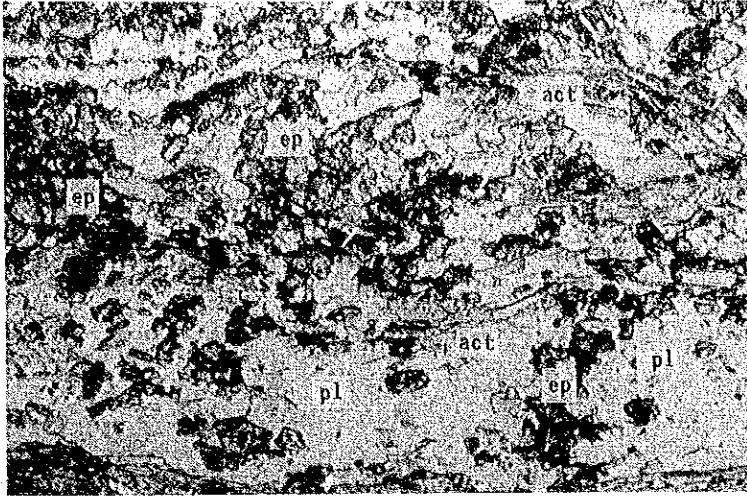


APPENDICES

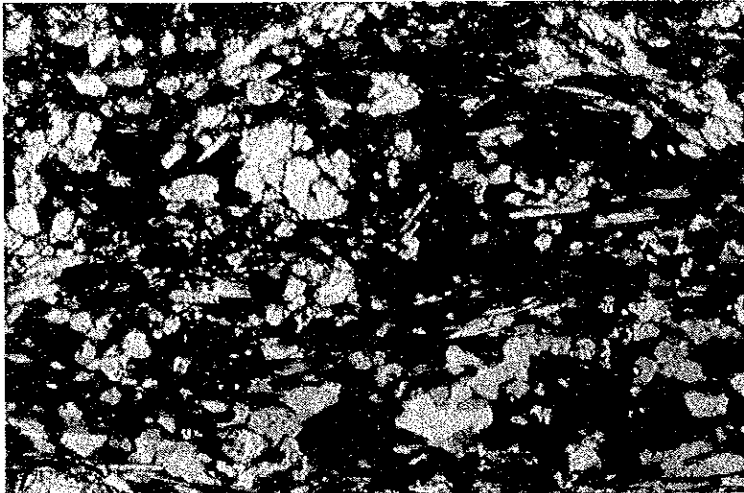
Fig. A-1 Microphotograph of Thin Section

Abbreviation

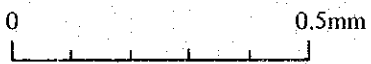
q	:	quartz
pl	:	plagioclase
bt	:	biotite
mus	:	muscovite
hb	:	hornblende
au	:	augite
hy	:	hypersthene
ol	:	olivine
en	:	enstatite
act	:	actinolite
ga	:	garnet
op	:	opaque minerals
ep	:	epidote
ser	:	sericite
chl	:	chlorite
srp	:	serpentine



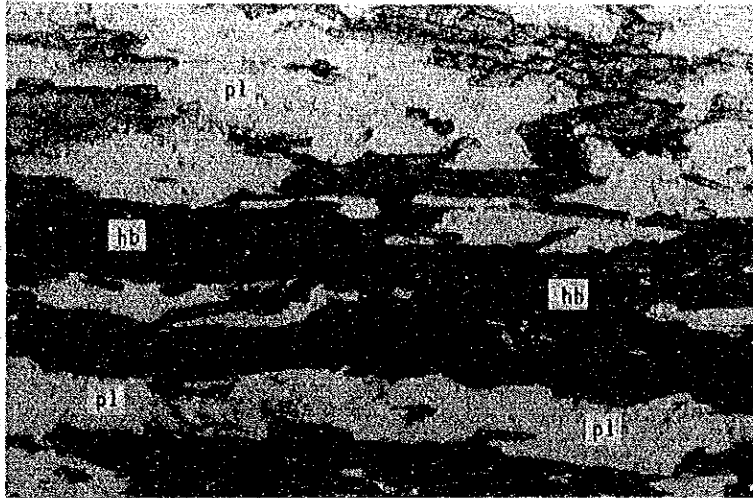
Only lower polar



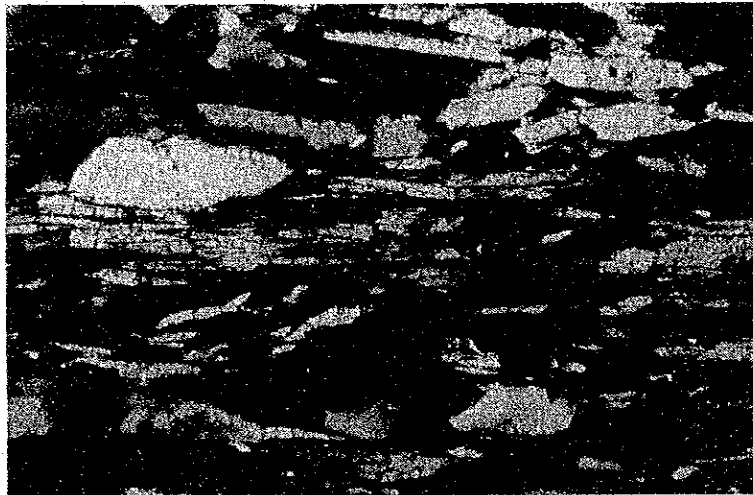
Crossed polars



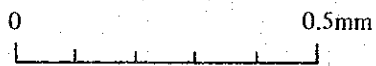
Sample No. : SR-18
Location : Mananao River
Rock name : epidote actinolite schist
Group name : Halcon metamorphics



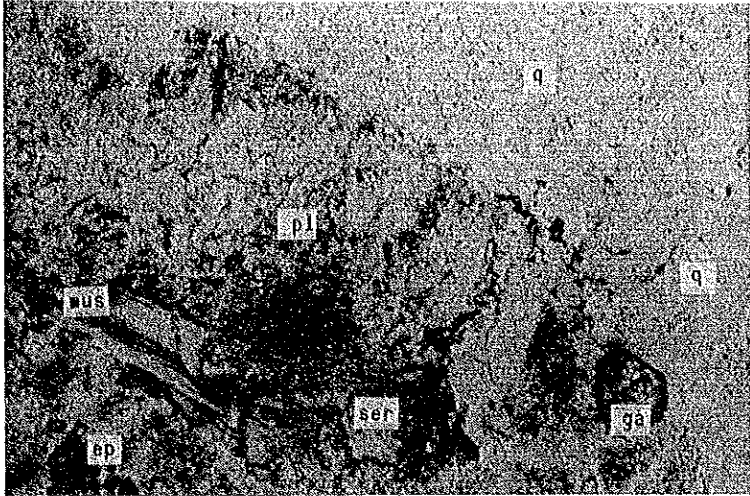
Only lower polar



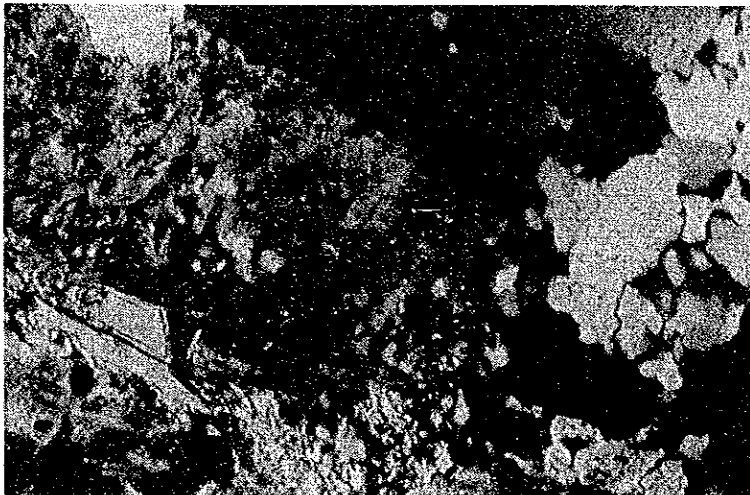
Crossed polars



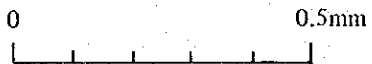
Sample No. : WR-12
Location : Bongabong River
Rock name : amphibolite
Group name : Halcon metamorphics



