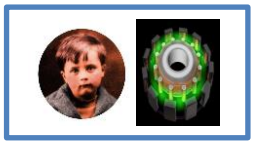
Searl education is massive; only because of his employment demanded such skills. Let's take a look at the **S.E.G**. as to what Searl has been stating since **1946**:



Neodymium Nd 60: electronic structure = 2-8-18-22-8-2 Valence = 3
Copper Cu 29: electronic structure = 2-8-18-1 Valence = 1 or 2
This choice of that **rare earth** was mainly its cheapness then; everyone wants to use it now, as it was used in the **1940s** and since. It is not the best solution in the **rare earths** options. Nevertheless **copper Cu 29** is the best for the emitter stage. **Silver Ag 47** or **Gold Au 79** could be used in place of **Copper Cu 29.** From this statement you would expect **Gold Au 79** to be the best. Searl agrees that the thickness of the wall would be much less, and that represents a smaller diameter **S.E.G**. As Searl has stated that the **maximum diameter** of an **S.E.G**. is based entirely depends upon the **elements** and **compounds** which are employed.

Let's return to page **34** of Searl continue education **1946** to **1947**: Searl states that in some elements, the **valence shell** is half full. That is, there are **four valence electrons**. Two examples of elements of this type are **silicon Si 14** and **germanium Ge 32**. Searl call these elements **semiconductors** because they are neither **good** conductors nor **good** insulators. As Searl has pointed out so many times over the years that semiconductors are important in electronics because **transistors** and **integrated circuits** are composed of these elements. However, in this section, Searl will be concerned primarily with **conductors** and **insulators**.

