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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The problems associated with measuring stresses in ice are reviewed. Theory and laboratory test results are then presented for a stiff cylindrical sensor made of steel that is designed to measure ice stresses in a biaxial stress field. Loading tests on freshwater and saline ice blocks containing the biaxial ice stress sensor indicate that the sensor has a resolution of 20 kPa and an accuracy of better than 15% under a variety of uniaxial and biaxial loading conditions. Principal stress directions can also be determined within 5°. The biaxial ice stress sensor is not significantly affected by variations in the ice elastic modulus, ice creep or differential thermal expansion between the ice and gauge. The sensor also has a low temperature sensitivity (5 kPa/°C).		