst.	Reference	Rock name as cited by author.	Remarks.
Class I. Persalane.																								
Order 4 Quardofelic. Brittannare.																								
Rang 1. Peralkalic. Liparase.																								
Subrang 3. Sodipotassic. Liparose.																								
16 A3.III	77 61 1 294	11. 94 .117	0 55 004	0 87 .012	Trace.	0 31 .006	3 80 .061	4 98 .053	0 23	Trace		0 25 .003		Trace		100 54	2. 618		q 35 76 di 0.65 or 29 47 hy 0.26 ab 31.96 mt 0.93 an 0.83 il 0.46	Rockport, Cape Ann.	H. S. Washington.	Washington, H S, Jour. Geology, vol 6, p. 793, 1898.	Hornblende granite.	
17 A3.III	77 49 1 292	11. 89 .117	0 34 .002	1 12 .015	0 09 .002	0. 45 .008	4. 58 .074	4 26 .045	0 16					Trace		100. 63			q 33. 42 ac 0 92 or 25 02 di 1 95 ab 37. 73 hy 1 16	Bass Rocks, Cape Ann	Do.	Idem, vol. 7, p 107, 1899.	Aplite	Border of dike.
18 A3.III	76 44 1. 274	12. 95 .127	0. 19 001	0. 89 .012	Trace.	0 15 .003	4. 76 .077	4 95 .053	0 09			0 37 .005		Trace.		100. 79			q 29. 16 ac 0 46 or 29. 47 di 0 75 ab 39 82 hy 0 53 il 0. 76	Bass Rocks, Cape Ann.	Do.	Idem, p 107.	Aplite	Center of dike.
19 A3.III	76 49 1. 275	11. 89 .117	1 16 .007	1 56 .022	Trace	0. 14 .002	4. 03 .064	5 00 .053	0. 38	0. 12		Trace		Trace		100. 77	2. 650		q 33 12 di 0 49 or 29 46 hy 1. 72 ab 33 54 mt 1. 62	Magnolia	Do	Idem, p. 113.	Paisanite	
20 A3.III	71 40 1. 190	14 76 .145	1. 68 .011	0 72 .010	0 55 .014	0. 10 .002	4. 79 .077	5 16 .055	1 46					Trace		100 62			q 22 80 hy 1 40 or 30 58 mt 2. 32 ab 40. 35 hm 0. 16 an 0. 56 c 1 12	Marblehead Neck	H. S Washington	Idem, p. 293	Keratophyre (bostonite).	
21 A2 II	70 23 1. 171	15. 00 .147	1 99 .012	N d (024)	0. 38 .010	0 33 .006	4. 98 .080	4. 99 .053	1 28	0. 91		0 03	0. 06	0. 24	.003	100 42			q 19. 62 hy 4. 17 or 29 47 il 0 46 ab 41. 92 an 1. 67 c 0 82	Do.	T. M Chatard.	Sears, J H, Harvard Coll Mus Comp Zool Bull., vol 16, p. 170, 1890	Do.	
22 A2 II	67 35 1. 123	15. 05 .148	1 23 008	4. 76 .066	0. 03 .001	0 55 .010	4 42 .071	6. 08 .065	0 17	0. 16		0 60 .008		0. 05 .001		100 45	2. 691		q 14. 06 hy 6 70 or 36. 14 mt 1. 86 ab 37. 20 il 1. 22 an 2. 78 c 0 20	Pigeon Hill quarry, Rockport, Cape Ann	H S. Washington.	Washington, H. S, Jour Geology, vol. 6, p. 795, 1898	Quartz syenite.	Inclusion in granite No. 16, above.
23 A1 I	71 90 1. 198	12 98 .127	0 81 005	2 85 .040	0 02	1 04 .019	4 19 .068	5 60 .060	0 20	0 20		0 34 .004	0 04	0 08 .001	Trace.	99. 87	2. 651	ZrO_2 0.12 SrO trace	q 22 80 ac 0 46 or 33 36 di 4 71 ab 35. 11 hy 1. 85 mt 0 93 il 0. 61	Quarry, South Lynnfield	M F Connor	This paper.	Quincy granite	
Subrang 4 Dosodic. Kallerudose.																								