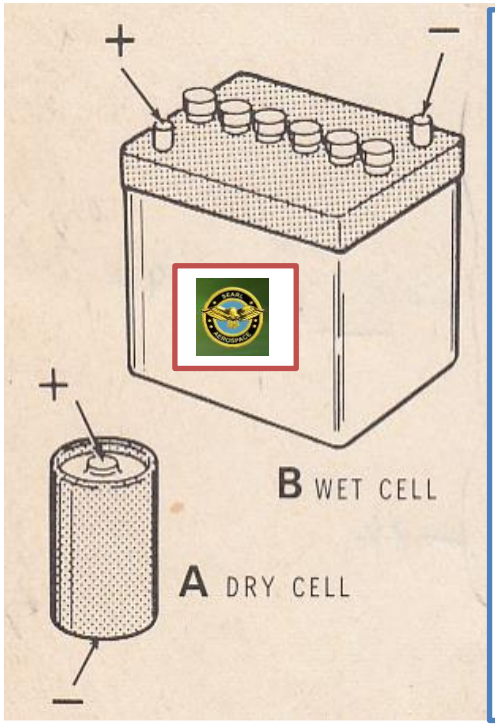


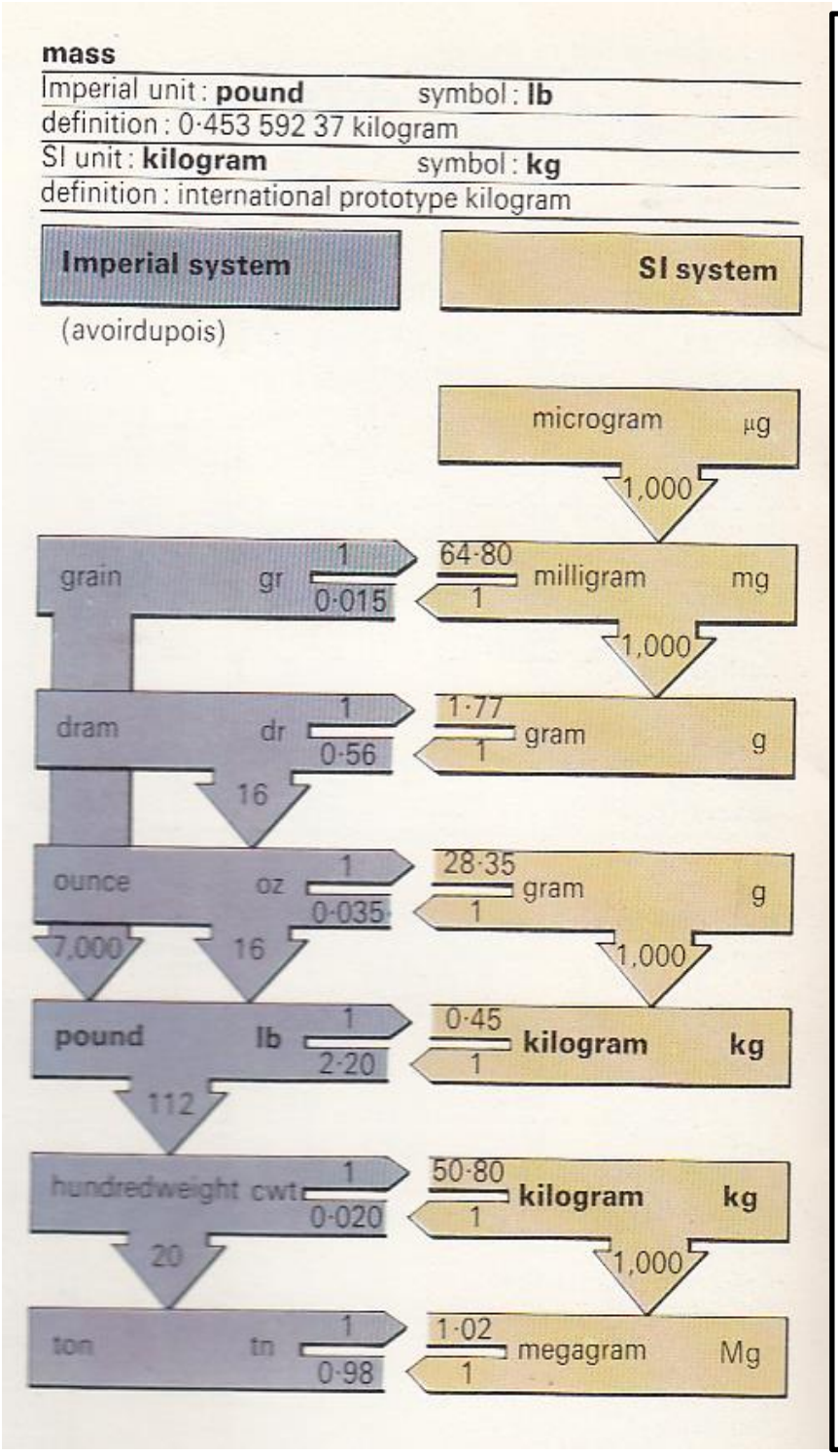
Figure CE 1-13:
identify these two components. I state which is a battery?

The battery: current flow is the **movement** of **free electrons** from one place to another.

Note that before we can have **current flow** we must first have **free electrons**.

Figure CE 1-13: The top image represents a battery; the lower image is just a cell.

Searl has shown how **valence electrons** can be dislodged from the atoms to form **free electrons** and **positive ions**. Searl explains that this can be done by very simple means such as **combing our hair** or **rubbing** a **glass rod** with a **silk cloth**. Searl states that however, to perform a useful function, we must free very large numbers of **electrons** and **concentrate** them in one area.



MASS: is usually measured by **weighing**, but it is not the same thing as **weight**. The mass of an object represents the amount of matter in it, and Searl states that it is the same wherever the object is.

The **weight** of the object depends on **gravity**; Searl states that it would be different on other planets.

Searl states that the international prototype **kilogram** is a standard piece of **metal** kept in **Paris**, **France**, to which all other **masses** can be compared.

Searl remind you that it has taken centuries to arrive at this arbitrary value of the **kilogram** which is accepted of today.

Yet, there are those who think that they could make an **S.E.G.** in **3 months cheap**. That is news to me. I have not seen anyone of those claims becoming **FACT**; because they do not have the **knowledge**!

Searl would like to think that most people know about the **production lines** that makes engines for motor cars etc.

As Searl was for **31** years employed in making bearings, bushes etc., for cars etc. Thus, Searl is fully aware of what **production lines** are all about. He has to design them for the **S.E.G. production lines**. Searl states that this system works because the machines used in **mass production** are carefully designed to do just one job: or perhaps a couple of jobs. Searl sates that within this **document** you will see such machine at **Searl Magnetics Corporation**, for machining of layers for the **S.E.G.** construction.

Searl is trying to help us to understand about the problems of **advanced technology**, not only its **shear cost**, but the lack of **skill workforce**. Searl states that this is the **crucial part**, so many of the pieces of the **motor car engines** made by the machines are needed that the machines run **continuously** and **automatically**.