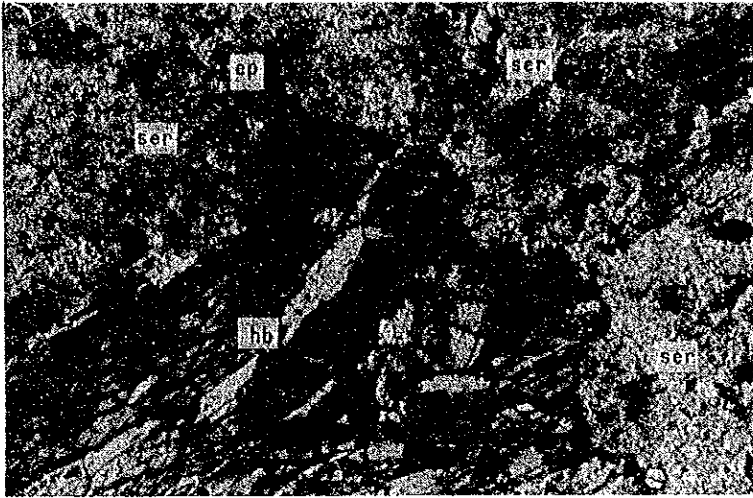
Only lower polar



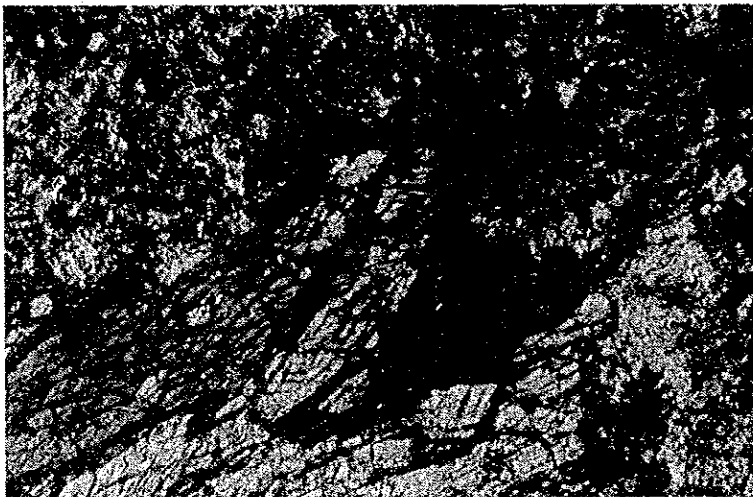
Crossed polars



Sample No. : FR-39
Location : Camarong River
Rock name : gneiss
Group name : Halcon metamorphics



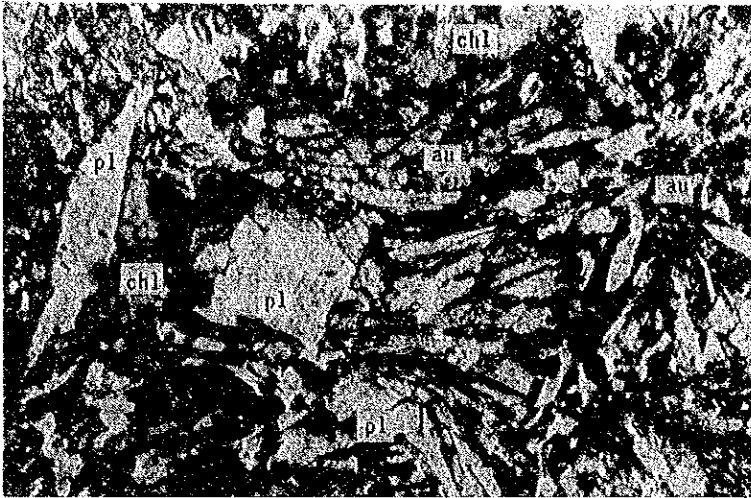
Only lower polar



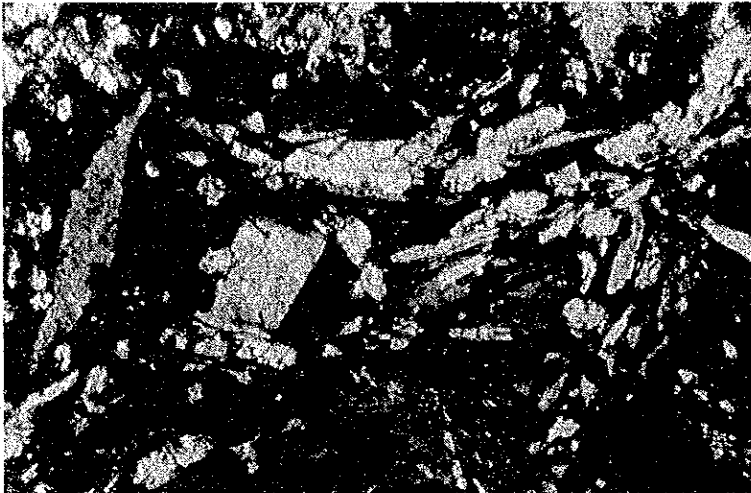
Crossed polars



Sample No. : FR-118
Location : east of Abra de Ilog
Rock name : metagabbro
Group name : Halcon metamorphics



Only lower polar

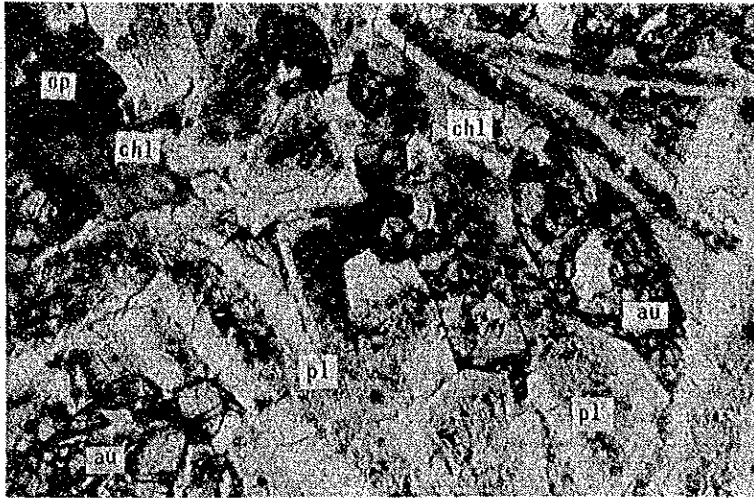


Crossed polars

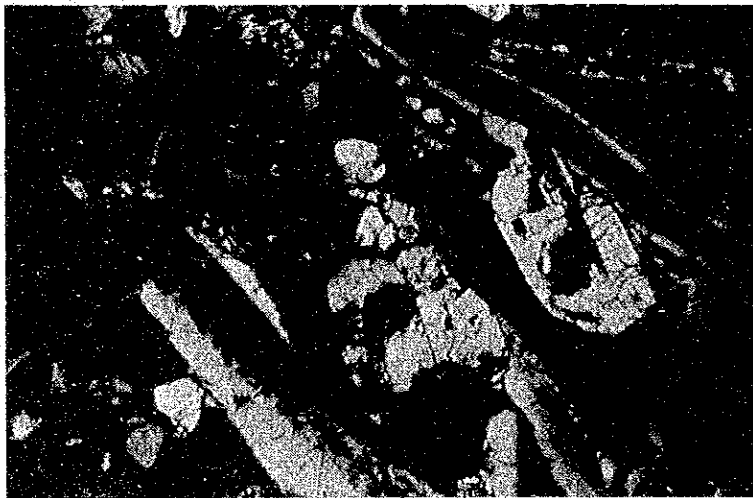
0 0.5mm

A horizontal scale bar with a vertical line at the left end and a vertical line at the right end. The left end is labeled '0' and the right end is labeled '0.5mm'. There are four small vertical tick marks between the two main ends, dividing the 0.5mm distance into five equal segments.

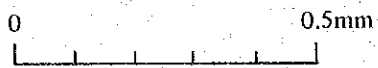
Sample No. : YR-26
Location : Pola River
Rock name : basalt
Formation name : Lumintao formation



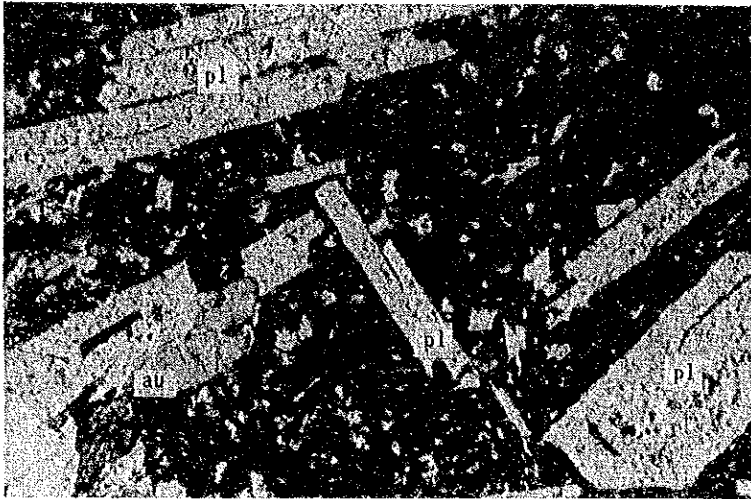
Only lower polar



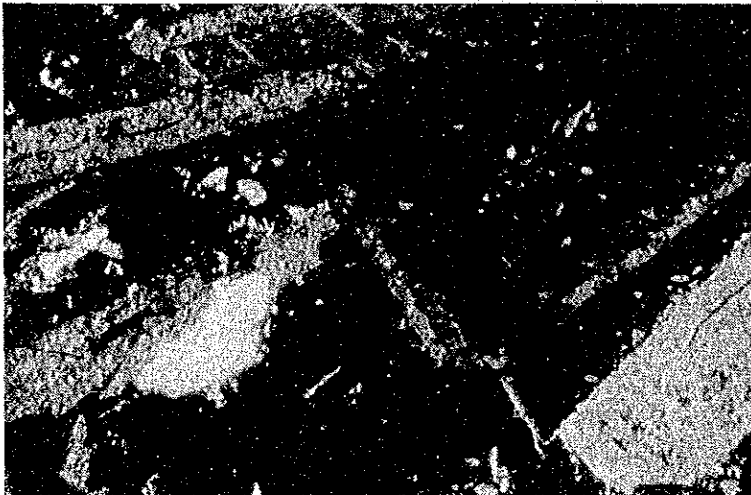
Crossed polars



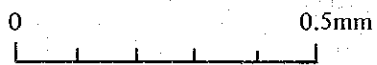
Sample No. : YR-10
Location : Rayusan River
Rock name : dolerite
Formation name : Lumintao formation



