

The core

[Environment](#), [Earth](#)



The same pole always ended up pointing north. All magnets have a north and a south pole, no matter what shape they might have been bent into, or even if you break it apart into pieces. The magnetic field is the strongest at these poles. As magnets are brought near one another, they exert a force on each other. The force can be either attractive or repulsive and can be felt even when the magnets don't touch (force at a distance). This leads us to the Law of Magnetism which says " Like poles repel and unlike poles attract". This is like the force between electric charges, but not exactly the same.

Electrical charges and magnetic poles are different Many people wrongly assume that magnets can stick to any metal. In fact only a few elements on the periodic table actually have any magnetic properties strong enough to be worth mentioning. These elements are known as a group as ferromagnetic elements. The name comes from the Latin name for iron, ferrule. The ferromagnetic elements are: 1. Iron 2. Cobalt 3. Nickel 4. Gadolinium As time passed, more and more people tried to explain magnetism. William Gilbert, wrote a book called De Magnet on the subject.

He was able to spores some old superstitions about magnets, while at the same time presenting his own scientific ideas. He even proposed the idea of an " orb of virtue" surrounding every magnet, basically he was describing a magnetic field. The Effects of MME An electromagnetic pulse (MME), also sometimes called a transient electromagnetic disturbance, is a short burst of electromagnetic energy. At a higher level an MME can induce a spark, for example when fuelling a gasoline- engine vehicle. Such sparks have been known to cause fuel-air explosions and precautions must be taken to prevent them.

A large MME can induce high rents and voltages in the victim, damaging electrical equipment or disrupting its function. A very large MME event such as a lightning strike is also capable of damaging objects such as trees, buildings and aircraft directly, either through heating effects or the disruptive effects of the very large magnetic field generated by the current. An indirect effect can be electrical fires caused by heating. These damaging effects have led to the introduction of MME weapons. Most engineered structures and systems require some form of protection against lightning to be designed in.

The Animals that Navigate using Magnetism Abominations is the phenomenon of magnetic fields produced by living organisms; it is a subset of blameworthiness's. In contrast, organisms' use of magnetism in navigation is misconception and the study of the magnetic fields' effects on organisms is negotiability. Researchers believe some migratory birds can sense the magnetic field through their upper beak because there is a magnetite receptor there, which is made up of iron-based magnetic crystals. This senses the strength of the magnetic field, which is strongest at the poles, and it measures the angle of the field compared to the round.

The beak is similar to a compass. According to the experiment done by Max Plank Institute in Germany, they found that when they re-magnetized the iron particles in the beaks of migratory birds like robins and red warblers, it suggested that the beaks do act as a type of compass or navigational device. It partially allowed the birds to decide in what direction to go in. Re-magnification is similar to when you rub a magnet with a piece of metal

allowing for the metal to become magnetized, by doing this you can change the direction of magnetism by rubbing it in the other direction.

The research shows that migratory birds may have sensory systems linked to their beaks that use iron to detect the Earth's magnetic field. How are the Aurora Borealis and Australia formed? The aurora Borealis (northern lights) form when charged particles emitted from the sun during a solar flare penetrate the earth's magnetic shield and collide with atoms and molecules in our atmosphere. These collisions result in countless little bursts of light, called photons, which make up the aurora. Collisions with oxygen produce red and green auroras, while nitrogen produces the pink and purple colors.

This reaction encircles the polar regions of the earth and occurs at an altitude of 40-400 miles (65-650 km) in a zone called the 'Auroral Oval'. The aurora Borealis most commonly occur between 60-75° latitude, but during great geomagnetic storms the auroral oval expands equatorward and can reach 30° latitude or further. In the northern hemisphere they are called the aurora Borealis (northern lights) and in the southern hemisphere aurora Australia (southern lights). How Magnetism is created by moving charges? When an electrical charge is moving or an electric current passes through a wire, a circular magnetic field is created.

Magnetism is seen whenever electrically charged particles are in motion for example, from movement of electrons in an electric current, or in certain cases from the orbital motion of electrons around an atom's nucleus. They also arise from "intrinsic" magnetic dipoles arising from quantum-mechanical spin. The same situations that create magnetic fields, charge

moving in a current or in an atom, and intrinsic magnetic dipoles, are also the situations in which a magnetic field has an effect, creating a force.

QUESTIONS/EXPLANATIONS What was the cause of death of 32 civilians within the 10 mile block radius in the film?

The reason why 32 people died in that movie is because when the core of the Earth stopped moving, the NEFF or Electro Magnetic Field of the Earth deteriorated causing massive problems on people with pacemakers.

Pacemaker is a device that helps control the heart of people that have abnormal heart beats. Why did the wrist watch stopped ticking? Because of the MME, a pulse of electromagnetic energy, this induces a very high current thousands of volts in parts of the watch, and since many electrical items, such as microchips, are very sensitive to high voltages, it causes them to break.

Explain the Erratic Behavior of the Pigeons in the Film Because the Pigeons are affected by the change of the Earth's Magnetic Why did the Borealis appear in Washington DC? When super charged particles enter the earth's atmosphere from the solar wind they tend to be channeled toward the poles by magnetic forces causing them to spiral around the magnetic field lines of the earth. They are energetic enough to ionize air molecules, so a considerable number of atoms and molecules are elevated to excited states.

When they make the transition back to their ground states they emit light characteristic of the atoms and molecules. Red and green light emitted from oxygen atoms is a constituent of the light seen at the poles. Atmospheric nitrogen also plays a role. How is the Earth's Magnetic Field created

according to the film? The magnetic field is generated by the rotation of the dense, iron, liquid outer core and that this field extends about 126,000 meters (proxy. 78 miles) out into space.

As the outer core fluid is driven by convection currents, a dynamo effect of circulating electric current is produced inside Earth. The Space Shuttle in the film was 12 miles off course. Explain what happened. The Space Shuttle, returning from space, suddenly turns up far off course and headed for impact in Los Angeles due to a momentary glitch in its navigation, positioning systems (GAPS on overdrive), and a faulty ground transponder which resulted in the shuttle being off-course by 12 miles.

Enumerate the effects of losing the earth's Magnetic Field according to the film. People with pacemakers, all within a 10-block radius, will be dead. The Golden Gate Bridge collapses, sending hundreds of people plunging to their deaths. Flocks of pigeons lose their ability to navigate, flying into panicked crowds, slamming into windshields and causing drivers to lose control of their cars. And an electrical superstore. Give the scientific explanation how the terra shuttle was found under the ocean at the end of the film.

Keyes and Child's realize they can use the unobtainable shell to convert the heat and pressure from the waveforms to power the Virgil, and they are able to escape the core. They break through the crust underwater, leaving them on the ocean floor without power and communications. They believe themselves lost but use the remaining power to activate a weak sonar beacon. The beacon attracts a nearby whale pod, and Finch is able to trace their whale songs to locate the Virgil.