BORNEO-EXPEDITION

GEOLOGICAL EXPLORATIONS

IN
CENTRAL BORNEO

(1893-1894)

Dr. C. A. F. MOLENGRAAFF

Geological Survey of the Netherlands

ATLAS

in 22 Sheets

PUBLISHED BY THE Society for the Promotion of the Scientific Exploration
of the Dutch Colonies

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LURAS AND SEGAIKOKS AT MERAKAU.

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BY

Dr. G. A. F. MOLENGRAAFF

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of the Dutch Colonies

E. J. BRILL
LEYDEN

H. GERLINGS
AMSTERDAM

1902

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ERRATA.

MAP 1.

for: S. Embaloeh (Lébajan) *read:* S. Embaloeh Lëbojan.

MAPS II and III.

The colours 15 and 37 are by mistake too nearly alike each other. On the Lëkawai and Tondok rivers the colour is meant for 15, *Old-tertiary*; whilst in the vicinity of Mt. Ampan and along the Embahoe 37, *Andesite* is indicated. This should also be considered with regard to the other maps and sections.

There is only a shade of difference between the colours 17, *recent fluvialile and lacustrine deposits*, and 33, *rhyolite*, which might lead to misapprehension on map VII^c. This can, however, be avoided by noticing fact the that where the colour 33 is meant the name of the rock is given in addition, which is not the case with colour 17.

Index to all the maps and sections.

	Maps. Kaarten.	Sections. Doorsneden.	
Crystalline schists, chiefly amphibolite.		1.	Kristallijne schists, hoofdzakelijk amphiboliet.
Old slate-formation.		2.	Oude lei-formatie.
Danau-formation, precretaceous (generally).		3.	Danau-formatie praecretaceesch (algemeene notatie).
Sandstone, clay-slate and shale.		4.	Zandsteen, kleilei en kleisteen.
Chert and hornstone.		5.	Kiezellei en hoornsteen.
Diabase.		6.	Diabaas.
Diabase-tuff.		7.	Diabaas-tuf.
Silicified diabase-tuff, Poelan-Melaioe-type.		8.	Verkiezelde diabaas-tuf. Poelan-Melaioe-type.
Diabase-porphyrite.		9.	Diabaas-porphyriet.
Augite-porphyrite.		10.	Augiet-porphyriet.
Limestone.		11.	Kalksteen.
Cretaceous beds (generally).		12.	Krijtformatie, algemeene notatie.
Lower or shale-stage.		12.	Onderste of kleisleen-étage.
Middle or marl-stage.		13.	Middenste of mergel-étage.
Upper or sandstone-stage.		14.	Bovenste of zandsteen-étage.
Beds of upper-cretaceous and lower-tertiary age.		15.	Lagen van boven-cretaceischen en ond-tertiairen ouderdom.
Sandstone-formation.		16.	Zandsteen-formatie.
Older and recent fluviatile and lacustrine deposits, Quarternary and Recent.		17.	Oude en jonge stroom- en meerafzettingen: Quartair en Novair.
Rocks of unknown age, altered by contact metamorphism.		18.	Contact-gesteenten van onbekenden ouderdom.
Granite and tonalite.		19.	Graniet en tonaliet.
Granite and tonalite, schistose by pressure.		20.	Graniet en tonaliet, schielierig door druk.
Gneissic granite from the Samba-river.		20a.	Gneisachtige graniet van de Samba-rivier.

from the Danau-formation.

Uit de Danau-formatie.

Cretaceous beds.

Krijtformatie.

Kleurschaal voor alle kaarten en doorsneden.

	Maps. Kaarten.	Sections. Doorsneden.	
Tourmaline-granite.		21.	Toermalijn-graniet.
Augite-tonalite.		22.	Augiet-tonaliet.
Diorite.		23.	Dioriet.
Diabase, not contemporaneous with the beds of the Danan-formation.		24.	Diabaas, niet van gelijken ouderdom met de Danan-formatie.
Gabbro and olivine-gabbro.		25.	Gabbro en olivien-gabbro.
Olivine-hypersthene-norite.		26.	Olivien-hyperstheen-noriet.
Pikrite, Harzburgite, Lherzolute and Serpentine.		27.	Pikriet, Harzburgiet, Lherzoliet en Serpentiin.
Quartz-porphyrity (Palaeo-rhyolite).		28.	Kwartsporphyriet.
Diabase, Diorite, and Amphibole-porphyrity of unknown age.		29.	Diabaas, Dioriet en Amphibool-porphyriet van onbekenden ouderdom.
Raja-porphyrity.		30.	Raja-porphyriet.
Amphibole-porphyrity of andesitic type.		31.	Andesitische amphibool-porphyriet.
Volcanic rocks (generally).		32.	Vulkanische gesteenten, algemeene notatie.
Rhyolite.		33.	Rhyolith.
Perlite and Obsidian.		34.	Perliet en Obsidiaan.
Dacite.		35.	Daciet.
Mica-dacite.		36.	Biotiet-daciet.
Andesite.		37.	Andesiet.
Mica-andesite.		38.	Biotiet-andesiet.
Andesite-tuff.		39.	Andesiet-tuf.
Basalt and dolerite.		40.	Bazalt en doleriet.
Stratified volcanic beds; tuff, tuff-breccia and lava-flows.		41.	Gelaagde vulkanische afzettingen: tuf, tufbreccie en lavastroomen.
Country, geologically unknown.		42.	Geologisch onbekende streken.