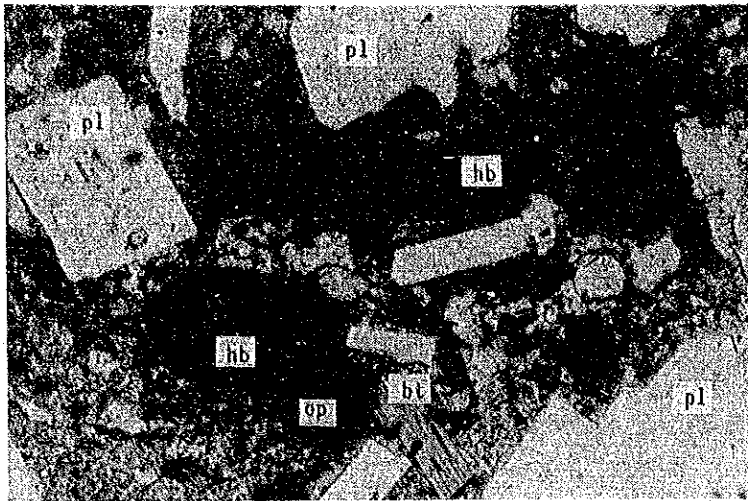
Only lower polar



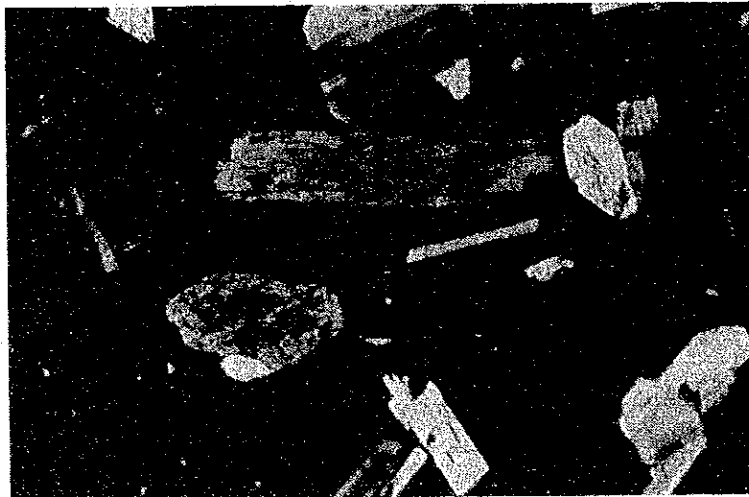
Crossed polars



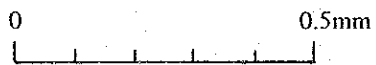
Sample No. : FR-17
Location : Mamburao River
Rock name : basalt
Group name : Mamburao group



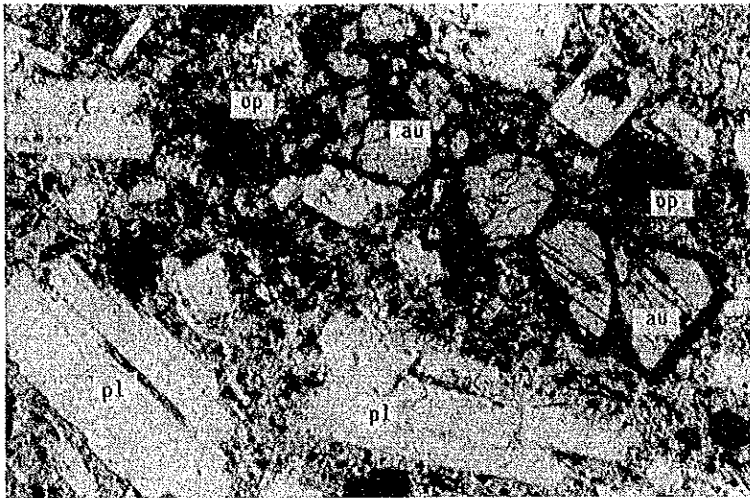
Only lower polar



Crossed polars



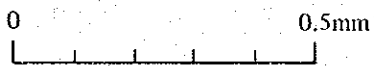
Sample No. : SR-93
Location : north of Calapan
Rock name : biotite hornblende andesite
Group name : Socorro group



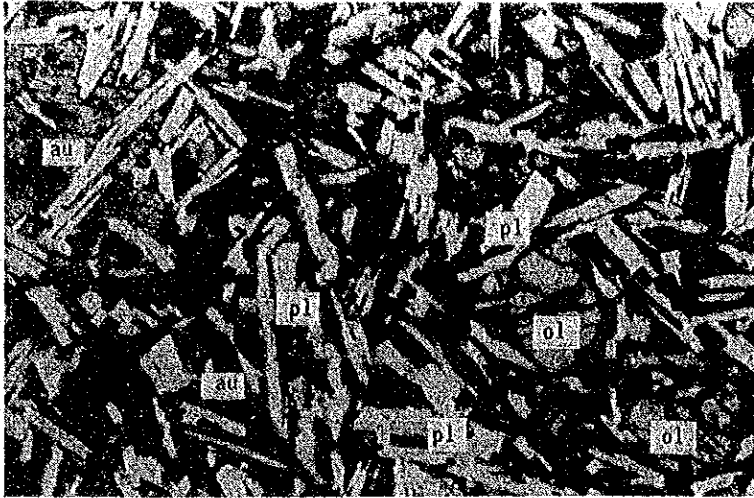
Only lower polar



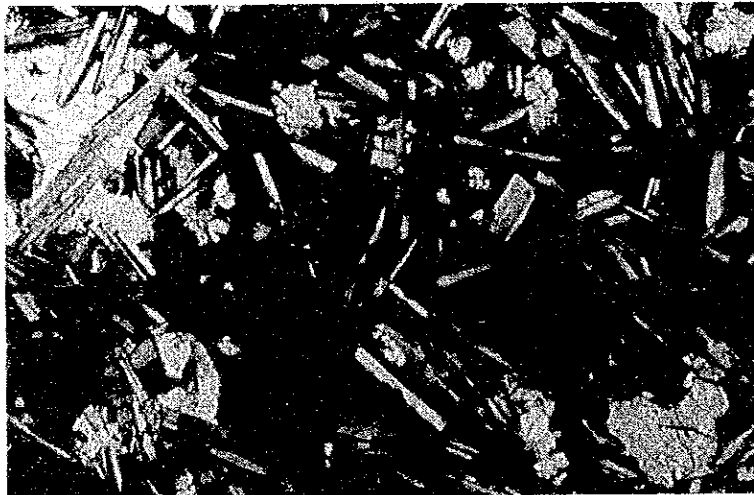
Crossed polars



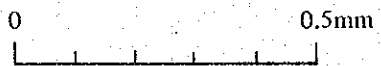
Sample No. : SR-72
Location : south of Mt. Dumali
Rock name : pyroxene andesite
Group name : Socorro group



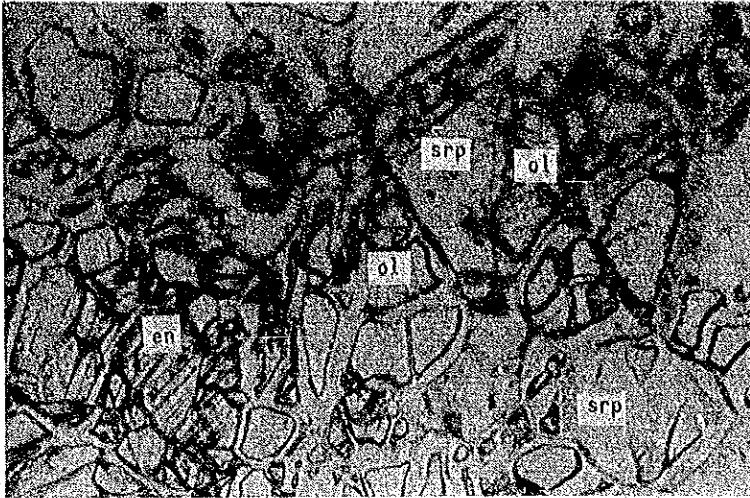
Only lower polar



Crossed polars



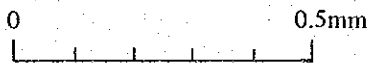
Sample No. : WR-32
Location : Mauhao
Rock name : basalt
Group name : Socorro group



