WHERE MAGNETISM IS

This leads us to wonder where these magnetic forces may be found and though we do not know what it is, a great deal is known of the "Fields" through which the force of magnetism acts and along what "Lines" these forces go.

Try this experiment to prove it. Take a bar magnet. Lay it on the table on top of a piece of writing paper. Move a compass, starting at one pole of the magnet, gradually toward the other pole, stopping at distances equal to a little more than the length of the compass needle. Let the compass needle come to rest in each place and when we have noticed the position it takes, draw a picture of this position on the piece of paper as in Figure 12. Notice how the picture seems to make long, circular lines reaching from one pole to the other, crowded together at the poles and spreading apart at a position halfway between the poles.

These lines gave the earlier discoverers of magnetic power the idea of calling them LINES OF FORCE and, after drawing this picture, can we not easily imagine these magnetic lines of force spreading out in all directions from the pole tips? Yes, they spread IN ALL DIRECTIONS.

You will find this is true if you take your magnetized sewing needle suspended by a little thread at its middle and hold it over the magnet from the north to the south pole, you will see the dip of the needle changes. If you set a paper up back of the needle and draw these changes, you would see a line coming up in the air just the same as those made by the compass on the flat piece of paper. See Figure 13.

Let us take the iron filings again. Sprinkle them on a piece of cardboard or glass and place the bar magnet under it. By tapping the glass gently, the iron filings will arrange themselves in lines starting from one pole and circling around towards the other pole.
MAGNETIC MATERIALS

Study these magnets. Which one is stronger?

When these magnets attract each other, they are called magnets. They have north and south ends.

There are two kinds of magnets:

KINDS OF MAGNETS

The south pole will attract or reach the north pole. The other end, or north pole, will attract the south pole.

When a magnet is broken, it attracts the same way as before.

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If again, you would find that the broken piece has north and south poles, but the poles of the two pieces are reversed. Should you break the north pole of the broken needle, the north pole of the compass needle is at the north of the needle. The compass needle is still north and south poles. Take one of the broken pieces and break it in half. Hold one of the broken pieces. The compass needle is still north and south poles. Take one of the broken pieces and break it in half. Hold one of the broken pieces. The compass needle is still north and south poles.

Another curious thing about a magnet is that if you break one in half, the north and south poles will still be on the ends of the broken pieces. Put the two halves together. You will see that they attract one another. If you break a magnet into three pieces, all three will attract one another. If you break a magnet into two pieces, only the broken ends will attract one another.

G. W. C. Gilbert's Magnetic Fun and Facts

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Magnetic Induction

When both iron and non-ferrous metals are brought close to each other, they attract each other. This is because of the magnetic force. The iron and non-ferrous metals are both magnetic. If we bring two magnetic materials close to each other, they will attract each other. This is because of the magnetic force.

To test the magnetic force, we can use a bar magnet. If we put a magnet near a non-magnetic material, it will attract the magnet. This is because the magnet creates a magnetic field around it. The non-magnetic material is attracted to the magnet because of the magnetic field.

To further test the magnetic force, we can use a compass. If we hold a compass near a magnet, the compass needle will be attracted to the magnet. This is because the magnetic field of the magnet affects the compass needle. The compass needle points to the North Magnetic Pole, which is the direction of the magnetic field of the Earth.

We can also test the magnetic force by using a wire and a magnet. If we place a wire near a magnet, the wire will be attracted to the magnet. This is because the magnet creates a magnetic field around it, and the wire is affected by this field. The wire will be pulled towards the magnet.

In conclusion, the magnetic force is a powerful force that can be used to attract and repel objects. It is created by magnets and affects both magnetic and non-magnetic materials. By understanding the magnetic force, we can use magnets to perform many useful tasks.
The second method is the same as the first, except that the two magnets are not opposed to each other but are simply placed on top of one another. The needle, when released, will swing and come to rest in one of the positions shown in Figure 3A. If the needle is a strong one, it may remain in this position for a long time. If the needle is weak, it will rapidly return to its former position.

**METHODS OF MAKING MAGNETS**

The most important method is the use of permanent magnets. To make a permanent magnet, you will need a strong magnet. By using a magnet in this way, you can make one that is strong enough to attract the needle. This method is much better than the first, because it gives a stronger and more reliable magnet.

**TERRESTRIAL INDUCTION**

This experiment is similar to the previous one, but it uses a different method to create the magnetic field. The needle is placed in a position where it is attracted to the earth's magnetic field. The needle will then swing and come to rest in one of the positions shown in Figure 3B. If the needle is a strong one, it may remain in this position for a long time. If the needle is weak, it will rapidly return to its former position.
Electromagnetism

Chapter II

Heat and Magnetism

which will require attention of electricity.

We will discuss a little later a better method than any of these
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Good way to remember this is to hold your thumb inward. As shown in Figure 28 will set up the north pole on the end marked "N." You will also find that the outer fingers in the left are shown.

In Figure 28, we have drawn the outer circumference so that the wires are placed in the same direction as they are in the figure. This will give the correct direction for the wires. The current is shown as coming from the outer ring and going into the center ring. The inner ring is shown as going from the outer ring and into the center.

Figure 27 shows how the results of this experiment will look.

Push a copper or brass wire through the center of a cardboard.

**MAGNETIC FORCE ABOUT A WIRE**

As they are "parallel," the effects of the earth's magnetism, when one is placed in the path of the other, cause a mutual repelling force. The current, when made to pass through the wire, has a mutual repelling force which is equivalent to the earth's magnetic field. The distance between the two wires can be increased or decreased by varying the current in the wire. The effect can be seen more clearly by using a galvanometer.
Use a Gilbert Boy Engineering Electromagnet Fun and Facts.