

and evolved within the

s by abrupt changes in trends. Basic dikes are appropriate for basic. Large replenishments of structure that sharply cuts lying cumulates. Trough gabbro through a zone of these troughs originated mafic cumulates into an rocks within the trough downward into the acid at the intrusion indicate throughout much of its

² in area, located along. Simmons *et al.* (1986) y. for the intrusion—usion (DePaolo, 1985). NILI was emplaced at a schists and pre-existing be steep. The eastern structural features and at the original floor of chamber. Three younger de of the NILI (Fig. 1).

STRUCTURE

graphic units: a lower Hybrid Series (HS) (Figs. 1 high relative to the floor (Fig. 2). Each trough is cumulates. Trough A developed later during

class (An₆₀₋₄₀), olivine Troctolites and olivine ly graded layers occur layers are widespread ted pigeonite occurs as enite and apatite occur nulates are much more middle portion.

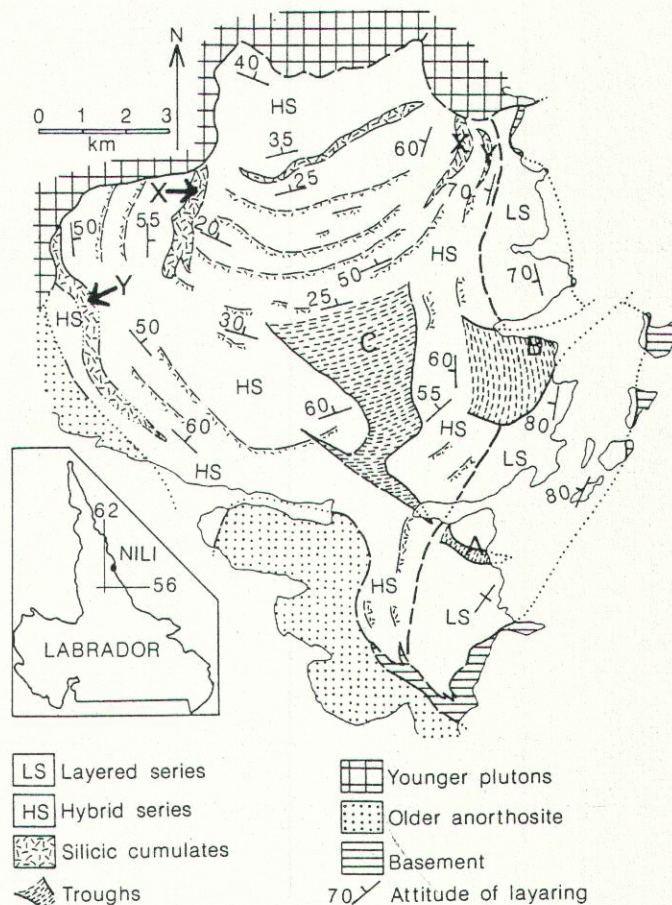


FIG. 1. Index map and geologic map of the Newark Island Layered Intrusion (NILI).

The Hybrid Series (HS) differs from the Layered Series in that it displays widespread evidence for the interaction of basic and acid magmas and consists of a wide range of mafic to granitic cumulates. The contact between the LS and HS series was drawn below the first definite occurrences of alkali-feldspar and sodic plagioclase megacrysts within mafic cumulates. Mafic rocks in the HS are generally massive on the outcrop scale and range typically from medium-grained troctolites and olivine gabbros to two-pyroxene gabbros and hornblende diorites (An₅₀₋₃₅). Mafic cumulates commonly grade upward over 10s to 100s of meters to granitic or hybrid cumulates. The transitional rocks characteristically display obvious hybrid features such as alkali-feldspar and quartz-xenocrysts in relatively fine-grained mafic rocks (Fig. 4). Layers of coarse-grained granitic cumulates occur at several levels and are especially prominent at the highest stratigraphic levels. The largest granitic layers are shown in Fig. 1. They consist of cumulus sodic plagioclase, alkali-feldspar and, less commonly, quartz with interstitial augite, orthopyroxene, quartz, and oxides. Granitic cumulates do not grade upward to more mafic cumulates. Instead, overlying basic rocks typically have sharp basal contacts marked by convex-downward, chilled masses of basalt-textured rocks which rest on weakly deformed granitic cumulates (Fig. 5) and grade upward to medium-grained gabbroic rocks. Some layers of granitic cumulates contain