SYMBOLS.

The direction of the line a gives the direction of the strike, the arrow b indicates the direction of the dip. Where no values are given, the strike and dip are only approximately known.

Strata horizontal.

Strata vertical.

Strata much contorted, dip sometimes in one, sometimes in the opposite direction.

Landslip.

Locality where Radiolaria-chert is found in situ.

Locality where Radiolaria-chert is found as boulders.

Locality where Radiolaria are found in tuff.

Locality where fossils were found by the author.

Locality where fossils occur according to van SCHELLE.

Heights in Meters.

Direction of the sections.

Faults.

Boundary-lines of formations or rocks.

Coal mines.

Ladangs: strips of land where rice is or has been cultivated.

Forest.

Rocks.

Karangans: boulder and sandbanks.

Residences of Dutch officials (Map III).

TEEKENS.

De lijn a geeft de richting der strekking, de pijl b de richting der helling aan. Het cijfer bij de pijl geeft de hellingshoek aan. Zoo geen cijfers gegeven zijn, is de strekking en helling slechts bij benadering bekend.

Stand der lagen horizontaal.

Stand der lagen vertikaal.

Lagen zeer sterk geplooid, helling nu eens in de ééne, dan weder in de tegengestelde richting.

Bergstorting, grondverschuiving.

Vindplaats van kiezel of hoornsteen met Radiolaria als vast gesteente.

Vindplaats van rolsteen van kiezel met Radiolaria.

Vindplaats van tuf met Radiolaria.

Plaats, waar fossielen door den schrijver zijn gevonden.

Plaats, waar fossielen volgens van SCHELLE voorkomen.

Hoogte-cijfer in Meters.

Richting der doorsneden.

Verschuivingen.

Grenzen van formaties of gesteenten.

Kool-mijnen.

Ladangs: plaatsen, waar rijstvelden zijn of waren.

Woud.

Rotsen.

Karangans: rolsteen en zandbanken.

Standplaatsen van Nederlandsche ambtenaren (kaart II).

ABBREVIATIONS.

River	S.	= Soengai
Lake	D.	= Danau
Mountain	G.	= Goenoeng
Mountain, peak	B ^t .	= Boekit
Island	P.	= Poelau
Rock, cliff	B.	= Batoe
Rapids	R.	= Riam
Mouth	N ^a .N ^b .	= Nangah
House	R ^h .	= Roemah
Bay	St.	= Selat
Cape	T.	= Tandjoeng
Island	N.	= Noesa
Mountain, peak	P ^k .	= Poeroek
Mouth	T ^b .T.	= Toembang
Rapids	K.	= Kiham
Behind the name of a kampong or a house means: inhabited by Dyaks, Malays or Chinamen	D. M. C.	Gevoegd achter den naam van een kampong of van een huis, beduidt: bewoond door Dajaks, Maleiers of Chineezers.
Resident	R.	Resident.
Assistent-Resident	A.R.	Assistent-Resident
Controleur	C.	Controleur.
Astronomical beacon of the topographical survey	A.S.	Astronomisch Station der topogra-

AFKORTINGEN.

Rivier		
Meer		
Berg, gebergte		
Berg, bergtop		
Eiland		
Rots, klip		
Stroomversnelling		
Mond		
Huis		
Baai		
Kaap		
Eiland		
Berg, bergtop		
Mond		
Stroomversnelling		
Gevoegd achter den naam van een kampong of van een huis, beduidt: bewoond door Dajaks, Maleiers of Chineezers		
Resident		
Assistent-Resident		
Controleur		
Astronomisch Station der topogra-		

The topographical basis of all the maps, those of the Samba-river excepted, as also the spelling of all the localities is taken from the Dutch topographical map of the Residentie Westerafdeeling van Borneo, surveyed 1886-1895 and published on the scale 1:200,000.

De topographische grondslag van alle kaarten, uitgezonderd die van de Samba-rivier, even als de schrijfwijze der plaatsnamen, is ontleend aan de topographische kaart der Westerafdeeling van Borneo, schaal 1:200,000, opgenomen 1886-1895.

SARAWAK

BORNEO

MAP

Shewing the North-Eastern portion
of the Residency
WESTERN-DIVISION
OF
BORNEO

Scale 1: 500000.

References:

- Road — Footpath - - - - Residency boundary
- Lakes ... Kumpang, village; M.C. or D. indicate that the place is inhabited either by Malays, Chinese or Braks.
- A.S. Astronomical stations D. Duann, lake
- P. Pulau, island S. Saangai, river
- B. Bukit } mountain N. Nangah, junction
- G. Gunung } R. Rini, rapids

The heights are given in Meters.

