Table 3 Stratigraphic correlation of the analyzed rocks of the Kita-matsuura district, Northwest Kyushu.

	Kawachino	Sanuki	Kurinoki	Tsujinodo	Ningyoishi-yama	N. W. of Ningyoishi-yama	Fuefuki	Kakui-dake	Kohochi-dake	Senryu
V	Aao* Aao 5 6 IVb→c? IVb→c?		TAao ABao 15 17 IVb IVa→d		BAao, qt 30 IVa→d					
IV	TBao, qt 4*** IVb**	Boa 12 IVb(→c)	TBao 16 IVb?			Byao, qt 34 Va→d	Bo 42 IIIa→d		Byao, qt 37 Vb→c?	TBo PBao Bo 98 101 102 IIIb? IVb IIIc
III		TBo TBao 9 10 IIIb IVb?	Mo 14 IIIb	TABoa TAo 23 24 IVb? IIIb	Mo Bao Bo Bo Bayo 28 25 26 27 29 IIIb IV? III? III? Vb	Bao Bo Bo 31 32 33 IVb(→c) IIIb? IIIb(→c)	ABo 41 IIIb	Mao TABo, qt Mo 60 63 66 IVb? IIIb IIIb		TABo 96 IIIb
II	TDol.o 3 IIIb	TDol.oa TBao 8 11 IVb IVb	ABao 13 IVb?	TABo Boay Byo 20 21 22 IIIb Vb(→c) IIb			TBo TBao 39 40 IIIb IVb	TBo Bao Bao Bao TBao TBao Mao Mao 57 58 59 61 62 64 65 67 IIIb IVb IVb IVb IVb IVb IVb IVb	TBao TBao, qt 35 38 IVb? IVb?	TBao TBao TBao 99 100 97 IVb IVb IVb
I	Bo Bo 1 2 III? IIIb?	TABo 7 IIIb							Ay*) (36) IId	

*) Sanukitic rock

	Mikuriya-Tabira	Kagami-yama	Mimasaka	Koshi-dake	Ima-dake	Joko-dake	Ono-dake	Myokanji-toge	Hirose	Hirado Shira-dake	Kuro-dake	Jinroku-yama
V												
IV	Bo TBao Bayo,qt Bo 77 78 79 80 IIIb(→c) IVd Va→d IIIa→d			TBo 85 IIIb			Bo Bo Dol.oa 46 47 48 IIIb IIIb IV(b→)c?	PBao, qt PBao 44 45 IVb IVb	TBo 51 IIIb	TBao Bo Bo,(qt) 70 71 72 IVb? IIId IIId		Bo, qt Bo, qt 93 94 IIIa→d IIIa→d
III	TBo TBo TBo 73 74 75 IIIb IIIb IIIb					TAo 86 IIIb			TBo 50 IIIb			TBAyoa 92 Vb
II	TBao 76 IVb	TBo 83 IIIb	TAyao 84 Vb?		TBoa 88 IVb	BAao 87 IV(b→c)		TBao 43 IVb			Aao 90 IVb?	ABo 91 IIIb→c?
I												

* TAByao,qt: Quartz-bearing hypersthene-augite-olivine trachyandesitic basalt, Mo: Olivine mugearite, Dol.: Dolerite
** Kuno's ferromagnesian silicate mineral assemblage
*** Rock specimen numbers refer to Fig. 5 and Table 8

Table 6 Modal compositions of analyzed rocks from the Northwest Kyushu, Southwest Japan. (volume percent)

Sample No. 1)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
Phenocryst			nd																																																	
Plagioclase	1	1		3			1	2		4	1	7	4	3	15	3	8	31	18	1	7	1	1	2	1			2	3	3				1	3			1		5	4		11	1						1	
Olivine	8	7		6	+	+	6	+	+	3	2	1	2	2	3*	6	3			+	+	+	+	1	8	7	2	1	3	5*	2	7	1	4*	4		4*	3	5	5	2	2	4	14*	17*	8*	6		+	1	5
Clinopyroxene				2	+	+		4		1	2	1	3		1	3	1	3	1		+		+		+				+	1	+		1	1	3			3	2		1			3	11	14				+		
Orthopyroxene																		1	1		2	+							2					+		+	+															
Hornblende																																																				
Iron-ore					+	+					+	+	+	1	1	1	1	3	2									+		+			+						+			+					+					+
Groundmass			nd	**					**	**		**		**		**		**	**					**				**					**		**	**	**												**		
Plagioclase	40	59		28	62	68	54	59	67	58	62	58	61	58	48	52	59			60	53	49	48	57	39	38	33	63	58	65	44	34	68	61	38		57	55	62	53	68	57	45	43	36	56	58	60		62	50
Alkali-feldspar	2	6		6	5	10	1	8	7	6	6	5	4	11	18?	13	10			9	2	1	1	10	1	1	1	9	1	2			+	11	+		+	6	7	4	4	3	8	+	+	2	2			6	9
Olivine	5	5		20	+	+	9	8	2	4	7	6	1	4	4	5	4			2	2	7	5	2	4	5	3	3	1	+	6	9	7	5	8		7	5	4	8	4	4	5	7	10	6	4	1		8	9
Clinopyroxene	3	6		30	9	13	+	12	13	16	14	12	18	11	6	12	10			18	28	21	20	19	23	16	19	14	28	14	22	+	15	14	7		21	23	14	18	11	27	18	21	17	23	26	22		17	21
Orthopyroxene																	+													+				+								1										
Iron-ore	+	3		4	3	4	2	3	9	7	3	3	5	9	2	4	2			6	5	4	4	7	1	1	1	5	3	3	2	2	6	1	1		4	4	4	5	5	5	4	3	3	3	4	14		4	2
Silica-mineral						+						+			+?		+													+				+			+?					+?						+			
Phlogopite									+					+																								+		+											
Glass	41	13		+	21	5	27	4	2	1	3	7	2	1	2	1	2			4	1	17	21	2	23	32	40	3	1	6	24	48	2	2	36		4	1	4	1	2	1	2	1	3	2	+	3		1	2
Xenocryst																																																			
Quartz				1																										1				+			+	+						+							
Plagioclase													+		+	+	+	+	+		+				+				+	+				+				+		+	+										