8 A3.III	69 64 1. 161	13. 04 .128	4 15 .026	1. 98 .028	0 32 .008	0 54 .010	5 46 .088	3 55 038	0. 69			0 55 .007				99 92	2 673		q 23 10 di 1 73 or 21 13 mt 4 87 ab 46 11 il 1 06 an 0. 56 hm 0 76	West Lynn.	S. J. Schofield	This paper.	Quartz keratophyre.	Lynn volcanics
Rang 2 Domalkalic Toscanase																								
Subrang 3 Sodipotassic Toscanose																								
14 A3 III	68. 88 1 148	14. 96 .146	0 64 004	4 64 064	0. 37 009	1 74 031	3. 83 .062	4 97 053	0 24	0. 06		Trace		Trace		100 33	2. 696		q 19. 62 hy 8 82 or 29. 47 mt 0. 83 ab 32 49 an 8. 62	Squam Light.	H. S. Washington.	Washington, H S., Jour Geology, vol. 7, p. 109, 1899	Quartz syenite porphyry.	
15 B3 IV	68 36 1 139	16 58 .163	0 90 006	3 24 045	0 45 011	1 85 033	3. 97 .064	5 27 056	0 17	0. 18		Trace.		Trace		100 97			q 18 18 hy 6. 25 or 31 13 mt 1 39 ab 33 54 an 9 17 c 1 02	Wolf Hill, North Gloucester	Do	Idem, vol 6, p 800, 1898	Nordmarkite	
16 A2 II	66 60 1 110	15. 05 148	1 07 .007	4 42 .061	0 36 009	2. 21 039	4 03 065	5 42 .058	0 41					Trace		100 33	2 612		q 15 24 di 3 41 or 32. 25 hy 5. 06 ab 34. 06 mt 1 62 an 6. 95 il 1 37	Prospect Street, Gloucester	Do	Idem, p. 798.	Akerite	
Subrang 4 Dosodic Lassenose.																								
9 A3 III	70 64 1 177	15 34 150	1 83 011	1 10 .014	0 52 .013	1 24 .022	5 23 .084	3 55 038	0 38	0 14		0 90 .011		Trace.		100 87	2. 632		q 23 28 hy 1 30 or 21 13 mt 0. 70 ab 44 02 il 0. 67 an 6 12 hm 1 28 c 0. 61	Marblehead Neck	H S Washington.	Washington, H S, Jour Geology, vol 7, p. 292, 1899	Rhyolite.	
Rang 3 Alkalicalcic Coloradase																								
Subrang 4. Dosodic Yellowstonose.																								
4 B2 III	68 94 1 149	14 11 .138	1 68 .008	2 88 040	0 80 020	4 62 .082	3 53 056	2 41 026	1 13	0 22		0 50 .006	0 08	0 05	0 04	100 99	2 723		q 28 56 di 6. 07 or 14 46 hy 1 99 ab 29 34 mt 2 55 an 15 57 il 0. 91	Saugus	M F Connor	This paper.	Dedham granodiorite.	
Order 5 Perfelic Canadare																								
Rang 1 Peralkalic Nordmarkase.																								
Subrang 3 Sodipotassic Phlegrose.																								
5 A3 III	63 71 1 062	18 30 180	2 08 .013	2 52 035	0 09 .002	1 18 .021	6 39 .103	6 21 065	0 17	0 09		Trace		Trace		100 74			q 0. 42 di 2 20 or 36 14 hy 1 95 ab 53 97 mt 2 32 an 3 34	Salem Neck.	H. S. Washington	Washington, H. S, Jour Geology. vol 6 p 806, 1898	Hedrumite pulaskite	
6 A3 III	61 05 1 018	18 81 .183	2 02 .013	3 06 043	0 42 011	1 30 .023	6 56 106	6 02 .064	0 78			0 34 004		Trace	None	100 04	2 655		or 35 58 di 2 38 ab 47 68 ol 2 50 an 3 61 mt 3 02 ne 4 26 il 0 61	Coney Island, Salem Harbor	Do	Idem, vol 7, p 118, 1899	Solvsbergite.	Near nordmarkose
Subrang 4 Dosodic. Nordmarkose																								
6 A2 III	63 09 1 052	18 44 180	2 90 018	1 36 019	0 16 004	1 00 .018	7. 25 .117	5. 23 .056	0 62	0. 21		0. 45 .006		Trace		100 77		ZrO_2 0 06	or 31 14 di 1 86 ab 59 21 wo 0. 81 an 1 95 mt 3 02 ne 1 14 il 0 91 hm 0 80	Salem Neck	H S Washington	Washington, H S, Jour. Geology, vol 6, p 806, 1898	Pulaskite.	