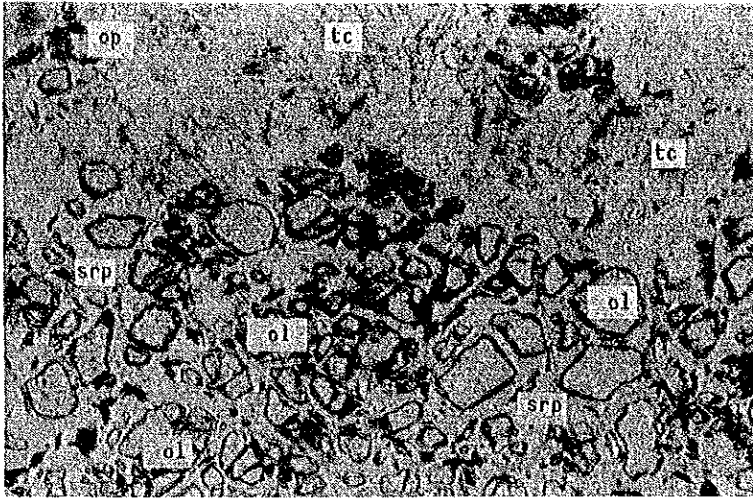
Only lower polar



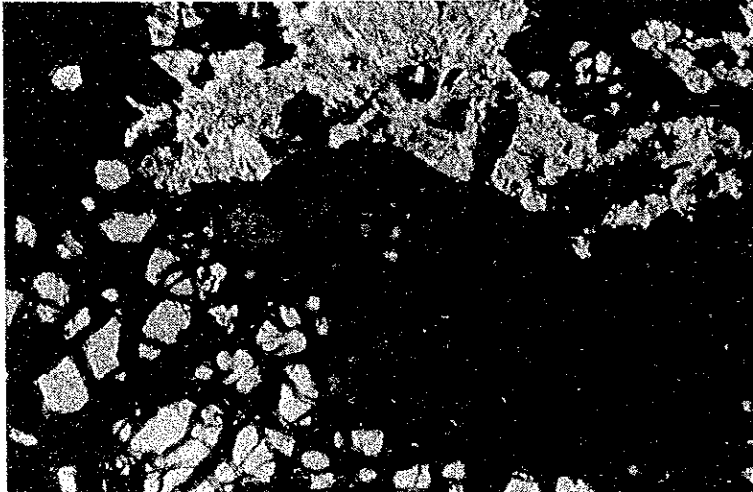
Crossed polars



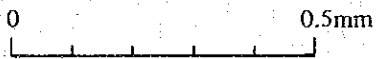
Sample No. : SR-65
Location : Bansud River
Rock name : harzbergite



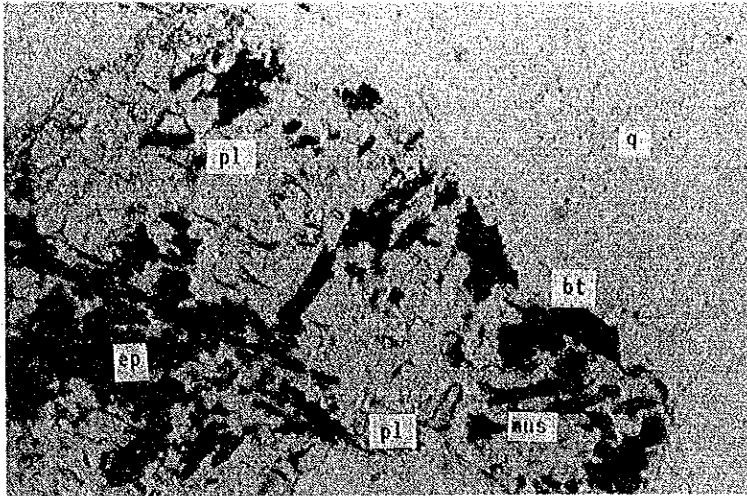
Only lower polar



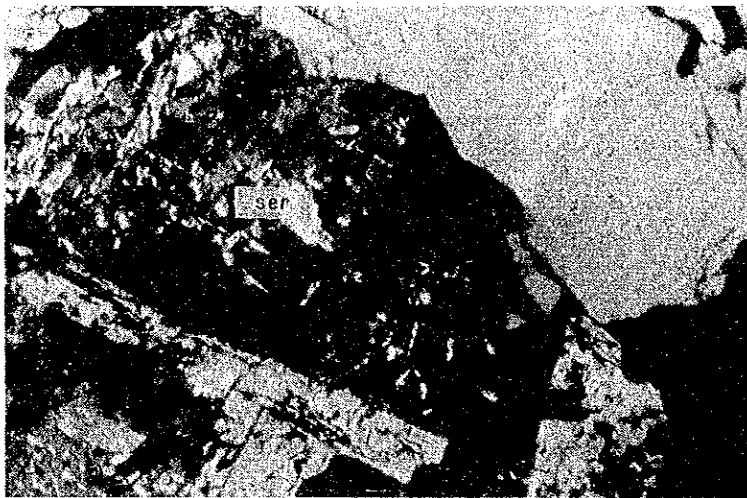
Crossed polars



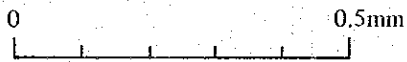
Sample No. : WR-161
Location : Magaswangtubig River
Rock name : Iherzolite



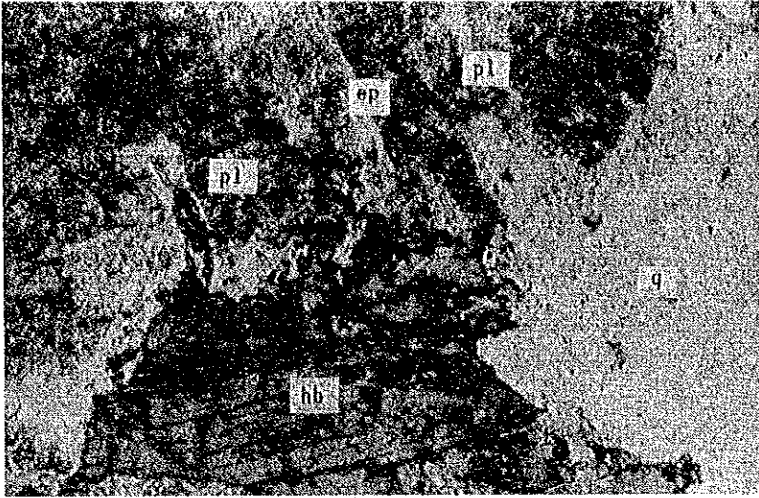
Only lower polar



Crossed polars



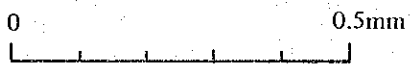
Sample No. : FR-41
Location : Camarong River
Rock name : granodiorite



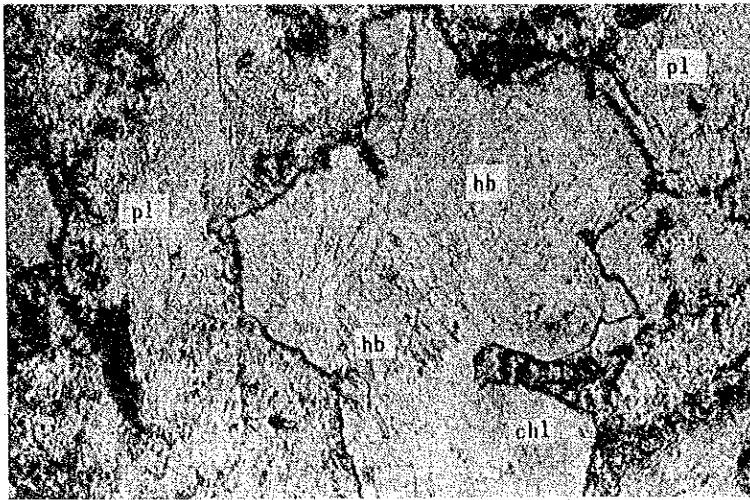
Only lower polar



Crossed polars



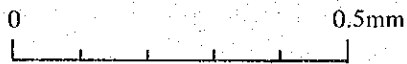
Sample No. : FR-24
Location : Mamburao River
Rock name : quartz diorite



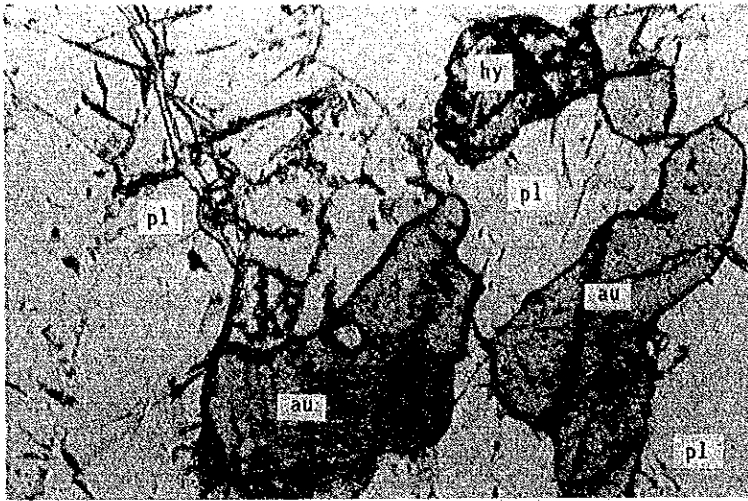
Only lower polar



Crossed polars



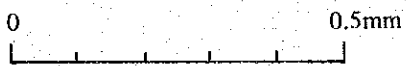
Sample No. : WR-179
Location : Magaswangtubig River
Rock name : diorite