SCALE 1 : 400.000.

111.

HYPOMETRICAL MAP OF A PART OF THE KAPOEWAS-RIVER-BASIN ABOVE SINTANG.

THE KAPOEWAS CUTS THROUGH THE SEMITAU-HILLS.

Molengrauff, Borneo.

SCALE 1 : 225000

B^TMÉNJOEKONG

IV.

Country above 300 Meters. Country between 100 & 300 Meters. Country below 100 Meters. Country inundated at high tide of the Kapoewas river. Lakes and rivers

SCALE 1:50,000.

No human habitations, nor any sign of cultivation. Ground entirely covered with dense pruned forest.

Picture-scenery.

Phyllitic claystone with silty limestones (1962') Str. vertical

High peaks

Stream parallel to the strike of the str.

S. Djak

S. T.

Streambed studded with

S. Djakit Liroeng

Magnificent tree ferns...

Strike ESE., vertical
S. Cendah Nimit

Strike ESE.

Greynacke...

S. Biror

S. Gendali

THE UPPER-KAPOEWAS, THE BOENGAN, THE BOELIT AND THE TRACK FROM THE BOELIT-RIVER ACROSS THE WATERPARTING TO THE MAHAKKAM-BASIN IN EAST-BORNEO.

SCALE 1 : 50000.

THE SĚBĚROEWANG
AND
THE ĚMBAHOE.

SCALE 1 : 50.000.

a Sandstone, 150. II.	f Fusile coal, 0.50.
b Fissile and compact coal (H623) and shale, 0.55.	g Swinestone, 4. —
c Clayey sandstone with concretions and coal particles (H894).	h Fusile coal, 1.50.
d Fissile coal, 0.55.	k Sandstone.
e Sandstone with coal particles, 0.20.

- a. Grey sh. (11699), 4. — M
- b. Coal (lignite) more compact than c.
- c. Fossiliferous (11700), 1.50.
- d. Sandy sh. with concretions containing vegetable remains (11702), 2.50.
- e. Sandstone

*Plan of the bad rapids
in the S^{ci} Tchoueng.*

Section D. Right bank of the Tébaoeng, 1½ KM. downstream from Lèmaïak.
Faulted strata of dark-grey clayshale, containing coal particles. Dip 20 N.

High, tree covered benlder island. E 110 S. Taboring navigable up to this point
River not navigable farther on. Ruan Bésiak

Faulted strata of dark grey clayshale, containing coal particles Dip 20° N.

Section C. Right bank of the Těbaoeng, 7 KM. upstream from Nangah Sěbilit.
Dip 18° NNE.

- a. Sandstone.
- b. Fissile coal with intercalated banks of clayshale with concretions, containing vegetable remains, 4. — M.
- c. Fissile coal with intercalated banks of clayshale, 1.40.
- d. Clayshale, 0.25.
- e₁ and e₂ (11791). Lignite, e₂ being of better quality than e₁. Beds 0.35 and 0.25 thick.
- f. Clayey sandstone, 1. —

FROM THE BOENOET, THE SĚBILIT AND THE TĚBAOENG, ACROSS THE MADI-PLATEAU TO THE MĚLAWI-VALLEY, THE LĚKAWAI AND THE SCHWANER - MOUNTAINS.

SCALE 1:75,000.

Section from Nangah Boelit to the Penaneh river in East Borneo.
From Nangah Boelit to Penyahan Mahakam the section runs along the Boelit river,
from there to Penaneh along the path, drawn on Map VIIc.

Horizontal scale 1:40,000.
Vertical scale 1:25,000.

Section L-L'. Horizontal scale 1:40,000.
Vertical scale 1:25,000.

Section K-K'. Horizontal scale 1:40,000.
Vertical scale 1:25,000.

LONGITUDINAL SECTION OF THE KAPOEWAS - RIVER.

Distances in Kilometers.

Heights in Meters.

Horizontal scale 1 : 1.000.000.

Vertical scale 1 : 1000.

(*) Spot, where the path from pangkalan Djemoekei, to the Batang Rēdjang crosses the Upper-Kapoewas.

LONGITUDINAL SECTION OF THE EMBALOEH-RIVER,
FROM N^o KAROOP TO ITS JUNCTION WITH THE KAPOEWAS-RIVER.

Distances in Kilometers.
Heights above sea-level in Meters.

Horizontal scale 1:1,000,000.
Vertical scale 1:1000

Kénèpai
1156

Lèmpai
1250

Sèngkadjang
400

Sèligi
425

Bèsaï mountains.
Genting Patjong 660
Pangoer Doeleng 890

DANAU SERYANG AND THE MOUNTAINS BORDING ITS WEST-SIDE, SEEN FROM POELAU MADJANG.

European part.

Month of the Melawi-river.

Chinese quarter.

Malay kampong.

VIEW OVER THE KANDEWAS DOWNSTREAM FROM THE EUROPEAN PART OF SINTANG.