7 A2 II	60 60 1 010	18 28 .180	2. 85 .018	2 67 .037	0 52 013	0 99 .018	6 66 .107	5 73 061	0 69			0 71 .009	0 15 .001			99 85			or 33 92 di 0 68 ab 51 09 ol 1 69 an 3 34 mt 4 18 ne 2 70 il 1 37 ap 0 34	Coney Island, Salem Harbor	M Dittrich	Rosenbusch, H., Elemente der Gesteinslehre, p 199, 1898	Syenite porphyry, solvsbergite.	
8 B3.IV	59 31 .989	22 50 .221	1 93 .012	1 40 .019	0 17 004	0 46 008	7. 98 .129	4 08 .043	1 12	0. 15		0. 32 .008		Trace		99. 42	2 599		or 23. 91 ol 0 59 ab 59 21 mt 2 78 an 2 22 il 0. 61 c 4 18	Great Haste Island, Salem Harbor.	H. S Washington	Washington, H S., Jour. Geology, vol. 6, p 803, 1898	Foyaite.	
Order 6 Lendofelic. Russare.																								
Rang 1 Peralkalic Miaskase.																								
Subrang 4 Dosodic Miaskose.																								
4 A2 II	58 77 980	22 53 .220	1 54 .010	1 04 .014	0 19 .005	0 74 013	9 62 .155	4 89 .052	0 90	0 07		0 31 .004		Trace	None	100 71	2 596	ZrO_2 0 11	or 28 91 ol 0 35 ab 42 97 mt 2. 32 an 3 61 il 0 61 ne 20 73	Salem Neck.	H S Washington	Washington, H S, Jour Geology, vol 6, p 803, 1898	Foyaite	
5 A2 II	56 75 946	20 69 .203	3 52 .022	0 59 .008	0. 11 003	0 37 .007	11 45 185	2 90 .031	3 18	0 04		0 30 .004		Trace	None	100 12	2 474	SO_3 trace Cl 0 28	or 17 24 ac 6 01 ab 46 64 di 0 65 ne 23 57 wo 0. 46 mt 0 93 il 0 61 hm 0 80	Pickard Point, Manchester	Do.	Washington, H S, Am Jour Sci, 4th ser, vol 6, p. 185, 1898	Analcite tinguaite	
Class II. Dosalane.																								
Order 5 Perfelic Germanare.																								
Rang 1 Peralkalic. Umptekase.																								
Subrang 3 Sodipotassic. Ilmenose.																								
4 A2 II	62 99 1 050	14 25 .140	2 78 .017	5 15 072	1 30 033	2 72 .049	4 86 .078	6 35 .068	0 18			0. 16 .002		0 18 .003		100 92	2. 732		q 2 52 ac 2 77 or 37 81 di 11 60 ab 37 73 hy 5 56 mt 2 55	Beverly.	F E Wright	Wright, F E, Min pet Mitt, vol 19, p 318, 1900	Umptekite	
Subrang 4 Dosodic. Umptekose.																								
5 A2 II	64 28 1 071	15 97 .156	2 91 018	3 18 .044	0 03 .001	0 85 015	7 28 .117	5 07 .054	0 20			0 50 006	0. 08	Trace	None	100 33	2 703		q 2 04 ac 6 93 or 30 03 di 3 72 ab 53 45 hy 2 74 mt 0 70 il 0 91	Andrews Point, Cape Ann	H S. Washington	Washington, H S, Am Jour Sci, 4th ser, p 178, 1898	Glaucophane solvsbergite.	
Rang 3 Alkalicalcic. Andase.																								
Subrang 4 Dosodic Andose.																								