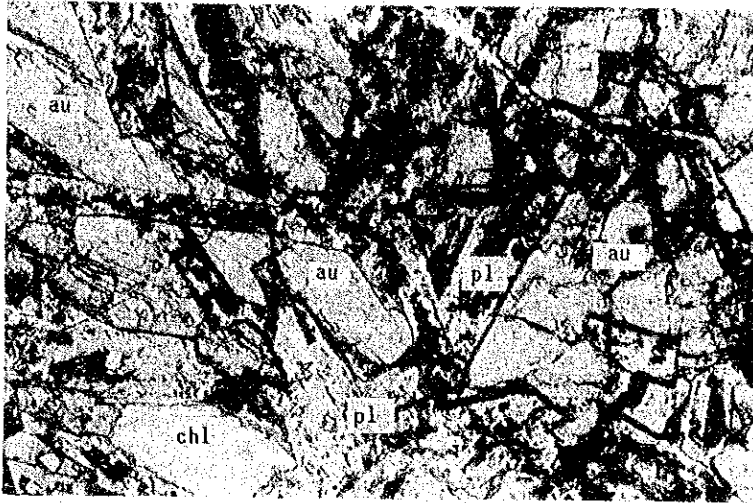
Only lower polar



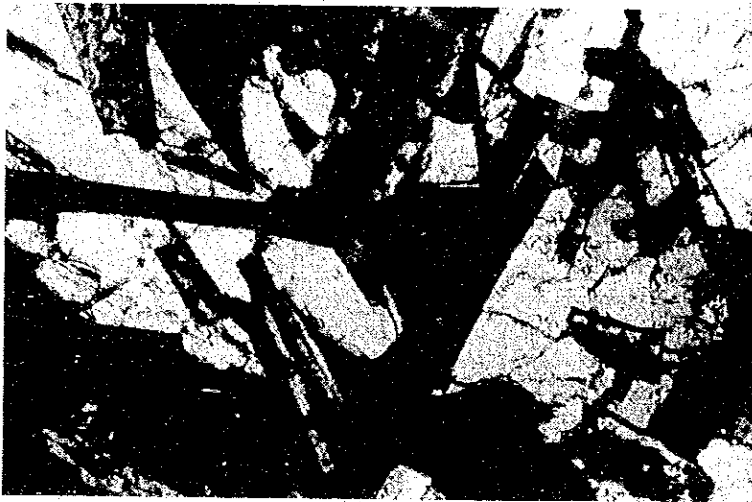
Crossed polars



Sample No. : YR-05
Location : Amnay River
Rock name : gabbro



Only lower polar



Crossed polars

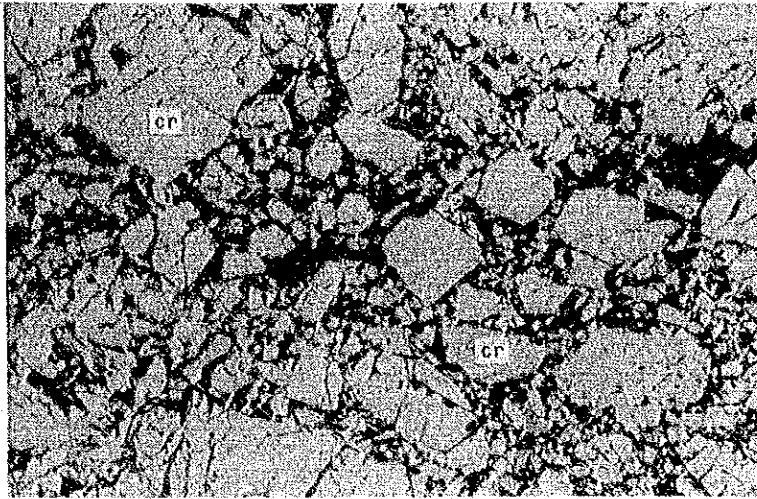


Sample No. : YR-20
Location : Rayusan River
Rock name : dolerite

Fig. A-2 Microphotograph of Polished Section

Abbreviation

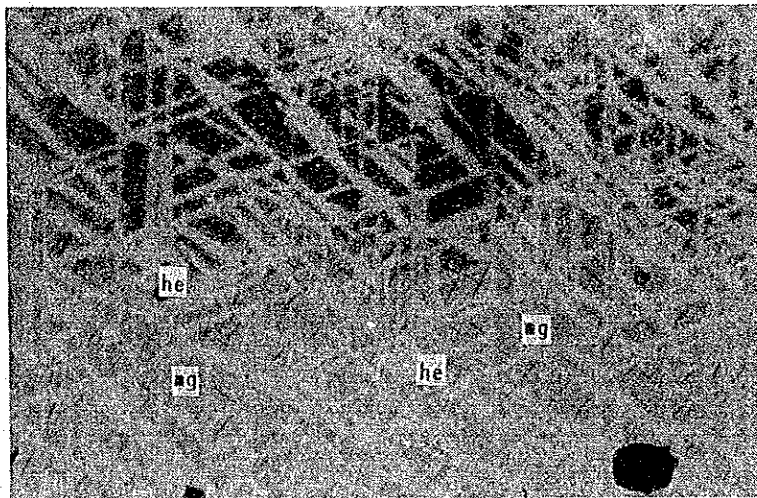
cr : cromite
mg : magnetite
he : hematite
pyr : pyrrhotite
cp : chalcopyrite
sph : sphalerite



Sample No. : FR-07
Location : Paluan
Ore name : chromite ore

Reflected light
Only lower polar

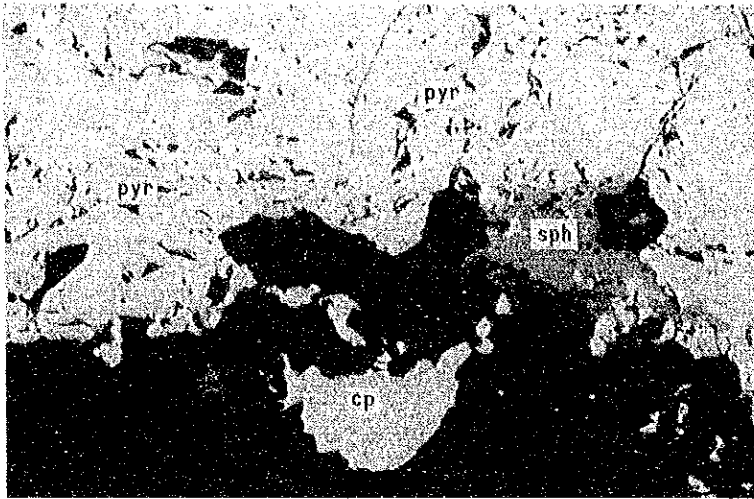
0 0.5mm



Sample No. : FR-45
Location : Pagbahan River
Ore name : magnetite ore

Reflected light
Only lower polar

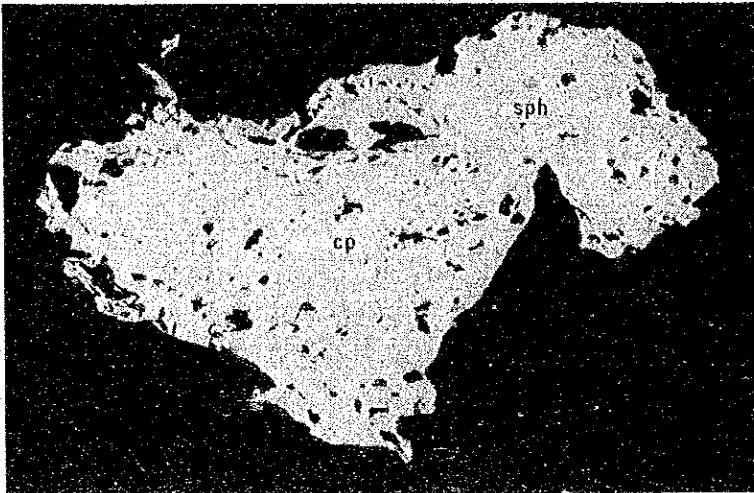
0 0.5mm



Sample No. : WR-142
Location : Rosanna River
Ore name : chalcopyrite-
pyrrhotite ore