Although the machines are very **expensive** to build, they were cheap to run; and Searl can assure you that is absolutely true. Searl can confirm that from experience of the **cost** of **machines** which has already been brought for the **S.E.G**. development, plus the **high cost** of **customs duties** to pay before you can collect the machines. The **masses** have no idea of the **cost** today which is involved. Let us take a different look at Searl knowledge, in which Searl was explaining what terms mean to him:



PERMANENT MAGNETS: have the property of retaining their **magnetism** practically unaltered for a great **length** of **time**. **NOTE** that here Searl refers to **conventional magnets**, and not to Searl **magnetic devices**. Searl states that **hard steel** when once magnetised will remain as a magnet for a very long time period, but **soft iron** soon loses its magnetic effect.

MAGNETIC SUBSTANCES: all **metals** are not affected by the **influence** of a **magnet**. There are very few substances capable of becoming magnetised, and most important in **1946 – 1968** was **iron Fe 26**, **steel** being a **compound** and not an **element**; **nickel Ni 28**, and **cobalt Co 27**.

MAGNET POLES: when a suspended bar-magnet is allowed to come to rest, one end point approximately to the **North** and the other to the **south**. Searl points out that the **Gillespie Airfield, San Diego, California, USA**, seats at the bottom of my garden; so to speak: lies **13^0 E** of the **North Pole**, therefore, such a magnetic bar would put me of course by that amount for the real **North Pole**. Searl: points out that the two ends therefore have distinct properties, and are called the **poles** of the **magnet** . The end pointing to the **North** is called the **North Pole** and that pointing **south** is called the **South Pole**. In reality that is incorrect – the **North Pole** of the **magnet** has to be the **South Pole** and not the **North Pole**.

MAGNETIC ATTRACTION AND REPULSION: suspend a bar-magnet and mark the **North Pole N** and the **South Pole S**. Searl says now remove this magnet and suspend another, and mark its **north** and **South Pole N^1** and **S^1** respectively. Searl says keeping this **magnet suspended**; bring the **North Pole N** of the first magnet near to the **North Pole N^1** of the second. Searl says observe that we get **repulsion**. Now, when the **suspended magnet** has again come to rest, bring the **pole N** near the pole **S^1**. This time we have **attraction**. Lastly, bring the **pole S** near to the **pole N^1** and we again have **attraction**. From these results we arrive at the **fundamental Law** of the **magnetic action**: To avoid breaking up the following statement Searl will continue on the next page.

••• •–––•–•/ ••• ––––•–•/ ••• ––––•–•/ ••• ––––• –/ •–•–•//

LIKE POLES REPEL AND UNLIKE POLES ATTRACT: this Law is even of more importance than the analogous law in **STATIC ELECTRICITY.**

••• ––• – ••• •–––•–• ••• ––––•–•

MAGNETIC INDUCTION: Is the power possessed by a **magnet** of imparting **magnetic qualities** to a **magnetic substance**. Searl states that this **phenomenon** can easily be explained by the following experiment: Searl says let the **north pole** of a magnet be brought near a short piece of **iron Fe 26**, as shown in **Figure BC 1**:

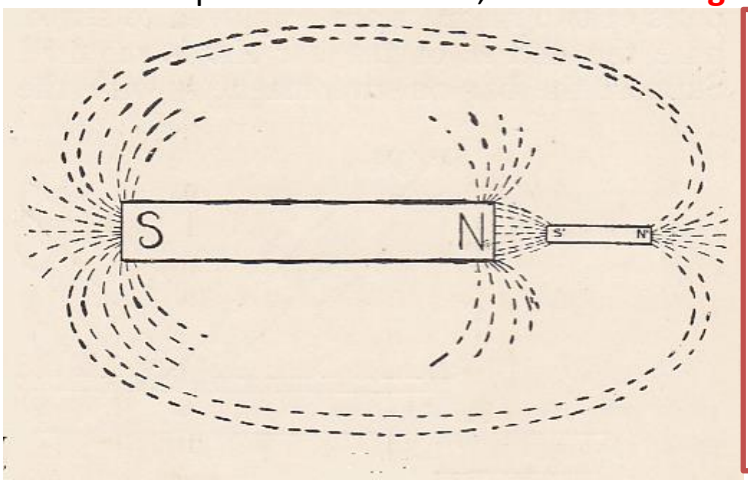


Figure BC 1: A **south pole S[1]** is induced at the end of the **iron Fe 26** nearest the **North Pole N[1]** at the opposite end of the **iron Fe 26**.

This **induction** always **precedes** the **attraction** of a **previously un-magnetised** body. To: Searl **education** and **understanding** of **magnetism**.