Sample No. 1)	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102
Phenocryst					+)																																	nd														
Plagioclase	2	2	1		+								1	3	3	3						1											2	3	11	16			28	6	12	3	5	3	2	+			1		
Olivine	+	+	+			5	6	4	5	3	4	2	4*	5	3	4		+	7*	4*	3	2	2	3	9	6	4	3	3	+		6	1	2	2	2	+		+	2	+	2*	4*	2	4	6*	5	7*	8	13*	8****
Clinopyroxene		+	+				1	2	2	1	1		+	4		3			1		1				1		+	1					+			1	+		+		+			2		5		1	1	1	
Orthopyroxene	+	+	+																									2		+	+		+								+									+ ****
Hornblende	+	2																													+																				
Iron-ore	+	+	+			+	+		+		+	+		+	+						1			+					1				+		+		+	+			+			1	+				+	+	+ ****
Groundmass	**	**	**	**	**										**		**	**							**						**	**	**		**	**		nd			**			**							
Plagioclase						57	51	52	54	57	57	61	55	49	53	52			34	60	58	42	55	57	54	59	58	36	58			43	60	55	44	40	59		31	39	49	49	51		47	50	60	47	45	48	66
Alkali-feldspar						7	6	6	8	3	4	7	6	11	9	10			+	4	7	+	11	10	7	6	1	1	5			6	11	12	4	2	7		+		12	3	2		3	1	4	4	5	4	1
Olivine						11	9	7	4	8	6	7	12	5	6	6			4	2	4	18	10	6	5	4	5	+	2			9	1	9	6	4	11		6	9	+	6	1		6	6	2	8	9	4	
Clinopyroxene						18	21	22	21	23	22	15	14	16	21	15			23	28	20	1	11	14	17	19	21	7	14			29	12	11	4	18	18		9	+	20	23	26		19	17	23	27	6	26	12
Orthopyroxene																				+	+							19	11													+	1									
Iron-ore						4	5	6	5	4	5	5	6	6	5	5			3	4	2	4	7	6	6	3	3	+***	4			7	6	7	7	5	3		3	+***	6	3	2		9	5	5	4	4	3	11
Silica-mineral																				+?	+?								+?																							+?
Phlogopite													+										1	2								+																				
Glass						2	1	1	1	1	1	3	2	1	+	2			28	2	4	32	3	2	1	3	8	31***	2				7	1	22	10	2		23	44***	1	9	8		10	10	1	2	1	1	2
Xenocryst																																																			
Quartz												+									+							+														2	+								
Plagioclase	+	+	+										+	+	+	+																			+	+			+		+	+	+	+							

1) Refer to Fig. 5 and the rock specimen numbers of Table 8

* Spinel-bearing ** Fine-grained *** Mixed **** Replaced by rhombic pyroxene and iron-ore +) Biotite and garnet-bearing

Table 8. Chemical compositions of the rocks of the Kita-matsuura district, Northwest Kyushu, Southwest Japan.

Group I

	1 7*** IIIb**	2 1 IIIb?	3 2 IIIb?
SiO_2	48.56	51.40	51.44
TiO_2	2.15	1.95	1.87
Al_2O_3	16.40	15.57	14.88
Fe_2O_3	3.19	2.72	3.69
FeO	5.86	7.25	6.46
MnO	0.18	0.19	0.17
MgO	4.32	6.37	6.92
CaO	8.82	7.72	7.10
Na_2O	3.29	2.95	2.98
K_2O	1.68	1.69	1.80
P_2O_5	0.78	0.73	0.70
H_2O+	2.83	0.41	0.62
H_2O-	1.38	1.52	1.76
Total	99.44	100.47	100.39
FeOtot.	48.4	46.8	45.6
MgO*	24.0	30.8	32.2
Alk.O	27.6	22.4	22.2

Analyst: Hajime KURASAWA

* Solidification index

** Kuno's ferromagnesian silicate mineral assemblage

*** Rock specimen numbers refer to Fig.5 and Tables 3, 6

II-1

	1 38 IVb?	2 40 IVb	3 64 IVb	4 99 IVb	5 100 IVb	6 61 IVb	7 57 IIIb	8 62 IVb	9 58 IVb	10 76 IVb	11 22 IIb	12 83 IIIb	13 59 IVb	14 97 IVb	15 21 Vb (→c)	16 39 IIIb
SiO_2	44.54	44.62	44.88	45.24	45.36	45.36	45.40	45.92	46.02	46.04	46.14	46.40	46.46	47.60	48.26	48.66
TiO_2	2.42	2.05	2.15	1.00	1.45	1.59	1.77	1.69	1.50	1.82	1.95	1.00	1.79	0.69	1.55	1.70
Al_2O_3	17.26	17.46	16.48	15.83	15.60	15.59	15.41	15.87	16.04	15.58	16.16	16.25	16.15	16.93	16.17	15.00
Fe_2O_3	3.47	3.14	6.21	3.88	3.15	3.69	4.78	4.09	3.96	4.50	4.23	3.32	4.51	3.46	3.60	3.81
FeO	6.50	7.36	5.00	7.20	7.72	7.16	6.36	6.43	5.66	7.35	6.72	7.46	6.02	7.16	7.93	7.06
MnO	0.17	0.16	0.08	0.18	0.18	0.13	0.10	0.12	0.09	0.19	0.19	0.17	0.12	0.19	0.16	0.18
MgO	7.44	7.83	7.44	9.48	9.53	8.70	8.65	8.18	8.34	8.87	7.89	9.85	7.58	8.30	6.55	7.04
CaO	9.42	9.57	8.64	9.12	8.92	11.05	9.05	9.78	9.52	8.96	8.92	9.00	9.88	9.82	8.59	7.51
Na_2O	2.94	2.48	3.18	3.08	2.74	2.57	3.03	2.89	2.69	3.22	2.86	3.17	3.03	3.55	3.24	3.36
K_2O	1.51	1.20	1.46	1.48	1.39	0.74	1.21	0.97	1.04	1.19	1.04	1.41	1.07	1.66	0.72	1.79
P_2O_5	0.60	0.70	0.54	0.59	0.57	0.58	0.59	0.60	0.62	0.29	0.59	0.42	0.48	0.40	0.76	0.63
H_2O+	1.38	1.07	1.03	1.11	1.32	1.21	1.25	1.09	1.89	0.78	1.62	0.76	1.11	0.26	1.08	1.19
H_2O-	1.89	1.84	2.72	1.39	1.59	1.27	1.91	1.93	2.25	0.91	1.42	0.58	1.83	0.40	1.22	1.69
Total	99.54	99.48	99.81	99.58	99.52	99.64	99.51	99.56	99.62	99.70	99.73	99.79	100.03	100.42	99.83	99.62
FeOtot.	44.7	46.9	46.7	43.2	43.5	46.5	45.2	45.7	45.7	46.3	47.2	42.0	46.3	40.9	51.5	46.2
MgO	34.6	36.1	32.8	38.4	39.4	38.7	36.8	37.0	37.6	35.9	35.4	39.6	34.8	36.3	30.2	31.1
Alk.O	20.7	17.0	20.5	18.4	17.1	14.8	18.0	17.3	16.7	17.8	17.4	18.4	18.9	22.8	18.3	22.7

