Ten, 4-70 m-long boreholes have been cored through snow, continental ice and marine ice in and around a rift on the Roi Baudouin Ice Shelf, Dronning Maud Land, Antarctica. Application of a digital optical televiewer (OPTV) in six of these holes has resulted in the first complete borehole images of several ice shelf and rift facies. Outside the rift, the uppermost tens of metres of the shelf is composed of snow, progressing to firn at depth. Here, the snow and firn contain frequent mm- to cm- thick horizontal ice layers, reflecting surface firnification frequently disrupted by significant seasonal or shorter-term melting events. Here, bubble concentration, and hence density, may be approximated from the reflectance recorded by the OPTV images. Within the rift, boreholes intersect translucent ice with a greenish hue that shows no apparent layering but which contains tube-shaped voids and occasional aggregated clusters of irregularly-shaped gas bubbles. This ice commonly extends to the surface of the rift and can be only metres thick before the base of the rift is intersected. This visually-distinctive ice is interpreted as marine ice that has formed within the rift and now crops out at the rift surface. Where coring penetrated the rift base OPTV imaging revealed the presence of unconsolidated ice platelets extending for at least 5m. These ‘sub-shelf’ platelets are layered in a highly irregular and contorted manner. We believe these OPTV images are the first that have been reported of the structure of in situ sub-shelf platelet ice.