Searl says that when **two permanent magnets** are brought near each other, there is already an existing **attraction** or **repulsion** according to the way in which they are presented to each other. Searl states that the **magnetic induction** is the **power possessed** by a **magnetic pole** of inducing a magnetic condition in a neighbouring piece of **magnetic material**, so that the end nearer the **magnetic pole** has **unlike polarity** and the more distant end **like polarity**.

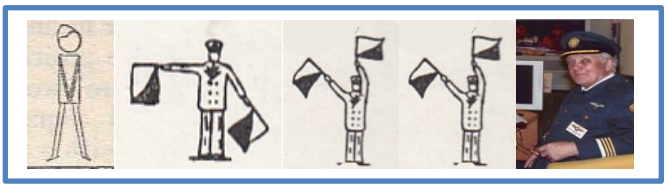
Let us now return to **page 37**: Searl continue education **1946 – 1947**:

Searl states that this requires more **sophisticated techniques**. Searl says that one device for doing this is the **ordinary battery**. There are many types of batteries. **Figure CE 1-13** shows two familiar examples. These are the **Dry Cell** (flash light battery) and the **wet cell** (automobile battery).

Searl says that while these two types of batteries are quite different in construction, they do have several points in common. Both have **two terminals** or **poles** to which an electrical circuit can be connected. Also, both employ a **chemical reaction** which produces an **excess** of **electrons** at one terminal and a **deficiency** of **electrons** at the other. The terminal at which the **electrons congregate** is called the **negative terminal**. It is indicated by the **minus sign** in **Figure CE 1-13**. The other terminal is indicated by a **plus sign** and has a **deficiency** of **electrons**. Searl says now let's see how the battery affects the **free electrons** in a **conductor**.

Searl is able to help you to understand how he learnt: from which the **S.E.G.** was born. Agree dream 1. Hopscotch game was the guilty; and the squares lead him to the concept.

Now that you have had a break, let's get back to Searl **continue education 1946 – 1947**; which you on **YouTube** has been knocking:



RANDOM DRIFT AND DIRECTED DRIFT:

Searl states that a **conductor** is a **substance** which has a **large number** of **free electrons**. In a **conductor**, the **free electrons** do not stand still. Instead they drift about in a **random motion**, which Searl has been stating since **1946. Figure CE 1-14A** represents a small section of a **conductor** containing many **free electrons**. Searl states that any instant, the **free electrons** are drifting at **random** in all directions. Searl points out: that this is referred to as **random drift**. This type of drift occurs in all **conductors** but it has little practical use. Searl states to do useful work, the **free electrons** must be forced to drift in the **same direction** rather than at **random**. Strange Searl states that is precisely what the **S.E.G**. does best. Searl states that we can influence the drift of **electrons** so that all or most **electrons** move in the **same direction** through the **conductor**. Searl sates this can be done by placing **electrical charges** at **opposite ends** of the **conductor**. **Figure CE 1-14B** shows a **negative charge** placed at one end of the **conductor** while a **positive charge** is placed at the other.

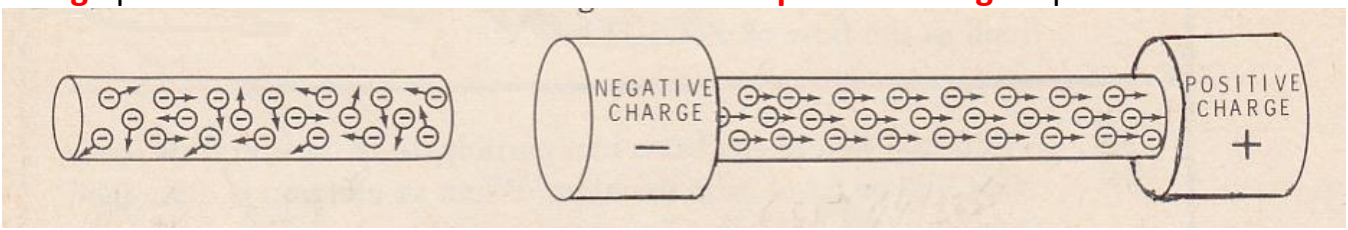


Figure CE 1-14A: Random drift: **Figure CE 1-14B: Directed drift. (Comparison)**

Searl reminds you that the **negative charge repels** the **free electrons** while the **positive charge attracts** them. Searl states as a result all of the **free electrons** move or drift in the same **general direction**. Searl reminds you that the **direction** is from the **negative charge** to the **positive charge**.