II–2

	1 11 IVb	2 88 IVb	3 8 (IV)b	4 43 IVb	5 35 IVb?	6 3 IIIb	7 13 IVb?	8 7 IIIb	9 20 IIIb	10 65 IVb	11 91 III b→c?	12 67 IVb	13 87 IV (b→c)	14 84 Vb?	15 90 IVb?
SiO_2	46.80	46.94	47.00	47.56	47.66	48.00	48.50	48.56	48.84	48.94	49.10	49.48	51.72	52.04	53.36
TiO_2	2.15	1.16	2.64	2.15	2.08	1.60	2.20	2.15	2.70	1.37	0.84	1.69	0.94	0.84	1.00
Al_2O_3	17.75	18.21	16.49	16.31	16.34	15.32	18.34	16.40	16.60	17.40	16.47	17.42	18.54	17.69	19.35
Fe_2O_3	2.81	2.66	3.69	3.89	2.82	3.43	3.43	3.19	4.64	4.12	2.06	3.11	2.63	5.40	2.70
FeO	6.57	7.68	7.96	7.06	7.63	5.94	6.09	5.86	6.42	6.14	9.55	7.60	6.57	6.17	6.06
MnO	0.12	0.18	0.22	0.21	0.17	0.18	0.14	0.18	0.19	0.17	0.19	0.15	0.17	0.18	0.14
MgO	5.63	7.99	6.56	5.87	6.02	4.40	3.95	4.32	4.08	5.68	5.32	5.63	4.07	3.62	3.73
CaO	9.67	7.57	8.33	7.57	7.89	10.37	9.32	8.82	7.28	8.37	9.31	7.90	8.14	6.25	7.59
Na_2O	3.24	3.38	3.12	3.58	3.38	2.73	3.56	3.29	3.83	4.10	2.63	4.21	3.36	4.03	3.84
K_2O	1.37	1.89	1.30	1.82	1.82	1.51	1.23	1.68	1.75	1.89	1.11	1.64	1.78	2.17	1.62
P_2O_5	0.75	0.54	0.82	0.72	0.66	0.86	0.73	0.78	0.78	0.52	0.61	0.49	0.43	0.42	0.40
H_2O+	1.93	0.83	0.56	0.88	1.28	3.27	1.12	2.83	1.74	0.51	1.01	0.38	0.51	0.62	0.21
H_2O-	0.54	0.89	1.60	1.91	2.03	1.82	1.02	1.38	1.08	0.67	1.75	0.59	0.86	0.84	0.26
Total	99.33	99.82	100.29	99.53	99.78	99.43	99.63	99.44	99.93	99.88	99.95	100.29	99.72	100.27	100.26
FeOtot.	47.0	43.2	50.6	48.4	47.8	51.0	51.2	48.4	52.3	45.7	55.6	47.5	49.2	52.9	48.0
MgO	29.1	34.2	29.5	26.9	28.3	24.9	22.0	24.0	20.2	26.5	26.0	25.8	22.4	17.4	21.1
Alk.O	23.9	22.6	19.9	24.7	23.9	24.1	26.8	27.6	27.5	27.8	18.4	26.7	28.4	29.7	30.9

III_1

	1 33 IIIb (→c)	2 31 IVb (→c)	3 29 Vb	4 32 IIIb?	5 25 IV?	6 26 III?	7 27 III?
SiO_2	45.72	48.02	49.12	49.52	49.74	50.88	51.02
TiO_2	1.37	1.52	1.56	1.56	1.34	1.55	1.35
Al_2O_3	15.26	14.79	15.05	14.49	14.90	14.42	14.80
Fe_2O_3	5.61	2.84	2.77	3.40	2.65	2.93	3.31
FeO	6.76	8.87	9.28	8.90	8.49	7.89	7.81
MnO	0.18	0.22	0.19	0.22	0.23	0.20	0.21
MgO	7.75	7.72	7.63	7.66	7.47	7.14	6.20
CaO	8.84	8.31	8.66	8.40	8.44	7.63	7.51
Na_2O	2.43	2.56	2.85	2.69	2.38	2.89	2.70
K_2O	0.33	0.61	0.54	0.88	0.87	1.30	1.47
P_2O_5	0.70	0.60	0.71	0.63	0.73	0.54	0.48
H_2O+	2.04	1.42	0.66	0.79	1.30	1.02	1.12
H_2O-	2.43	2.01	0.72	0.89	1.37	1.29	1.90
Total	99.42	99.49	99.74	100.03	99.91	99.68	99.88
FeOtot.	52.9	51.2	51.6	51.6	50.3	48.2	51.0
MgO	34.7	34.6	33.5	33.0	34.6	32.7	29.3
Alk.O	12.4	14.2	14.9	15.4	15.1	19.1	19.7

