



Fig. 2-18. *The earth's magnetic field.*

Compass Components

Considering the simplicity of the concept, compass design is surprisingly involved. The modern compass is a compromise of numerous conflicting requirements. Though there is some variation in manufacturing, essentially it is built as shown in Figure 2-19. The magnets, which you would expect to be big and strong, actually are not. A heavy magnet has a tendency to bob and move around excessively because of inertia. Also, a large magnet has too big of a flux field of its own, which will be greatly influenced by magnetic objects near it. By using two slender, long, parallel magnets, one on each side of the pivot, both the flux field and inertia are kept relatively small. It is the purpose of this very hard pointed pivot to mount the magnets on as friction free a point as possible so they can swing freely and align with the earth's flux field.

The pivot fits into a virtually friction-free, very hard jewel cup. Here is yet another reason for moderation in flying technique. Hard landings, fast taxi over rough surfaces, and abrupt maneuvers in flight will all cause bouncing and vibrations, the major cause of