Searl states that here, the application of the **electrical charges** at the ends of the **conductor** has changed **random drift** to **directed drift**. This **directed drift** of **free electrons** is called **current flow**. Searl accepts that an **electric current** is flowing through the **conductor**. Searl states that if the **electric charges** shown in **Figure CE 1-14B** are **isolated** from one another, the flow of **electrons** will quickly cancel **both charges** and only a **momentary current** will flow. However, if the **two electrical charges** are caused by a **battery**, the **chemical action** of the **battery** can maintain the **two charges** for some time. Therefore, a **battery** can maintain a **continuous current** through a **conductor** for a long period.

Searl states that a **copper Cu 29 wire** is a good example of a **conductor**. **Figure CE 1-15** shows a length of **copper Cu 29 wire** connected from **one terminal** to the other of a **battery**.

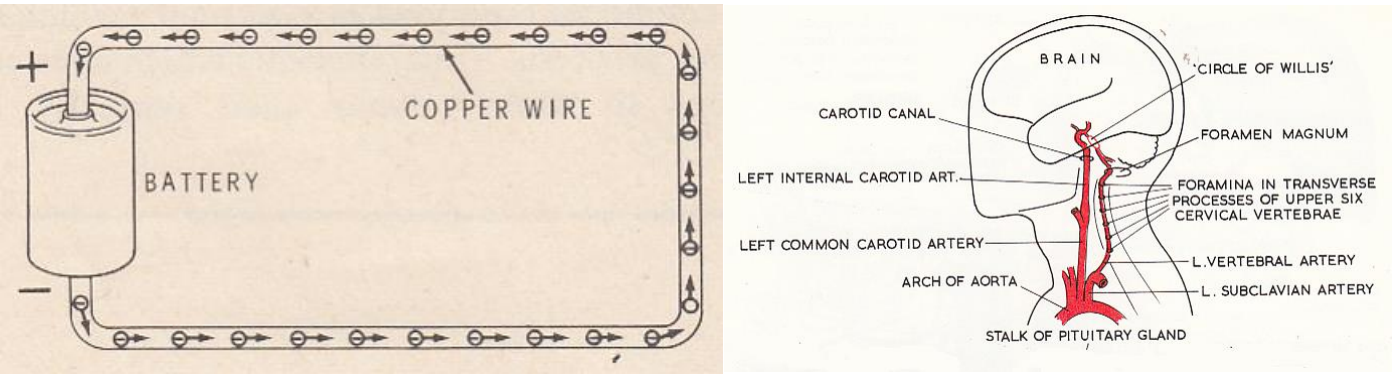


Figure CE 1-15: current flows from **negative terminal** to the **positive terminal** of the battery. **Figure AA35:**
Searl states that such a circuit would experience a **heavy current** will flow from the **negative terminal** of the **battery** to the **positive terminal**.

the **negative terminal** is a source of **free electrons**. Searl reminds you that an **electron** at this point is **repelled** by the **negative charge** and is **attracted** by the **positive charge** at the opposite terminal. Thus, the **electrons flow** through the wire as shown. When they enter the **positive terminal** of the **battery**, they are **captured** by **positive ions**. The **chemical reaction** of the **battery** is constantly releasing new **free electrons** and **positive ions** to make up the ones lost by recombination.

Searl point out that in practice, we never connect a conductor directly across the terminals of the battery as shown in Figure CE 1-15. The heavy current would quickly exhaust the battery. Searl makes clear that this example of a short circuit and is normally avoided at all cost. This example is shown here merely to illustrate the concept of current flow.

• • • •– –•–•/ • • • –– –•–•/ • • • – –•–•/ • • • ––• –/ •–• •//

THE ELECTRIC CIRCUIT:



Searl states that in its simplest form, an **electric circuit** consists of a **power source**, a **load**, and **conductors** for connecting the **power source** to the **load**. Often the **power source** is a **battery**. The purpose of the **power source** is to provide the **force** necessary to **direct** the **flow** of **electrons**. As you will see in the next volume, this **force** is called **voltage**. **Power sources** produce **voltage** by creating a **positive charge** at one **terminal** and a **negative charge** at the other.

We shall now return to Searl **continues education** of **1946 – 1947**: The **load** is generally some kind of **electrical device** which performs a useful **function**. It might be a **lamp** which produces **light**, a **motor** which produces **physical motion**, and a **horn** which produces **sound,** or a **heating element** which produces **heat.** Regardless of the type of **load** used, the **S.E.G**. **Load** performs its useful **function** only when **electric current flows** through it.

SEARL GLOBAL TECHNOLOGIES – MATHS – CURRENT: DOC-M1-1-17.