III_2

	1 10 IVb?	2 85 IIIb	3 23 IVb?	4 9 (III)b	5 50 IIIb	6 75 IIIb	7 73 IIIb	8 74 IIIb	9 60 IVb?	10 14 IIIb	11 96 IIIb	12 28 IIIb	13 66 IIIb	14 24 IIIb	15 41 IIIb	16 63 IIIb	17 92 Vb	18 86 IIIb
SiO_2	44.24	45.16	45.44	45.72	45.82	46.00	46.36	46.36	47.16	47.18	47.20	47.56	48.22	48.34	48.46	48.58	49.26	51.66
TiO_2	2.70	1.11	2.73	3.00	2.30	2.05	2.12	2.12	2.00	2.80	0.62	2.60	1.60	2.37	1.95	1.84	0.85	1.37
Al_2O_3	16.28	18.42	16.45	17.15	16.40	18.12	16.98	18.23	17.26	17.79	18.96	16.31	18.74	16.97	17.32	17.83	18.57	17.64
Fe_2O_3	3.69	3.79	5.68	4.44	4.42	4.18	3.99	4.58	5.11	5.34	6.33	5.06	3.45	4.90	5.06	4.17	4.62	4.58
FeO	8.11	8.53	6.02	7.21	7.31	7.75	8.77	6.47	6.98	5.79	6.47	7.18	7.49	6.46	5.52	6.69	5.55	5.62
MnO	0.14	0.25	0.22	0.16	0.21	0.18	0.22	0.18	0.12	0.12	0.09	0.23	0.12	0.21	0.21	0.14	0.17	0.19
MgO	6.07	6.50	4.46	5.40	5.77	5.72	5.56	5.17	5.18	4.23	5.25	4.82	5.33	4.28	4.69	4.79	4.10	3.97
CaO	7.45	7.46	9.16	8.12	8.27	7.77	8.37	7.63	6.83	7.92	7.50	6.99	7.97	6.67	8.63	7.35	7.57	6.21
Na_2O	3.36	3.37	3.37	3.74	3.66	3.66	3.23	3.63	4.04	4.14	3.35	4.05	4.16	4.24	3.66	3.84	3.57	3.98
K_2O	1.43	1.45	1.56	1.70	1.61	1.75	1.28	1.73	1.80	1.84	1.70	1.94	1.73	1.88	1.21	1.71	1.73	2.55
P_2O_5	0.77	0.52	0.84	0.88	0.44	0.45	0.44	0.57	0.55	0.83	0.59	0.62	0.57	0.76	0.61	0.61	0.43	0.40
H_2O+	3.68	1.38	1.93	1.29	1.86	0.86	0.83	1.19	1.04	0.98	0.66	0.93	0.41	1.54	1.31	0.88	1.38	0.68
H_2O-	1.58	1.62	1.86	0.78	1.58	1.12	1.47	1.66	1.63	0.80	0.81	1.32	0.53	0.84	1.36	1.22	1.73	0.82
Total	99.50	99.56	99.72	99.59	99.65	99.61	99.62	99.52	99.70	99.76	99.53	99.61	100.32	99.46	99.99	99.65	99.53	99.67
FeOtot.	51.3	51.4	54.3	50.8	50.5	50.8	55.1	50.2	51.2	51.0	54.1	52.0	48.5	51.0	51.3	50.3	50.8	48.1
MgO	27.2	27.9	21.7	24.5	25.8	25.3	24.8	24.5	23.0	20.3	23.4	21.4	24.5	20.2	23.9	23.0	21.4	19.6
Alk.O	21.5	20.7	24.0	24.7	23.7	23.9	20.1	25.3	25.3	28.7	22.5	26.6	27.0	28.8	24.8	26.7	27.8	32.3

IV

	1 45 IVb	2 44 IVb	3 46 IIIb	4 47 IIIb	5 4 IVb	6 16 IVb?	7 101 IVb	8 51 IIIb	9 80 III a→d	10 78 IVb	11 77 IIIb (→c)	12 98 IIIb?	13 42 III a→d	14 37 V b→c?	15 72 IIId	16 102 IIIc	17 70 IVb?	18 71 IIId	19 93 III a→d	20 34 Va→d	21 94 III a→d	22 79 Va→d	23 12 IVb (→c)	24 48 IV (b→)c?
SiO_2	45.06	45.90	46.46	47.56	47.94	48.40	48.54	48.62	48.68	48.70	48.88	49.24	49.60	49.64	49.80	50.16	50.96	51.38	52.36	52.28	53.06	53.92	54.00	52.88
TiO_2	1.73	2.02	1.37	1.34	2.02	2.02	1.14	1.20	1.10	0.95	1.17	0.73	1.59	1.58	1.37	0.85	0.94	1.00	0.75	1.44	0.74	0.69	1.15	3.20
Al_2O_3	13.19	14.46	14.91	15.45	15.84	16.60	14.21	14.94	16.24	16.32	16.45	16.43	15.82	16.54	16.17	15.55	16.68	16.44	14.93	16.77	15.03	14.57	15.31	13.51
Fe_2O_3	2.43	1.89	3.59	3.90	2.64	3.30	2.57	2.30	3.79	2.91	2.83	4.21	3.98	2.43	2.83	9.64	2.34	2.82	2.64	1.85	1.97	3.07	2.09	5.44
FeO	8.60	9.02	6.88	6.95	7.93	6.50	7.83	7.13	6.03	6.50	6.76	5.88	6.27	6.20	8.19	1.91	7.02	6.87	6.11	6.42	6.35	4.85	5.26	7.29
MnO	0.21	0.20	0.21	0.22	0.19	0.08	0.21	0.19	0.18	0.18	0.17	0.20	0.20	0.17	0.10	0.20	0.09	0.14	0.16	0.15	0.16	0.15	0.16	0.24
MgO	13.66	10.62	10.70	9.97	8.60	7.30	11.50	8.73	7.73	7.93	7.80	7.93	7.87	8.16	6.82	8.28	6.96	7.42	7.30	6.45	7.75	7.63	8.39	3.77
CaO	9.64	10.26	9.55	9.36	9.58	8.47	9.43	7.99	8.52	8.62	8.60	8.03	8.39	8.52	8.83	8.36	7.99	8.07	6.89	7.80	7.40	6.66	7.98	6.58
Na_2O	2.16	2.34	2.68	2.99	2.77	3.54	2.98	3.14	3.03	2.58	2.85	3.27	3.36	3.18	3.53	3.38	3.67	3.36	3.14	3.37	2.70	3.10	3.05	3.76
K_2O	0.54	0.75	0.85	0.83	1.12	1.51	1.00	1.41	1.31	1.12	1.01	1.51	1.14	1.44	1.08	0.86	1.53	1.09	1.47	1.74	1.46	1.74	1.38	1.84
P_2O_5	0.53	0.60	0.74	0.72	0.69	0.71	0.43	0.58	0.57	0.46	0.28	0.48	0.59	0.58	0.47	0.38	0.43	0.39	0.41	0.54	0.37	0.42	0.51	0.55
H_2O+	0.80	0.73	0.63	0.33	0.29	1.03	0.22	1.67	1.37	1.38	1.41	0.84	0.34	0.52	0.38	0.34	0.60	0.26	1.72	0.58	1.26	1.20	0.60	0.29
H_2O-	1.45	1.38	1.30	0.60	0.80	0.62	0.32	1.83	1.21	1.89	1.52	1.22	1.11	0.84	0.43	0.55	0.92	0.56	1.63	0.72	1.74	1.51	0.46	0.58
Total	100.00	100.17	99.87	100.22	100.41	100.08	100.38	99.73	99.76	99.54	99.73	99.97	100.26	99.80	100.00	100.46	100.13	99.80	99.51	100.11	99.99	99.51	100.34	99.93
FeOtot.	39.7	43.9	41.5	43.1	45.2	43.4	39.5	40.8	43.9	43.9	44.3	43.2	44.3	39.6	48.5	45.8	45.0	44.2	41.3	41.1	40.5	37.9	35.8	56.5
MgO	50.3	43.5	44.0	41.1	37.8	33.4	45.0	38.9	36.0	38.2	37.2	35.4	35.4	38.6	30.8	35.8	34.3	34.9	36.0	32.8	38.7	38.0	42.0	17.5
Alk.O	10.0	12.6	14.5	15.8	17.0	23.2	15.5	20.3	20.1	17.9	18.5	21.4	20.3	21.8	20.7	18.4	20.7	20.9	22.7	26.1	20.8	24.1	22.2	26.0