Reflected light
Only lower polar

0 0.5mm

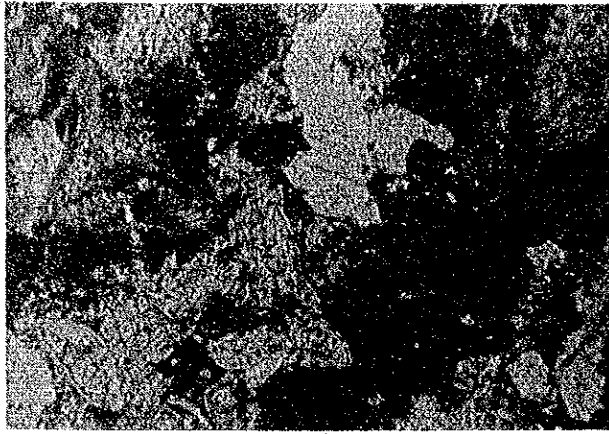


Sample No. : WR-185
Location : Bukayao River
Ore name : chalcopyrite-
pyrite ore

Reflected light
Only lower polar

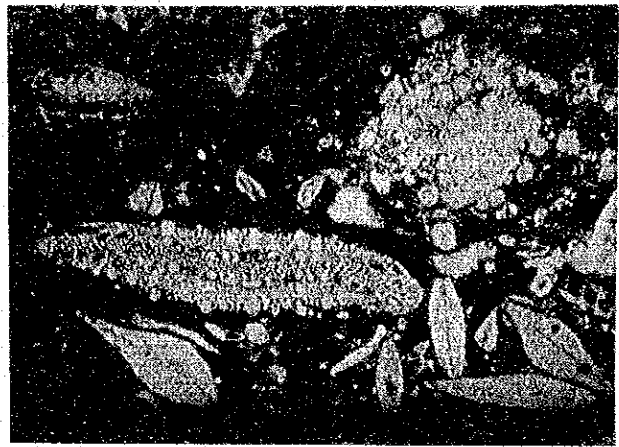
0 0.5mm

Fig. A-3 Microphotograph of Larger Foraminifera



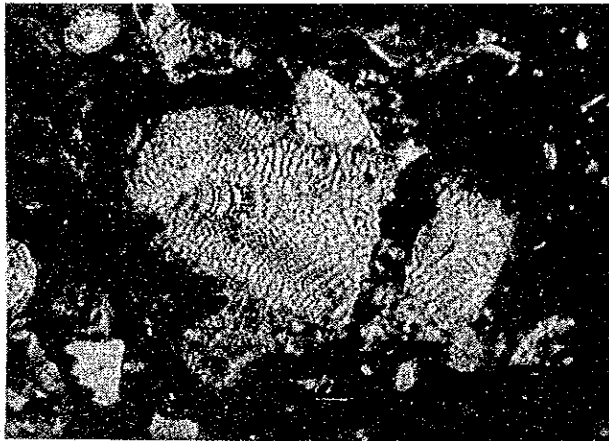
(x 32)

Sample No. : WR-204
Location : Bugsanga River
Group : Sablayan group
Species : *Halkyardia minia* (Liebus)
Age : Eocene



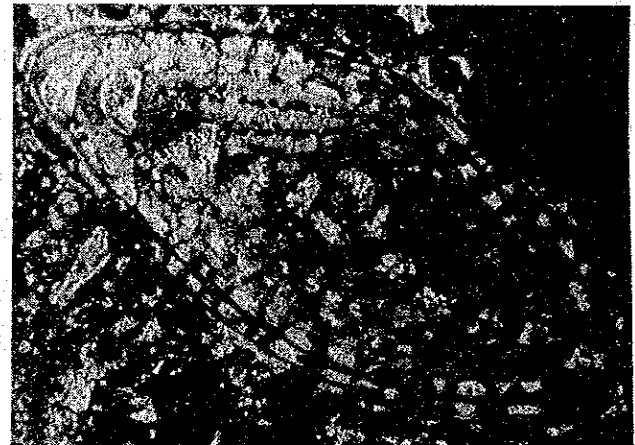
(x 32)

Sample No. : WR-41
Location : Balangan River
Group : Sablayan group
Species : *Biplanispira mirabilis* (Umbgrove)
Age : Late Eocene



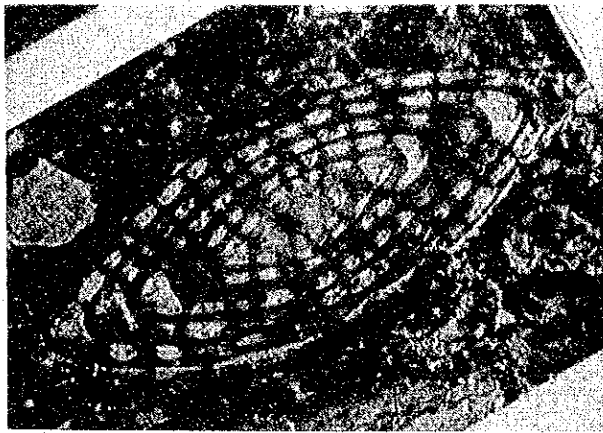
(x 32)

Sample No. : WR-41
Location : Balangan River
Group : Sablayan group
Species : *Discocyclina* (*Asterocyclina*) sp.
Age : Late Eocene



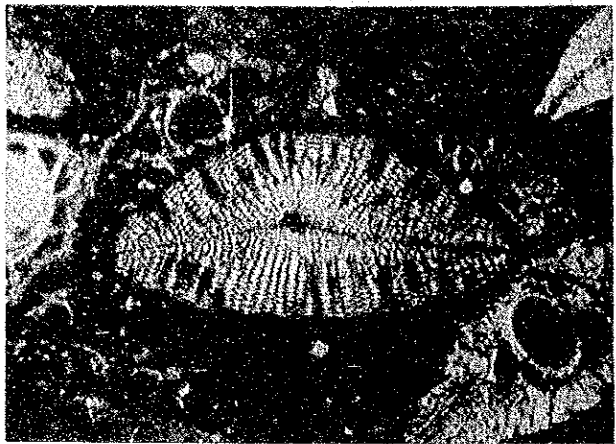
(x 32)

Sample No. : WR-202
Location : Bugsanga River
Group : Sablayan group
Species : *Nummulites fichteli* (Michelotti)
Age : Early Eocene



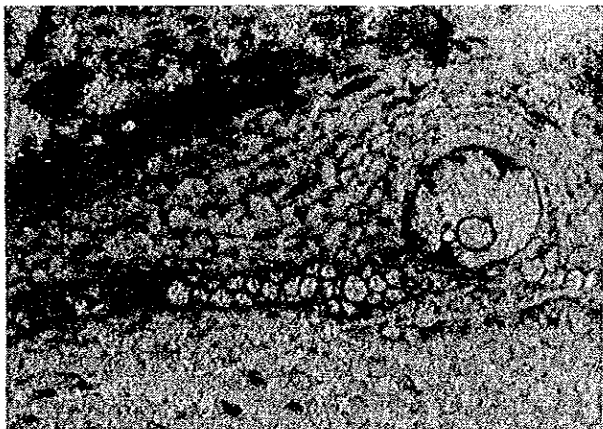
(x 32)

Sample No. : WR-202
 Location : Bugsanga River
 Group : Sablayan group
 Species : Nummulites fichteli (Michelotti)
 Age : Early Eocene



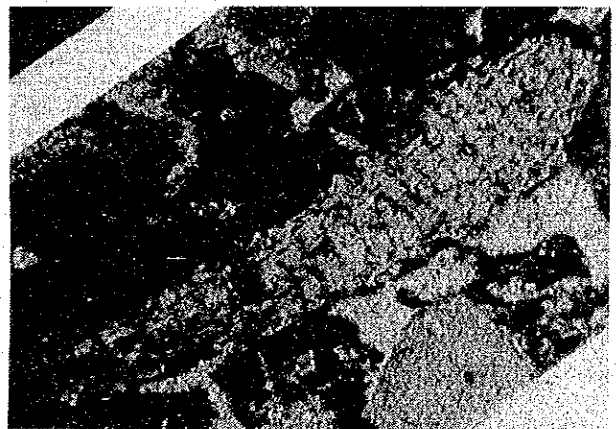
(x 32)

Sample No. : WR-203
 Location : Bugsanga River
 Group : Sablayan group
 Species : Lepidocyclina (Eulepidina)
 cf. planata (Oppenoorth)
 Age : Oligocene to Miocene



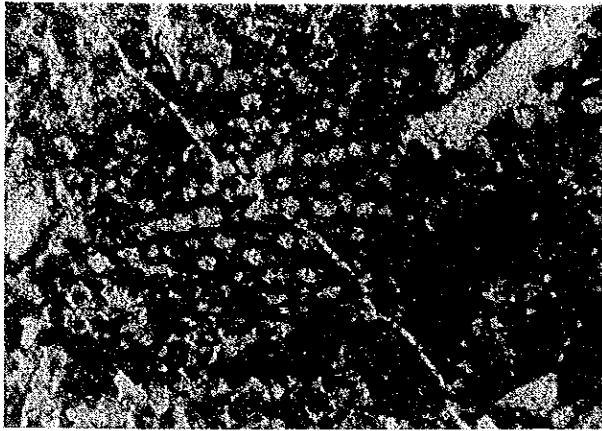
(x 32)

Sample No. : WR-203
 Location : Bugsanga River
 Group : Sablayan group
 Species : Lepidocyclina (Eulepidina)
 cf. planata (Oppenoorth)
 Age : Oligocene to Miocene



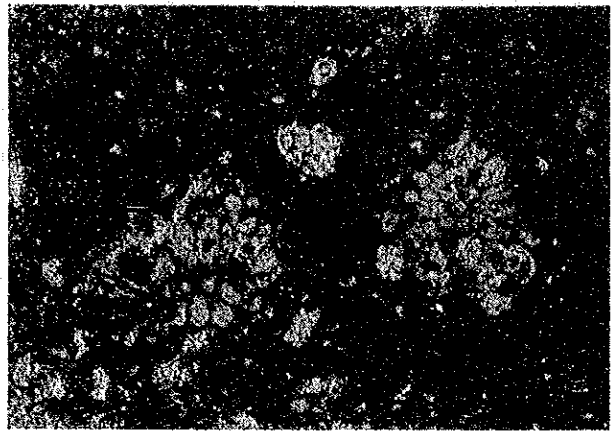
(x 32)