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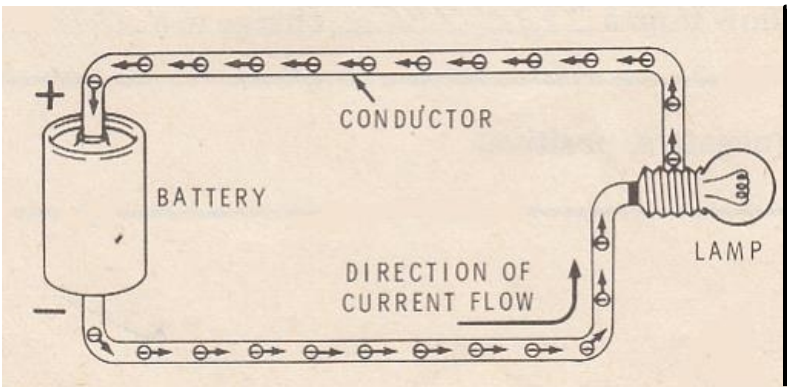


quantity	Imperial unit	symbol	SI unit	symbol	conversion
velocity	miles per hour	mi/h	metres per second	m/s	1 mi/h = 0·447 m/s
acceleration	feet per second per second	ft/s²	metres per second per second	m/s²	1 ft/s² = 0·305 m/s²
frequency	cycles per second	c/s	hertz	Hz	1 c/s = 1 Hz
density	pounds per cubic foot	lb/ft³	kilograms per cubic metre	kg/m³	1 lb/ft³ = 16·02 kg/m³
force	pound force	lbf	newton	N	1 lbf = 4·448 N
pressure	pounds per square inch	lbf/in²	pascal	Pa	1 lbf/in² = 6,894·76 Pa
work, energy	kilowatt hour	kWh	joule	J	1 kWh = 36,000 J
power	horsepower	hp	watt	W	1 hp = 745·7 W
electric current	ampère	A	ampère	A	
quantity of electricity	coulomb	C	coulomb	C	
electric potential ('voltage')	volt	V	volt	V	
electric resistance	ohm	Ω	ohm	Ω	
luminous intensity	candela	cd	candela	cd	

The: problem that Searl experiences, is that people does not appear to understand what he states. In this document he will try to get you to understand that which he means. Searl states that if a car goes faster by **3 m/s** in **every second**, then it **accelerates** by **3 metres per second per second**. This also applies to the **S.E.G. roller sets**, regardless of its **mass**. Searl states, those atoms in crystals, radio waves, pendulums, all have their own rate of **vibration**, as Searl has been telling us since **1946**, called their **frequency**.

Searl states that **density** is a measure of how closely packed **matter** is: how much **mass** there is in a **cubic metre**. The **force** needed to hold up a **gram mass** is **one gram force**, on the **Earth**. It is the **weight** of the **gram mass**. Searl states that any **force** can be spread over a larger or smaller area create a smaller or larger **pressure**. Searl points out that whenever **matte**r is lifted, or set moving, or changed in shape, **work** is done. **Energy** is the ability to do work, and is measured in the same units. Searl says that you will be hearing more lately on in this document.

The third part of the **circuit** is the **conductors** which connect the **power source** to the **load**. Searl points out that they provide a **path** for **current flow**; as that of runways for an aircraft to take-off or to land. Searl says that the **conductor** may be a length of **copper Cu 29 wire**, or a strip of **aluminium Al 13**, the metal frame of an automobile, etc.

Figure CE 1-16: shows a pictorial representation of an **electric circuit** consisting of a **battery**, a **lamp**, and connecting **Copper Cu 29 wire**. The **battery** provides the **force** (**voltage**) necessary to cause the **directed flow** of **electrons**. The **force** developed by the **battery** causes the **free electrons** in the **conductor** to **flow** through the **lamp** in the **direction shown**. The **free electrons** are **repelled** by the **negative charge** and are **attracted** by the **positive charge**.

Thus, Searl agrees that the **electrons** flow from **negative** to **positive**, this Searl well understood at the age of **14 years 2 months** and **5 days**. That is why Searl was able to get a job as a projectionist so easy, then in the cinema circuit of the UK. The **negative** and **positive charges** in the **battery** are constantly being replenished by the **chemical action** of the **battery**. Therefore, the **battery** can maintain a **current flow** for a long period of time.