V

	1 17 IV a→d	2 15 IVb	3 30 IV a→d	4 6 IV b→c?	5 5 IV b→c?
SiO_2	51.44	52.80	52.86	53.94	54.46
TiO_2	1.70	1.80	1.94	2.02	2.00
Al_2O_3	17.03	17.72	16.76	17.44	17.92
Fe_2O_3	2.17	3.23	3.85	3.68	2.35
FeO	6.88	5.37	5.49	5.26	6.16
MnO	0.22	0.12	0.20	0.20	0.21
MgO	5.48	3.69	4.20	3.66	3.54
CaO	7.31	6.41	7.61	6.70	7.05
Na_2O	3.71	4.53	2.64	4.18	3.71
K_2O	1.44	2.35	1.80	1.72	1.71
P_2O_5	0.66	0.52	0.57	0.60	0.54
H_2O+	0.99	0.70	0.80	0.40	0.26
H_2O-	0.56	0.68	1.17	0.62	0.34
Total	99.59	99.92	99.89	100.42	100.25
FeOtot.	45.4	43.8	50.9	47.3	47.9
MgO	28.2	19.6	23.9	20.2	20.6
Alk.O	26.4	36.6	25.2	32.5	31.5

Table 9. Norms of the analyzed rocks in Table 8.

Group I

	1	2	3
Q	0.24	1.74	2.70
C	—	—	—
Or	10.02	10.02	10.56
Ab	27.79	25.15	25.15
An	24.76	23.91	21.96
Ne	—	—	—
Wo	5.81	4.29	3.83
En	10.74	16.00	17.30
Fs	5.01	8.18	5.94
Fo	—	—	—
Fa	—	—	—
Mt	4.63	3.94	5.34
Hm	—	—	—
Il	4.10	3.80	3.65
Ap	2.02	1.68	1.68

II-1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Q	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
C	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Or	8.90	7.24	8.90	8.90	8.35	4.55	7.24	5.57	6.12	7.24	6.12	8.35	6.12	10.02	4.45	10.57
Ab	19.92	20.97	25.17	17.83	21.50	20.45	24.12	26.64	22.55	24.12	24.12	18.35	25.69	18.87	27.26	28.31
An	29.48	32.82	26.42	24.76	26.15	28.65	24.76	27.54	31.43	24.48	28.37	25.87	27.26	25.31	27.54	20.58
Ne	2.56	—	0.85	4.55	0.85	0.85	0.85	—	—	1.70	—	4.55	—	5.97	—	—
Wo	5.81	4.41	5.46	7.20	6.16	9.52	6.97	7.32	5.23	7.67	5.11	6.85	8.01	8.36	4.53	5.58
En	4.12	3.81	4.62	4.82	4.12	6.32	5.12	6.22	8.53	5.22	9.14	4.42	6.22	5.32	12.55	9.24
Fs	1.19	1.32	0.13	1.85	1.58	2.51	1.19	1.85	1.98	1.85	2.77	1.98	1.72	2.51	7.12	3.83
Fo	10.13	10.98	9.71	13.23	13.79	10.69	11.54	9.85	8.58	11.82	7.46	14.07	8.86	10.83	2.67	5.91
Fa	3.26	4.89	0.41	5.30	6.11	4.08	3.06	3.26	2.04	4.08	2.65	5.71	2.45	5.50	1.83	2.85
Mt	5.09	4.63	9.03	5.56	4.63	5.33	6.95	6.02	5.79	6.48	6.25	4.63	6.48	5.07	5.33	5.56
Hm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Il	4.55	3.95	4.10	2.91	4.03	4.48	4.70	4.70	4.25	7.16	5.37	2.91	4.70	1.37	4.25	4.70
Ap	1.35	1.68	1.35	1.35	1.35	1.35	1.35	1.35	1.35	2.02	1.35	1.01	1.01	1.01	1.68	1.35

II-2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Q	—	—	—	—	—	1.80	—	0.24	0.18	—	—	—	0.60	0.84	1.62
C	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Or	8.35	11.13	7.79	10.57	10.02	8.90	7.24	10.02	10.57	11.13	6.68	10.02	10.01	12.79	9.45
Ab	26.22	23.07	26.22	30.41	28.84	23.07	27.89	27.79	32.51	29.36	22.02	31.46	28.82	34.06	32.49
An	29.76	28.93	27.26	23.09	24.20	25.03	30.60	24.76	22.81	24.48	30.04	23.64	30.02	23.91	30.86
Ne	0.57	3.13	—	—	—	—	—	—	—	2.84	—	2.27	—	—	—
Wo	5.81	2.21	3.83	4.30	4.53	8.94	4.76	5.81	3.48	6.04	5.34	5.11	3.36	1.97	1.86
En	3.81	1.31	8.33	4.32	5.12	10.94	8.63	10.74	10.14	4.02	11.95	3.01	10.20	9.10	9.40
Fs	1.58	0.79	4.49	1.98	2.90	5.80	4.35	5.01	3.83	1.58	1.45	1.85	8.84	5.94	7.52
Fo	7.18	13.09	5.63	7.32	6.89	—	0.84	—	—	7.18	0.99	7.74	—	—	—
Fa	3.87	7.34	2.45	3.67	4.28	—	0.41	—	—	3.46	1.22	5.50	—	—	—
Mt	4.17	3.94	5.33	5.56	4.17	5.09	5.09	4.63	6.71	6.02	3.01	4.40	3.71	7.89	3.94
Hm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Il	4.10	2.28	5.01	4.10	3.95	3.04	4.25	4.10	5.16	2.58	1.67	3.19	1.82	1.52	1.98
Ap	1.68	1.35	2.02	1.68	1.68	2.02	1.68	2.02	2.02	1.35	1.35	1.35	1.01	1.01	1.01