Sample No. : YR-09
 Location : Rayusan River
 Group : Sablayan group
 Species : Miogypsina (Miogypsina)
 thecidaeformis Tan Sin Hok
 Age : Miocene



(x 32)

Sample No. : HR-10
Location : North of Calintaan
Group : Sablayan group
Species : *Miogypsina (Miogypsina)*
thecidaeformis Tan Sin Hok
Age : Miocene



(x 32)

Sample No. : HR-205
Location : Labangan River
Group : Socorro group
Species : *Calcarina delicata* Todd and Post
Age : Pleistocene

Table A-1-1 List of Larger Foraminifera

Group or Formation Name	Sample No.	Location	Geologic Age	Species of Larger Foraminifera	
Sablayan Group	WR-204	Bugsanga R.	Focene		
	WR-41	Bugsanga R.	Late Eocene		
	WR-202	Bugsanga R.	Early Eocene		
	WR-203	Bugsanga R.	Ohgo.-Miocene		
	HR-10	North of Calintan	Miocene		
	YR-09	Rayusan R.	Miocene		
	WR-34	Foot of Eplog Hill	Miocene		
	WR-201	Hagdanan Peak	Miocene		
	WR-154	West of Pocanil Bay	?		
	Socorro Group	HR-40	East of Sablayan	Pleistocene	
		HR-205	Labangan R.	Pleistocene	
		HR-206	Labangan R.	Pleistocene	
		FR-05	West of Mamburao	Pleistocene	
		WR-04	Caguray R.	Pleistocene	
		WR-30	NW of Buruncan Point	Pleistocene	
		WR-03	Caguray R.	Pleistocene?	
		WR-37	NE of Magsaysay	?	
		FR-42	Odala River		
		FR-111	Subang River		
Halcon metamorphics	YR-21	Rayusan R.			
	YR-22	Rayusan R.			
	WR-64	Balangan R.			
Mansalay F.	WR-64	Balangan R.			
	WR-42	Bugsanga R.			
Sabluyan G.					

No Larger Foraminifera

Table A-1-2 List of Smaller Foraminifera

Species of Smaller Foraminifera	Group or Formation Name	Bongabong Group												Mansalay F. FR-20	Sablayan C. HR-207	Socorro G. HR-152	
		Sample No.	Location	HR-120	HR-114	HR-109	HR-110	WR-110	WR-115	HR-112	HR-118	HR-101	San Teodoro				
Species of Smaller Foraminifera																	
Cyclammina cf. pacifica Beck																	
C. sp.																	
Cribrostomoides sp.																	
Gaudryina udryina sp.																	
Haplophragmoides sp.																	
Martinottiella sp. p.																	
Placina sp.																	
Trochammina sp.																	
Acen. Foram. gen. and sp. indet.																	
Ammonia sp.																	
Aromalina glabrata Cushman																	
Bolivina sp.																	
Bullimina sp.																	
Cassidulina subglobosa Brady																	
C. cf. yabei Asano and Nakamura																	
C. sp.																	
Dentalina sp.																	
Dentalina emaciata Reuss																	
Eponides wubonatus (Reuss)																	
E. sp.																	
E. sp. p.																	
E. haidingerii (d'Orbigny)																	
Fissurina marginata segueza																	
F. sp.																	
Gyroidina orbicularis d'Orbigny																	
Lagena striata (d'Orbigny)																	
L. sp.																	
Lagenonodosaria pauciloculata (Cushman)																	
L. sp.																	
Lenticulina kobalus Asano																	
L. nikobarensis (Schwager)																	
L. orbicularis (d'Orbigny)																	
L. sp.																	
Melonis pacificum (Cushman)																	
Nodosaria sp.																	
Planulina wuellerstorffi (Schwager)																	
Planulina sp.																	
Planularia sp.																	
Planina bulboides (d'Orbigny)																	
Planina sp.																	
Quinqueloculina sp.																	
Retalia sp.																	
Uvigerina aculeata d'Orbigny																	
U. crassicosata Schwager																	
U. excellens Todd																	
U. sp.																	
Virgulina complanata Egger																	
Cal. Foram. gen. and sp. indet.																	
Globorotalia foata robusta Bolli																	
G. foata lobata Bermudez																	
G. menardii (d'Orbigny)																	
G. menardii menardii (d'Orbigny)																	
G. sp.																	
Glabigerinoides trilobus (Reuss)																	
G. rubra (d'Orbigny)																	
G. inamatus Leroy																	
G. sp.																	
Globigerina falconensis Blow																	
G. bulboides Blow																	
G. praebulboides Blow																	
G. trilobus (Reuss)																	
G. sp.																	
Orbulina universa d'Orbigny																	
Pla. Foram. gen. and sp. indet.																	
No Smaller Foraminifera																	

Table A-2-1 List of Microscopic Observations(Thin Section)

Abbreviation;

Rock

andesite por. : andesite porphyry
q diorite por. : quartz diorite porphyry
diorite por. : diorite porphyry
sch : schist
s.s. : sandstone

Mineral

q : quartz
kf : potash feldspar
pl : plagioclase
bt : biotite
mus : muscovite
hb : hornblende
au : augite
hy : hypersthene
en : enstatite
ol : olivine
act : actinolite
tor : tourmaline
cpx : clinopyroxene
opx : orthopyroxene
ap : apatite
ga : garnet
sp : spinel
sph : sphene
op : opaque minerals
gl : glass
ep : epidote
ser : sericite
chl : chlorite
cal : calcite
srp : serpentine
sap : saponite
mon : montmorillonite
zeo : zeolite
al : albite
prh : prehnite
zir : zircon

Igneous rocks

Group	Sample No.	Location	Rock Name	Texture	Phenocryst													Groundmass								Secondary Mineral											Remarks				
					q	kf	pl	bt	mus	hb	au	hy	oi	en	ap	ga	op	sp	q	kf	pl	bt	hb	epx	opx	op	ap	ga	gl	q	cal	ser	chl	ep	op	sph		srp	sap	mon	zeo
Socorro G.	WR- 32	Mauhao	basalt	intergranular		⊙			○	○				*												⊙															An 70%
	SR- 71	S of Mt. Dumali	andesite	do		⊙			(*)	*				*				⊙		○	*																				An 50 - 70%
	72	do	andesite	cryptocrystalline		⊙	*		*	○	*			*				⊙		*	*																				An 50%
	73	Casiligan R.	andesite	intergranular		⊙	*		*	○	*			*				⊙	*	*	*	*																			An 30 - 50%
	76	Pula R.	andesite	do		⊙	*		(*)	*				*				⊙		○	*						⊙													An 50 - 70%	
Sablayan G.	93	N of Calapan	andesite	hyalopilitic		⊙	*		⊙				*				⊙	*	*	*	*					⊙			*												An 30 - 50%
	102	Pula R.	andesite	do		⊙	*		○	*			*					*	*	*	*					⊙															An 30 - 70%
	YR- 07	Rayusan R.	andesite por.	porphyritic	*	⊙			*	*			*									*	*					*	*									*		An 30 - 50%	
	FR- 17	Mamburao R.	basalt	intersertal		⊙			*					*				⊙		*	*	*	*			⊙	*	*	*	*				*	*					An 30 - 50%	
	YR- 03	N of Bato R.	dolerite	porphyritic		⊙			○					*														*	*	*	*								*		An 30 - 50%
Mamburao G.	10	Rayusan R.	dolerite	doleritic		⊙			○				*															*	*											An 10 - 50%	
	16	do	basalt	cryptocrystalline		*			*	*																	*	*	*	*								*		with abundant microlite	
	26	Pola R.	basalt	intergranular		⊙			○				*					⊙		⊙							*	*	*	*										An 10 - 30%	
	WR- 134	Bongabong R.	basalt	hyalopilitic		*			(*)					*				⊙	*	*	*	*			⊙	*	*	*	*												
	145	do	basalt	intergranular		*			*	*				*				⊙		○	○	*	*					*	*	*	*						*	*		alkalic, An 10 - 30%	
	SR- 06	Tuguilan R.	basalt	fluidal		*								*											⊙	*	*	*	*												
	12	Abra de Ilog R.	dolerite	subophitic		⊙			⊙					*													*	*	*	*				*	*					alkalic, An 10 - 30%	
	41	Amnay R.	basalt	intersertal		⊙			*					*				⊙							⊙	*	*	*	*											An 30 - 50%	
	FR- 14	W of Abra de Ilog R.	basalt	intergranular		⊙			○	○				*				⊙		○	○	○	○				*	*	*	*										An 10 - 50%	
	15	S of Tubili R.	basalt	hyalopilitic		⊙			(*)					*				⊙	*	*	*	*			⊙	*	*	*	*											An < 30%	
HR- 44	Mongpong R.	basalt	do		*			*	*				*				⊙	*	○	○	○					*	*	*	*											An 10 - 50%	
Baco G.	51	do	andesite por.	porphyritic		⊙	*		○	*			*					*		○	○	○					*	*	*	*									*	*	An 30 - 50%
	302	Calintaan	basalt	intergranular		*			○				*					⊙		○	○	*	*				*	*	*	*											An 50 - 70%
	WR- 131	Bongabong R.	q diorite por.	holocrystalline	*	⊙			○				*									*	*				*	*	*	*											An 10 - 50%
	179	Magaswangtubig R.	diorite	do		⊙			⊙				*									*	*				*	*	*	*								*		An 10 - 30%	
	181	do	gabbro	subophitic		⊙			○	*			*									*	*	*	*			*	*	*	*										An 30 - 50%
	SR- 27	E of Abra de Ilog R.	aplite	microgranitic	⊙	○	*						*															*	*	*	*										An 10 - 30%
	66	Bansud R.	gabbro	holocrystalline		⊙			*	⊙	*	(*)															*	*	*	*											An 70 - 90%
	68	do	gabbro	do		⊙			⊙	*																		*	*	*	*										An 50 - 90%
	FR- 18	E of Abra de Ilog R.	q diorite	do		⊙			⊙				*														*	*	*	*								*		An 10 - 30%	
	24	Mamburao R.	q diorite	do		⊙	*		⊙				*															⊙	*	*	*	*									An 10 - 50%
	41	Camarong R.	granodiorite	granitic		⊙	*		⊙	*			*														*	*	*	*											An 10 - 30%
	HR- 126	Pula R.	gabbro	holocrystalline		⊙			⊙	○				*														*	*	*	*					*	*				An 50 - 70%
	127	do	gabbro	do		⊙			*	⊙	*			*														*	*	*	*										An 50 - 70%
	YR- 05	Amnay R.	gabbro	do		⊙			⊙	○			*															*	*	*	*							*			An 50 - 70%
	20	Rayusan R.	dolerite	subophitic		⊙			⊙				*															*	*	*	*										An 50 - 70%
	FR- 02	S of Tubili R.	diorite	holocrystalline	*	⊙			(*)				*													⊙	*	○	*	*											An 10 - 30%
	SR- 10	Abra de Ilog R.	gabbro	do		*			⊙				*														*	*	*	*									*		An 50 - 70%
67	Bansud R.	gabbro	do		*			*	⊙	⊙		*														*	*	*	*											An 50 - 70%	
WR- 161	Magaswangtubing R.	lherzolite	equigranular		*			*	⊙	*		*														*	*	*	*											with talc as secondary min.	
166	do	lherzolite	do		*			○	⊙	○		*														*	*	*	*												