8 A3 III	51 82 .864	17 06 .167	1 97 012	8 60 120	4 87 .122	8 59 .153	3 44 .056	1. 77 .019	0. 20	0 11		2 15 .027				100 58			or 10 56 di 13 98 ab 29 34 hy 8 36 an 25 58 ol 5 59 mt 2. 78 il 4 10	Peache Point, Marblehead.	H S Washington.	Washington, H S, Jour Geology, vol 7, p 60, 1899.	Diorite	
9 A2 II	49 84 .831	17 45 171	1 64 .010	9 43 .131	4 77 .119	8 34 .149	3 90 .063	1. 35 .015	0 54	0. 26	None.	1 56 .020	0. 10 001	0 15 002	Trace	99 45	3 090	S 0 12 003	or 8 34 di 12 25 ab 31. 44 ol 14 69 an 25 85 mt 2 32 ne 0 85 il 3 04 ap 0 34	Railroad cut, east of Montrose station, Lynnfield	M F. Connor.	This paper.	Gabbro-diorite	
Rang 4 Docalcic. Hessase.																								
Subrang 4-5 Presodic Hessose																								
8 B2 III	43 73 .729	20 17 .198	4 32 .027	6 93 .097	3 91 .098	10 99 .196	2 42 .039	1. 45 015	1 02	0. 08		4 23 .053	0 15 .001	Trace		99 40	3 058		or 8. 34 di 10 80 ab 60 01 ol 4 94 an 40 03 mt 6 26 il 8. 06 ap 0 34	Nahant.	H S Washington	Washington, H S, Jour Geology, vol 7, p 63, 1899	Gabbro	Sum low.
Order 6. Lendofelic. Norgare.																								
Rang 2 Domalkalic Essexase																								
Subrang 4 Dosodic. Essexose																								
4 A2 II	47 94 .799	17 44 .171	6 84 .043	6 51 .090	2. 07 .052	7. 47 .133	5 63 .091	2. 79 .030	2 04			0 20 003	1 04 .007			99 92			or 16 68 di 13 82 ab 26 20 ol 3 06 an 13 94 mt 9 98 ne 11 64 il 0 46 ap 2. 35	Salem Neck.	M. Dittrich.	Rosenbusch, H., Elemente der Gesteinslehre, p. 172, 1898.	Essexite	TiO_2 low?.
5 A2 II	46 99 783	17 94 .176	2 56 .016	7 56 .105	3 22 .081	7. 85 .140	6 35 .102	2 62 .028	0 65			2 92 .035	0 94 007	Trace.	None.	99 60	2. 919		or 15 57 di 16 24 ab 18 86 ol 5 31 an 12 79 mt 3 71 ne 18 74 il 5 32 ap 2 35	Do.	H S Washington	Washington, H S, Jour Geology, vol 7, p. 57, 1899	Do.	
Rang 3. Alkalicalcic. Salemase																								
Subrang 4 Dosodic Salemose.																								
5 A3.III	45 32 .756	18 99 186	3 78 .023	9 78 .136	4 68 .117	9. 19 .164	3 78 .161	2 12 .023	0 31	0 09		1. 94 .024				99 98	2 975		or 12. 79 di 14 25 ab 12 84 ol 12 06 an 28 36 mt 5 34 ne 11 64 il 3 65	Salem Neck.	H S Washington	Washington, H. S, Jour. Geology, vol 7, p 63, 1899	Hornblende gabbro.	
Class III. Salfemane																								
Order 5. Perfelic Gallare.																								
Rang 3. Alkalicalcic. Camptonase.																								
Subrang 4. Dosodic. Camptonose.																								
6 A2 II	47. 12 .785	14 43 142	3 33 021	11. 71 .163	6. 05 .151	9 63 .172	2 58 .042	1. 11 .012	0 34	0 28		3 27 .041				99 85			or 6 67 di 19. 23 ab 22 01 hy 7. 46 an 24 46 ol 8 42 mt 4 87 il 6 23	Rockport, Cape Ann.	H S. Washington	Washington, H S, Jour Geology, vol. 7, p 289, 1899	Diabase.	Ophitic in large quarry.
Rang 4. Docalcic. Auvergnase.																								
Subrang 4-5 Presodic. Auvergnose.																								
12 A3. III	46 59 .777	17 55 .172	1 68 .011	10 46 .145	7 76 .194	10 64 .190	3 31 .053	0 72 .008	0 07	0 10		1 41 .018				100 29	3 047		or 4 45 di 18 02 ab 16. 77 ol 18. 92 an 30 86 mt 2 55 ne 5 96 il 2 74	Salem Neck.	H. S. Washington	Washington, H S, Jour Geology, vol 7, p 285, 1899	Camptonite	