III_1

	1	2	3	4	5	6	7
Q	0.66	0.06	—	—	3.00	2.04	3.30
C	—	—	—	—	—	—	—
Or	2.23	3.34	3.34	6.12	5.56	7.78	8.90
Ab	20.97	21.48	24.10	23.06	20.44	24.63	23.06
An	29.48	27.24	26.69	24.46	26.97	19.46	23.63
Ne	—	—	—	—	—	—	—
Wo	4.30	4.41	5.10	5.80	4.53	6.26	4.29
En	19.27	19.30	17.20	18.80	18.57	17.90	15.50
Fs	5.94	11.87	11.22	11.09	11.48	9.90	9.63
Fo	—	—	1.33	0.28	—	—	—
Fa	—	—	0.92	0.21	—	—	—
Mt	8.10	4.18	4.18	4.87	3.94	4.18	4.87
Hm	—	—	—	—	—	—	—
Il	2.58	2.89	3.04	3.04	2.58	3.04	2.58
Ap	1.68	1.34	1.08	1.34	1.68	1.34	1.34

III_2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Q	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
C	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Or	8.35	8.35	9.46	10.02	9.46	10.57	7.79	10.02	10.57	11.13	10.02	11.69	10.02	11.13	7.24	10.02	10.02	15.03
Ab	28.31	25.69	28.31	27.79	25.69	26.74	26.74	29.36	32.51	31.98	28.31	31.98	28.84	35.65	30.93	32.51	30.41	33.56
An	25.31	30.87	25.03	25.03	23.64	28.65	28.09	28.37	23.64	24.48	31.71	20.58	27.54	21.97	27.26	26.42	29.48	22.81
Ne	—	1.42	—	1.99	2.84	2.27	0.28	0.85	0.85	1.70	—	1.14	3.41	—	—	—	—	—
Wo	3.14	1.05	6.39	4.30	6.27	3.14	5.58	2.56	2.90	4.07	0.93	4.53	3.60	2.90	5.11	2.79	2.32	1.97
En	2.21	0.60	5.62	3.02	4.12	1.91	3.11	1.71	1.91	3.11	4.82	3.01	2.11	3.92	10.84	4.62	8.93	9.74
Fs	1.19	0.40	1.19	0.92	1.72	1.06	2.24	0.66	0.79	0.53	1.98	1.19	1.32	1.45	2.90	2.51	4.49	4.49
Fo	8.30	10.83	3.80	7.32	7.04	8.72	7.60	7.88	7.74	5.21	5.77	6.33	7.88	4.78	0.56	5.21	0.99	0.14
Fa	4.69	7.95	0.82	3.06	3.67	5.09	5.71	3.26	3.67	1.22	2.85	3.06	5.50	2.24	0.20	2.85	0.61	0.10
Mt	5.33	6.48	8.34	6.48	6.48	6.02	5.79	6.71	7.41	7.64	9.26	7.41	5.09	7.18	7.41	6.02	6.71	6.71
Hm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Il	5.16	2.12	5.16	5.77	4.40	3.95	4.10	4.10	3.79	5.31	1.21	5.01	3.05	6.95	3.64	3.34	1.67	2.58
Ap	1.68	1.35	2.02	2.02	1.01	1.01	1.01	1.35	1.35	2.02	1.35	1.35	1.35	1.68	1.35	1.35	1.01	1.03

IV

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Q	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.66	—	—	3.24	—	3.06	3.54	2.52	7.14
C	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Or	3.34	4.45	5.01	5.01	6.68	8.90	6.12	8.35	7.79	6.68	6.12	8.90	6.68	8.35	6.67	5.56	8.90	6.67	8.90	10.01	8.90	10.56	8.34	10.56
Ab	18.35	19.92	22.55	25.17	23.59	29.89	24.12	26.74	25.69	22.02	24.12	27.79	28.31	26.74	29.34	28.82	31.44	28.82	26.72	28.82	23.06	26.20	25.68	31.96
An	24.48	26.70	26.15	26.42	27.26	25.03	22.25	22.53	26.70	29.48	28.93	25.59	24.76	26.70	25.30	24.46	24.46	26.41	21.96	25.58	24.19	20.57	23.91	14.46
Ne	—	—	—	—	—	—	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Wo	8.36	8.71	7.09	6.62	6.74	5.34	9.18	5.81	5.11	4.53	4.99	4.88	5.69	5.11	6.38	6.03	5.34	4.41	4.06	4.06	4.18	4.99	5.10	6.26
En	7.03	6.53	7.63	8.23	9.03	4.62	6.12	8.53	12.15	15.96	13.96	9.03	13.45	6.02	8.20	20.78	6.80	14.30	18.30	14.90	19.27	19.10	21.00	9.40
Fs	2.37	2.90	2.11	2.37	3.96	1.45	2.37	3.83	4.22	6.86	6.07	3.03	4.09	2.11	5.01	—	3.83	6.60	5.41	7.52	9.23	5.68	6.34	3.96
Fo	18.85	13.93	13.23	11.68	8.72	9.57	15.76	9.29	4.93	2.67	3.94	7.60	4.22	10.13	6.23	—	7.35	3.01	—	0.84	—	—	—	—
Fa	6.72	7.13	4.28	4.28	4.08	3.67	6.52	4.48	1.83	1.22	1.83	2.85	1.43	3.67	4.18	—	4.49	1.53	—	0.41	—	—	—	—
Mt	3.47	2.78	5.33	5.56	3.94	4.63	3.70	3.24	5.56	4.17	4.17	6.02	5.79	3.47	4.17	4.40	3.48	4.18	5.34	2.78	3.02	4.41	3.02	7.89
Hm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.55	—	—	—	—	—	—	—	—
Il	3.34	3.79	2.58	2.58	3.79	3.79	2.12	2.28	2.12	1.82	2.28	1.37	3.04	3.04	2.74	1.67	1.67	1.98	1.52	2.74	1.37	1.37	2.28	6.08
Ap	1.35	1.35	1.68	1.68	1.68	1.68	1.01	1.35	1.35	1.01	0.67	1.01	1.35	1.35	1.35	1.01	1.01	1.01	1.01	1.35	1.01	1.01	1.35	1.35

V

	1	2	3	4	5
Q	0.12	—	8.76	4.14	9.60
C	—	—	—	—	—
Or	8.34	13.90	10.56	10.01	10.01
Ab	31.44	38.25	22.53	35.63	31.44
An	25.58	21.13	28.63	23.63	26.97
Ne	—	—	—	—	—
Wo	2.67	3.02	2.44	2.67	1.97
En	13.70	7.60	10.50	9.20	8.90
Fs	8.05	3.56	4.09	3.81	6.47
Fo	—	1.12	—	—	—
Fa	—	0.66	—	—	—
Mt	3.25	4.64	5.57	5.34	3.48
Hm	—	—	—	—	—
Il	3.19	3.50	3.65	3.80	3.80
Ap	1.68	1.35	1.35	1.35	1.35

Table 10. Rock name and locality of the analyzed rocks of the Kita-matsuura district, Northwest Kyushu.

