Abstracts of papers

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Guustaaf Molengraaff: Pioneer geologist in Indonesia

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G.A.F. Molengraaff (1860-1942) was educated in his natal town, Nijmegen, and at the Universities of Leiden, Munich, and Amsterdam. For most of his life he was Professor and Head of Geology at the Technical High School in Delft, Holland. He was for some years (1897-1902) State Geologist of the Geological Survey of South Africa, and later (1902-1905) a consulting geologist there. He made three investigations in Indonesia (then the Netherlands East Indies): The Borneo Expedition in 1893-94;

an investigation of gold deposits in north Celebes in 1901; and he lead the Timor Expedition in 1910-1911.

His major work on Indonesia is his "Geological investigation in Central Borneo" published in Dutch in 1900, and in English in 1902, describing his survey of the Kapuas, the greatest of Borneo rivers, illustrated by an atlas of beautiful and detailed geological river traverses. Molengraaff described the Crystalline Schists of Semitau, recording glaucophane-bearing varieties; the tonalite of the Schwaner Mountains; the "Old Slate Formation" of the Embaluh valley; the association of radiolarian chert, diabase, and serpentinite of his oceanic "Danau Formation"; and Tertiary sandstones and subaerial andesitic lavas and tuffs of the Muller Mountains. All these formations are today important and controversial elements in the interpretation of geotectonics of the region, in terms of former subduction zones: the glaucophane schist has been cited as evidence of deep burial; the tonalite and volcanics may represent intrusions above a dipping former subduction zone, marked also by the chert/diabase/serpentinite (a chert/ophiolite assemblage) of the Danau Formation; whereas the "Old Slate Formation" and its continuation into Sarawak and Sabah as the Rajang Group is now recognized as forming a great thickness of marine sediments with typical flysch characters, which probably were deposited on the seaward side of a former subduction zone, and moved south towards West Borneo on spreading ocean crust. Although the area was resurveyed in the 1930's, Molengraaff's observations are still the only ones available from some parts.

His surveys in Timor and Celebes led to important papers on neotectonic movements, attested by raised coral reefs, and to his synthesis on the coral reefs and marine geology of the whole archipelago. He was the first to describe the Sunda Shelf systematically and to attribute the valley systems found on it to lowering of sea level during the Pleistocene Ice Age.

His recognition of the Danau Formation of Borneo and red clay with manganese nodules in Timor as uplifted abyssal deposits resulted in a classic paper on this topic.

Molengraaff's energetic field work, and his careful and detailed field observations, coupled with his sound judgement and cautious but imaginative interpretation, give a present relevance to his work beyond that of many of his contemporaries and successors

who worked in Indonesia, yet Molengraaff, perhaps because his major work was in a still remote part of the least developed major island of Sundaland, Borneo, is hardly remembered today. If ever, the history of scientific exploration of Southeast Asia is studied systematically, his name will, perhaps, be more widely known and honoured.