Remarks; ⊙ : abundant ○ : common * : rare () : pseudomorph

Metamorphic rocks

Group	Sample No.	Location	Rock Name	Texture	q	pl	kf	bt	mus	hb	au	act	tor	sph	ser	chl	ep	cal	op	prh	ga	ap	zir			
Halcon metamorphics	WR- 12	Bongabong R.	amphibolite	nematoblastic	⊙					⊙				•												
	162	Villacervera	phillite	fibroblastic	⊙										⊙											
	171	Magaswangtubig R.	amphibolite	nematoblastic		•				⊙					•	•	•					•	○			
	187	Villacervera	ser-chl sch	fibroblastic	⊙										•	○										
	SR- 18	Mananao R.	ep-act sch	nematoblastic	⊙							○						○								
	20	Puerto Galera	gneiss	porphyroblastic	⊙	○	•																			
	21	do	calcareous sch	granoblastic	○														⊙							
	29	Matabang	altered gneiss	porphyroblastic	•	○										○	○	•	•	•		•			mafic min. altered to chl	
	40	Amnay R.	chl-ep sch	fibroblastic	⊙							•					•	⊙		○						
	45	Matabang R.	sandy phillite	granoblastic	⊙										•	•										
	46	do	ser-chl sch	lepidoblastic	•	○										○	⊙	•	•	○					pl altered to ep	
	47	do	amphibolite	granoblastic		○					⊙					•	•	○								
	49	do	amphibolite	do	•			(•)		⊙					•	○	•	•							pl altered to ser with fine matrix	
	59	Amnay R.	phyllite	fibroblastic	•											○										
	86	Puerto Galera	calcareous sch	granoblastic	•														⊙							
	87	do	calcareous sch	do	○									•		○	○	•	⊙							
	89	do	calcareous sch	do					•				•						⊙	•						
	91	San Teodoro	calcareous sch	do	○														⊙	•						
	FR- 13	Binuangan R.	act-epi sch	fibroblastic	○	○						⊙														
	21	Abra de Ilog R.	amphibolite	porphyroblastic	⊙						⊙				•	•	•	•	•	•						
	39	Camarong R.	gneiss	do	⊙	⊙			•																	
	40	do	amphibolite	nematoblastic	•	•				⊙						○										
	49	Pagbahan R.	marble	granoblastic					•										⊙							
	103	Malaylay R.	ser-ep sch	do	⊙									•	•	•	•	⊙	•	•					fine grained	
	108	S of Puerto Galera	gneiss	porphyroblastic	⊙	○	•								•	•										
	112	W of San Teodoro	chl-ep sch	do	○	⊙																				
	113	S of Puerto Galera	gneiss	do	⊙	○			•																	
	117	Pagbanhan R.	ser sch	fibroblastic	•				•							⊙										
118	E of Abra de Ilog	metagabbro	granoblastic	•	⊙					⊙					•	•	•	•	•							
YR- 12	Rayusan R.	amphibolite	nematoblastic	•	⊙					⊙																
24	Pola R.	amphibolite	do	•	⊙					⊙																
HR- 116	Balete R.	act sch	fibroblastic	•	•					•		⊙														
117	do	act sch	porphyroblastic	•	○					•		⊙														
Baco group	WR- 86	Siange R.	slate	fibroblastic	•	•									•									with fine matrix		
	126	S of Siange R.	slate	fibroblastic	•																				do	
	SR- 09	Abra de Ilog R.	phyllite	lepidoblastic	⊙								○		○	•									fine grained	
	36	do	silicified rock	—	⊙	•														○						
	57	Amnay R.	slate	fibroblastic	○				•							○	•								with fine matrix	
YR- 27	Pola R.	phyllitic s.s.	lepidoblastic	⊙	•										•	•	•	•								
29	do	phyllitic s.s.	fibroblastic	⊙	•										•	•	•	○	•							
Others	SR- 48	E of Abra de Ilog R.	skarn		•	•					○															

Remarks: ⊙ : abundant ○ : common • : rare

Clastic and Pyroclastic Rocks

Group and Formation	Sample No.	Location	Rock Name	Fragments																	Matrix				Secondary Minerals				Remarks					
				Rocks							Minerals																							
				chert	slate	pillire	ser schist	limestone	andesite	basalt	q	kf	pl	mus	bt	cal	hb	au	hy	zir	op	carbonate	opaque minerals	fine material	glass	micro-crystale	cal	ser		chl	mon			
Clastic rock																																		
Sablayan G.	WR- 153	Lagnas R.	sandy limestone	•							•	•	•	•							•	⊙											with foraminifera	
	YR- 06	Rayusan R.	calc. lithic greywacke	○	•					•	•	•	•								•	○											rock > feld., with foraminifera	
	WR- 26	S of Mansalay	arkosic arenite	○							⊙	•	○	•	•							•											rock < feld., well-sorted	
	61	Bugsanga R.	subarkose	•							⊙	○	•	•												•	•						rock < feld.	
Mansalay Formation	64	do	limestone									•																				fine grained		
	71	Siange R.	arkosic arenite	•							⊙	•	○									•				•	•						rock < feld.	
	74	do	calc. lithic greywacke	•							○	•	•									○											rock > feld.	
	107	Baroc R.	subarkose	•							⊙	•	•	•								•	•										rock < feld., well-sorted	
	118	N of Mansalay	arkosic arenite	•							⊙	○	•	•								•	•										rock < feld.	
	156	do	arkosic arenite	•							⊙	○	•	•								•	•										rock < feld.	
	SR- 03	Mamara R.	lithic arenite	○							○	•										•	•										rock > feld.	
	04	do	arkosic arenite	•	•						⊙	○	•	•	•							•	•										rock < feld., badly sorted	
	30	E of Abra de Ilog	arkosic arenite	•							⊙	•	•	•								•	○											rock < feld.
	44	Amnay R.	arkosic arenite	•			•				⊙	•	•	•								•												rock < feld., well-sorted
	YR- 14	Rayusan R.	lithic arenite	○	•						○	•	•	•								•	•											rock > feld.
	Pyroclastic rock																																	
Bongabong G.	WR- 10	Bugsanga R.	calc. crystal tuff							○	•	○									○												andesitic	
	SR- 69	Bansud R.	calc. crystal tuff	•			•			○		⊙		•	•	•					•	○											do	
	81	Pula R.	lapilli tuff								⊙																							do
	82	do	vitric-crystal tuff									•	⊙									•	○											do
	101	Bansud R.	calc. crystal tuff								•	•	○									⊙												andesitic, with foraminifera
	HR- 124	Pula R.	calc. crystal tuff									•	•	⊙								•	○											andesitic, with foraminifera
Mansalay F.	WR- 73	Siange R.	lapilli tuff							○		○												⊙		•	•	•					andesitic	
	79	do	calc. lithic tuff	•						○		•									○												do	
	82	do	calc. lithic tuff								⊙		•								○												do	
	FR- 03	W of Mamburao	lithic tuff								⊙														○								basaltic	
	10	Binuangan R.	vitric-crystal tuff									⊙												○									do	

Remarks; ⊙ : abundant, ○ : common, • : rare