Group I

1. Olivine trachyandesitic basalt (Ku 59102904)
   200 m. N.W. from Sanuki, Imari City, Saga Prefecture.
2. Olivine basalt (Ku 60120207)
   S.E. of Kawachino, Imari City.
3. Olivine basalt (Ku 60120206)
   An upper lava of no. 2 of Kawachino, Imari City.

II–1

1. Quartz-bearing augite-olivine trachybasalt (Ku 59110409)
   N. mountain-side of Kohochi-dake, Matsuura City, Nagasaki Prefecture.
2. Augite-olivine trachybasalt (Ku 60120502)
   S. valley of Fuefuki, Matsuura City.
3. Augite-olivine trachybasalt (Ku 60121002)
   450 m. N.E. from Kakui-dake, Sasebo City, Nagasaki Pref.
4. Augite-olivine trachybasalt (Ku 59110407)
   500 m. E. from Kusano-o, Yoshii-machi, Kita-matsuura-gun.
5. Augite-olivine trachybasalt (Ku 59110408)
   S.W. of top of Kumisaka-toge, Yoshii-machi.
6. Augite-olivine basalt (Ku 59103102)
   1 km. W. from Kami-udo, Sasebo City.
7. Olivine trachybasalt (Ku 59103106)
   River-side of Satomi, Sasebo City.
8. Augite-olivine trachybasalt (Ku 59103101)
   500 m. N.W. from top of Udo-goe, Sasebo City.
9. Augite-olivine basalt (Ku 59103105)
   The tunnel of Kawadani near the dam-site, Sasebo City.
10. Augite-olivine trachybasalt (Ku 59110307)
    Coast-cliff of Kamata, Tabira-machi, Kita-matsuura-gun.
11. Hypersthene-olivine-bearing basalt (KT 60121002)
    E. top of Tsujino-do, Imari City, Saga Pref.
12. Olivine trachybasalt (Ku 60113001)
    Kagami-yama, Karatsu City, Saga Pref.
13. Augite-olivine basalt (Ku 59103104)
    East strand of the Kawadani-dam, Sasebo City.
14. Augite-olivine trachybasalt (Ku 59110405)
    N. mountain-side of Inotsugi near Senryu, Emukae-machi, Kita-matsuura-gun, Nagasaki Pref.
15. Olivine-augite-bearing hypersthene basalt (KT 60121001)
    A lower lava of no. 11, E. top of Tsujino-do, Imari City.
16. Olivine trachybasalt (Ku 60120501)
    A lower lava of no. 2, Fuefuki, Matsuura City, Nagasaki Pref.

II–2

1. Augite-olivine trachybasalt (Ku 59102908)
   1 km. N. from Sanuki, Imari City, Saga Pref.
2. Olivine-augite-bearing trachybasalt (Ku 59110105)
   Ima-dake, 4 km. E. from Imari City, Saga Pref.
3. Olivine-bearing augite trachydolerite (Ku 59102905)
   500 m. N. from Sanuki, Imari City.
4. Augite-olivine trachybasalt (Ku 59110501)
   400 m. E. from Taru-kawachi, Yoshii-machi, Kita-matsuura-gun.
5. Augite-olivine trachybasalt (Ku 60120507)
   900 m. N.W. from Nagano, Matsuura City.
6. Olivine trachydolerite (Ku 60120205)
   A dyke, 500 m. S.E. from Kawachino, Imari City.
7. Augite-olivine andesitic basalt (Ku 59103006)
   1 km. N. from Eboshi-dake, Imari City.
8. Olivine trachyandesitic basalt (Ku 59102904)
   200 m. N.W. from Sanuki, Imari City, Saga Pref.
9. Olivine-bearing trachyandesitic basalt (KT 60121004)
   100 m. W. from top of Tsujino-do-toge, Imari City.
10. Augite-olivine mugearite (Ku 60121003)
    A height of ca. 600 m. above the sea, 400 m. N.E. from Kakui-dake, Sasebo City.
11. Olivine andesitic basalt (Ku 60120807)
    500 m. E. from Funanobaru, Yamauchi-mura, Kishima-gun, Saga Pref.
12. Augite-olivine mugearite (Ku 59103107)
    W. of Osae-goe, Sasebo City.
13. Augite-olivine basaltic andesite (Ku 60120304)
    W. of Joko-dake, Imari City.
14. Hypersthene-augite-bearing olivine trachyandesite (Ku 59110102)
    1 km. N. from Mimasaka, Yamauchi-mura, Kishima-gun.
15. Augite-olivine-bearing andesite (Ku 59110104)
    A pebble in volcanic breccia, Kuro-dake, Yamauchi-mura, Kishima-gun.

III_1

1. Olivine basalt (KT 59103103)
   The height of ca. 363 m. ridge above the sea, W. of Ningyoishi-yama, Matsuura City, Nagasaki Pref.
2. Augite-olivine basalt (KT 59103105)
   400 m. N. from ca. 363 m. ridge above the sea, W. of Ningyoishi-yama, Matsuura City.
3. Augite-hypersthene-olivine basalt (Ku 59102801)
   The lowest lava of an east-faced cliff of the north ridge of the Ningyoishi-yama, Imari City, Saga Pref.
4. Olivine basalt (KT 59103106)
   The foot of the Ningyoishi-yama, Matsuura City.
5. Augite-olivine basalt (Ku 60120602)
   A lava above the lowest lava of an east-faced cliff of the north ridge of the Ningyoishi-yama, Imari City.
6. Olivine basalt (Ku 60120601)
   A lava above no. 5 lava of the north ridge.
7. Olivine basalt (Ku 59102803)
   An upper part of no. 6 lava of the north ridge.

