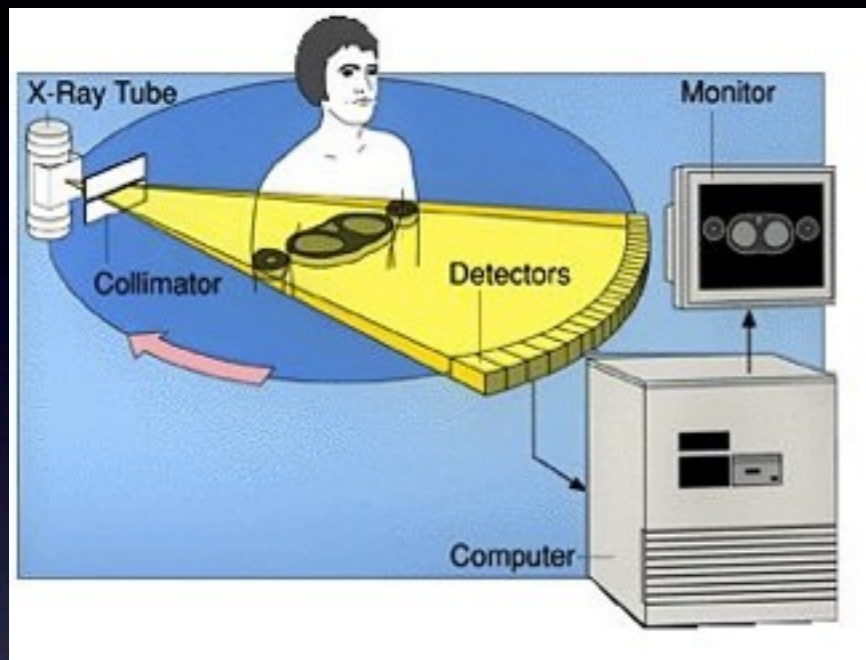


# CT scan: history and working principle



Ask Mish



Sir Godfrey Hounsfield

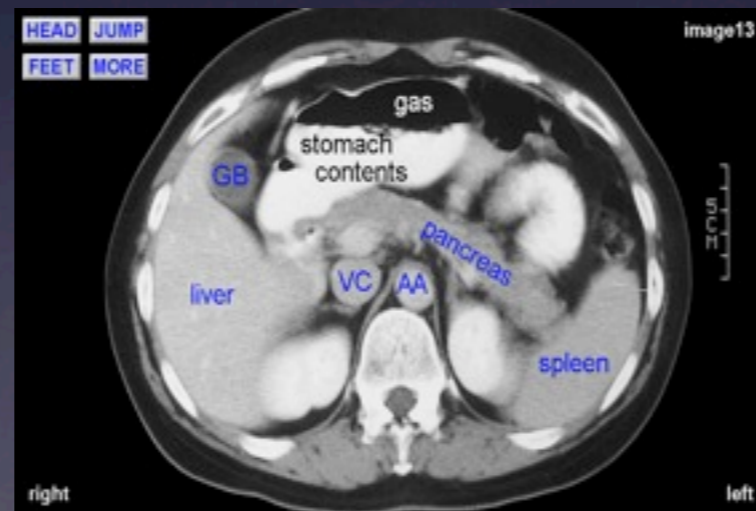
In the late 1950ties, a British engineer working for EMI Laboratories named **Godfrey Hounsfield** received a sabbatical to investigate England's business computer new applications in the emergent computerized technology and he turned his attention to radiology. In the late 1960ties, the success of British pop band **The Beatles** under the label of EMI created a fond for Mr. Hounsfield research in CT.

Hounsfield had the idea to use the computerized technology to recreate an object by taking multiple radiographic images around the object. The idea was based on **Johann Radon's** mathematical principle that says that if you take multiple projections of the object, you can reconstruct this object in space.

Hounsfield built his first prototype in the late 1960ties. It consists of a lead box with a pinhole that has inside Americium, a radioactive material that emitted X rays. The rays in the form of a pencil beam passed through an object and that information was recorded by a detector connected to a computer. Once the beam passed, the object will rotate 1 degree and another beam will pass and then again one degree and another beam will pass and so on until a rotation of 180 degrees. This prototype operated 9 days for a single image.

Today, the source of X rays is an X ray tube and the beam is in the form of a fan and there are multiple detectors connected to a performant computer. The principle is the same, the collimator is rotated 1 degree and then another one degree up to 180 degrees for a CT scan image. CT= computed tomography former CAT (computed axial tomography)

CT scanner today



Abdominal CT scan today