As the **electrons** flow through the **lamp**, they **heat** up the **wire** within the **lamp**. As the **wire** becomes **hotter**, the **lamp emits light**. The **lamp** will **glow** as long as a fairly **strong current** is maintained. Searl understands from his experiences with **flashlights** that a **battery** cannot maintain a **constant flow** forever. As the **battery** is used, the **chemical reaction** within the **battery** slows down; no different to us, as we age we also slow down, often without noticing it, and we think that time has speeded up, which is just an illusion to stop you worrying about running out of energy. Over a period of **time**, the **force** provided by the battery becomes weaker and less current is provided. As a result the lamp emits **less light**. It becomes dimmer and dimmer and eventually it emits no **light** at all. At this time the battery is said to be dead, burned out, or run down. In this condition the battery cannot produce the **force** necessary to push enough **electrons** through the **lamp** to cause the **lamp** to **glow**.

Searl explains that the **circuit** in **Figure CE 1-16** can be made much more **practical** by adding one additional **component**. This **component** is a **switch** which provides a simple method of turning the **lamp** on and off .

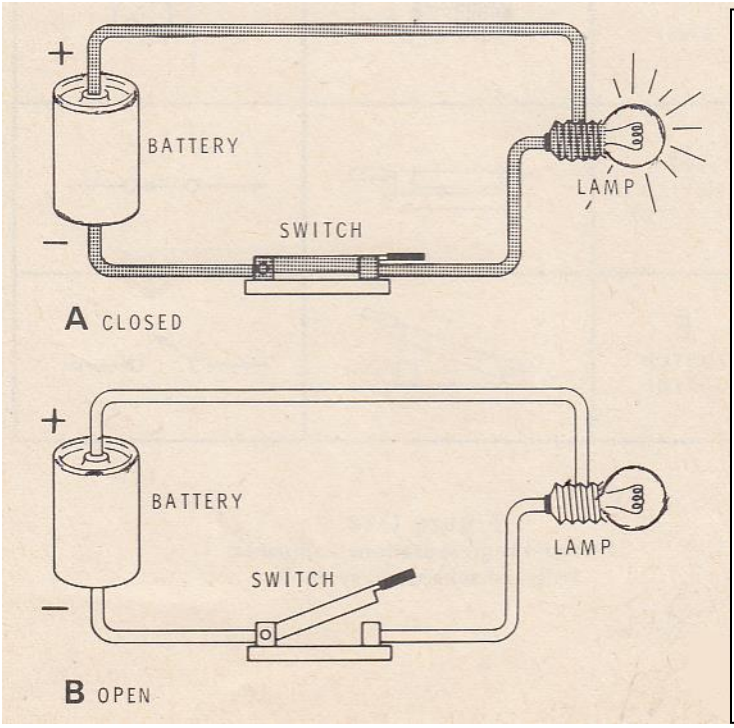
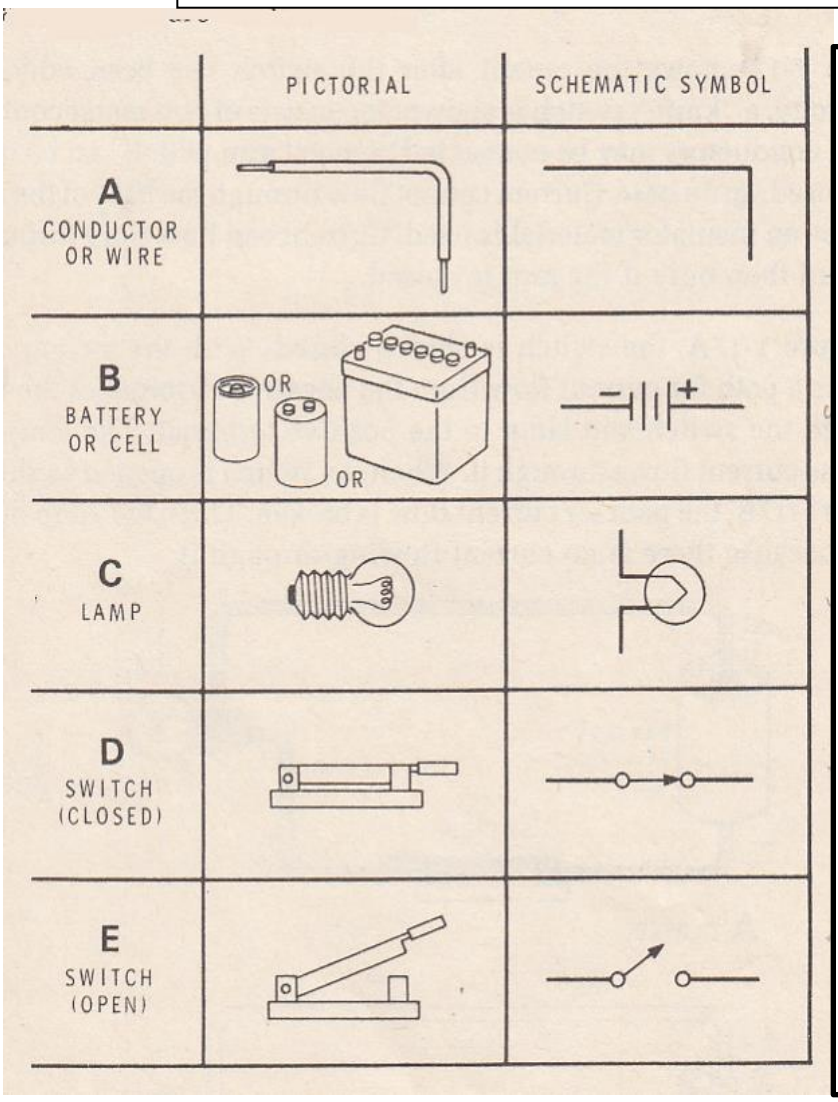