III_2

1. Augite-olivine trachybasalt (Ku 59102906)
   1 km. N. from Sanuki, Imari City.
2. Olivine trachybasalt (KT 59110105)
   S. of Koshi-dake, Imari City.
3. Olivine-augite-bearing trachyandesitic basalt (Ku 59102903)
   Yamanaka, Imari City.
4. Olivine-bearing trachybasalt (Ku 59102910)
   1 km. S. W. from Sanuki, Imari City.
5. Olivine-bearing trachybasalt (Ku 59102603)
   Hirose-yama, Nishi-arita-mura, Nishi-matsuura-gun, Saga Pref.
6. Olivine trachybasalt (Ku 59110303)
   Osaki-ue, Matsuura City, Nagasaki Pref.
7. Olivine trachybasalt (Ku 59110301)
   Kitakubo, Matsuura City.
8. Olivine trachybasalt (Ku 59110302)
   Osaki-shita, Matsuura City.
9. Augite-olivine mugearite (Ku 59103103)
   300 m. N. from Kawadani, Sasebo City.
10. Olivine mugearite (Ku 59103001)
    400 m. E. from Kurinoki-toge, Imari City.
11. Olivine trachyandesitic basalt (Ku 59110406)
    Senryu-fall, Emukae-machi, Kita-matsuura-gun, Nagasaki Pref.
12. Olivine-bearing mugearite (Ku 59102804)
    N. E. foot of the Ningyoishi-yama, Matsuura City.
13. Olivine mugearite (Ku 60121004)
    A top of the Kakui-dake, Sasebo City.
14. Olivine-bearing mugearite-trachyandesite (Ku 59102902)
    300 m. E. from Yamanaka, Imari City.
15. Olivine andesitic basalt (Ku 60120504)
    An upper lava of S. valley of Fuefuki, Matsuura City.
16. Olivine trachyandesitic basalt (Ku 60121001)
    N. of the top of Kakui-dake, Sasebo City.
17. Hypersthene-olivine-augite-bearing trachybasaltic andesite (Ku 60120801)
    700 m. S.S.W. from Funanobaru, Yamauchi-mura, Kishima-gun, Saga Pref.
18. Olivine mugearite-trachyandesite (Ku 60120303)
    Joko-dake, Imari City, Saga Pref.

IV

1. Augite-olivine picritic basalt (Ku 59110502)
   A top of Myokanji-toge, Sasebo City.
2. Quartz-bearing augite-olivine picritic basalt (Ku 59110503)
   500 m. S. from a top of the Myokanji-toge,Sasebo City.
3. Olivine basalt (Ku 60120902)
   A lower lava of Ono-dake, Imari City.
4. Olivine basalt (Ku 60120901a)
   An upper lava of the Ono-dake, Imari City.
5. Quartz-bearing augite-olivine trachybasalt (Ku 60120204)
   1 km. E. from the Kawachino, Imari City.
6. Augite-olivine trachybasalt (Ku 59103004)
   400 m. S. from a top of the Eboshi-dake, Imari City.
7. Augite-olivine picritic basalt (Ku 59110403)
   500 m. W. E. from Senryu-shira-dake, Emukae-machi, Kita-matsuura-gun, Nagasaki Pref.
8. Olivine trachybasalt (KT 59110102)
   300 m. N. from Hirose, Nishi-arita-mura, Nishi-matsuura-gun, Saga Pref.
9. Olivine basalt (Ku 59110305)
   1.5 km. N. E. from Shimogame, Tabira-machi, Kita-matsuura-gun, Nagasaki Pref.
10. Augite-bearing olivine trachybasalt (Ku 59110306)
    Ichinoseki, Tabira-machi, Kita-matsuura-gun, Nagasaki Pref.
11. Olivine basalt (Ku 59110304)
    Kozaki, Tabira-machi.
12. Olivine trachybasalt (Ku 59110401)
    300 m. E. from Ebirao, Emukae-machi, Kita-matsuura-gun.
13. Olivine basalt (Ku 60120505)
    S. valley of Fuefuki, Matsuura City, Nagasaki Pref.
14. Quartz-hypersthene-bearing augite-olivine basalt (Ku 59110410)
    S. mountain-side of Kohochi-dake, Matsuura City.
15. Quartz-bearing olivine basalt (Ku 59110202)
    A top of Hirado-shira-dake, Hirado City.
16. Olivine basalt (Ku 59110402)
    A top of Senryu-shira-dake, Emukae-machi.
17. Augite-olivine trachybasalt (Ku 59110205)
    1.5 km. S. from Hirado-shira-dake, Hirado City.
18. Olivine basalt (Ku 59110204)
    1 km. S. W. from Hirado-shira-dake, Hirado City.
19. Quartz-bearing olivine basalt (Ku 60120803)
    A top of Jinroku-yama, Yamauchi-mura, Kishima-gun, Saga Pref.
20. Quartz-hypersthene-bearing augite-olivine basalt (KT 59103108a)
    A north-faced cliff of Nononto, Imari City.
21. Quartz-bearing olivine basalt (Ku 60120804)
    500 m. N. E. from a top of Jinroku-yama, Yamauchi-mura, Kishima-gun, Saga Pref.
22. Quartz-bearing augite-hypersthene-olivine basalt (Ku 59110308)
    A coast of Noda, Tabira-machi, Kita-matsuura-gun.
23. Olivine-augite basalt (Ku 59102907)
    1.3 km. N. of Sanuki, Imari City.
24. Olivine-augite dolerite (Ku 60120901c)
    A segregation vein in an upper lava (No. 4) of Ono-dake, Imari City.

V

1. Augite-olivine andesitic basalt (Ku 59103003)
   1.2 km. N. from Kunimi-yama, Imari City.
2. Augite-olivine trachyandesite (Ku 59103002)
   400 m. S. W. from Kunimi-yama, Sechibaru-machi, Kita-matsuura-gun, Nagasaki Pref.
3. Quartz-bearing augite-olivine basaltic andesite (Ku 59102805)
   S. W. foot of Ningyoishi-yama, Matsuura City.
4. Augite-olivine-bearing andesite (Ku 60120201)
   1 km. E. from Kawachino, Imari City.
5. Augite-olivine-bearing andesite (Ku 60120203)
   A lower lava of no. 4, 1 km. E. from Kawachino, Imari City.

(KT: collected by K. TAKAHASHI)