963-53-222 **Stephanie B Alexander** (sba@math.uiuc.edu), Department of Mathematics, 273 Altgeld Hall, 1409 West Green Street, Urbana, IL 61801, and **Richard L Bishop*** (bishop@math.uiuc.edu), Department of Mathematics, 273 Altgeld Hall, 1409 West Green Street, Urbana, IL 61801. *Spines and Topology of Thin Riemannian 3-Manifolds.* Preliminary report.

Lagunov and Fet constructed a 3-dimensional Euclidean domain M whose boundary is a 2-sphere with normal curvature $|\kappa_{\partial M}| \leq 1$ and whose inradius is $\sqrt{3/2} - 1 + \epsilon \approx .225$ for every $\epsilon > 0$. We consider abstract Riemannian manifolds M of sectional curvature $|K_M| \leq 1$, with simply connected boundary such that $|\kappa_{\partial M}| \leq 1$, and with inradius $< .108$. Then the cut locus of the boundary has been proved by us in a previous paper (Advances in Mathematics, **155**, 23-48, (2000)) to be a 3-branched simple polyhedral spine of M. In dimension 3, these spines are fake surfaces. In this case we classify the possibilities for M up to homeomorphism, namely, they are connected sums of p copies of P^3, t copies of the lens spaces $L(3, \pm 1)$, and ℓ handles either $S^2 \times S^1$ or the twisted S^2 bundle over S^1, with β 3-balls removed, where $p + t + \ell + \beta \geq 2$. By modifying the example cited above we show that our inradius bound is sharp up to a factor of 2. (Received January 23, 2001)