Figure CE 1-17: Circuit with a switch. Searl agrees that is kids' stuff; but then I was just a kid, learning from parts brought from Woolworths in the UK. Let's face facts I had no chance to get electrocuted that way. This Figure shows the circuit after the switch has been added. For simplicity, a knife switch is shown. It consists of two metal contacts to which conductors may be connected, a metal arm which can be opened and closed, and a base. Current cannot flow through the base of the switch because an insulator material is used.

Current can flow through the arm and then only if the arm is closed. This was just a small part of Searl **education 1946** at **30 Crawley Road**, **Turnpike Lane**. **London**. **UK.** Soon Searl will be moving on to wiring houses. There you can get **executed**, if you do not understand what you are doing. Or set the house on fire. Which, some expert have done; but not Searl.

Let's return to Searl continue education **1946 – 1947**: Searl states that in Figure **CE 1-17A**, the switch is shown closed. With the switch closed, there is a path for **current flow** from the **negative terminal** of the battery through the **switch** and **lamp** to the **positive terminal**. The lamp lights because current flows through it. When the switch is opened as shown in Figure **CE 1-17B**, the path for **current flow** is broken. Searl states that is should be easy for everyone to understand that, the lamp does not glow because there is no current flowing through it.

Figure CE 1-18: Pictorial representation compared with the schematic symbols.



Searl says that while simple circuits can be drawn as shown in Figure **CE 1-16** and **CE 1-17**, it would be very difficult to draw complex circuits in this manner for the **S.E.G**, and certainly not for the **I-G-V**. For this reason, the **schematic diagram** was developed. Searl states that a **schematic diagram** is a drawing in which **symbols** are used to represent **circuit components**. Thus, the first step to understanding the **schematic diagram** is to learn the **symbols** for the various **components** used. Figure **CE 1-18** compares very **elementary symbol** with the **pictorial** representation of the **circuit components** we have used up to this point. Searl will continue this issue below.

Searl states that the **conductor** is represented by a **single line** in the **schematic**. Also, the **picture** of the battery is replaced by a series of **long** and **short lines**. The **long line** represents the **positive terminal** while the **short line** represents the **negative terminal**. The same **symbol** can be used regardless of the type of battery.

Searl will complete that which he was going to say on the last page: The **symbols** for the **lamp** and **switch** are also shown.

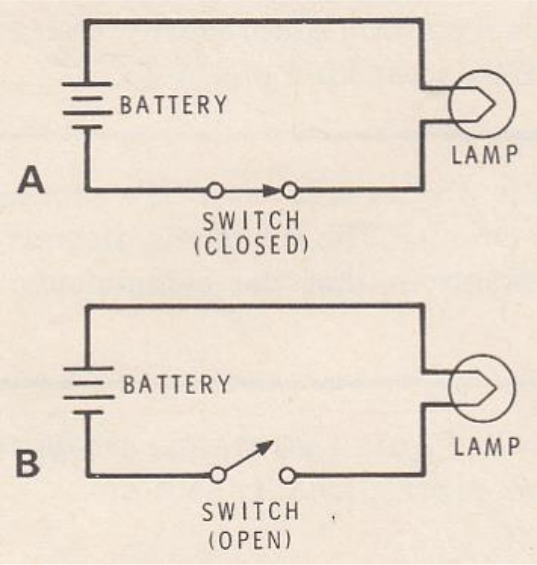


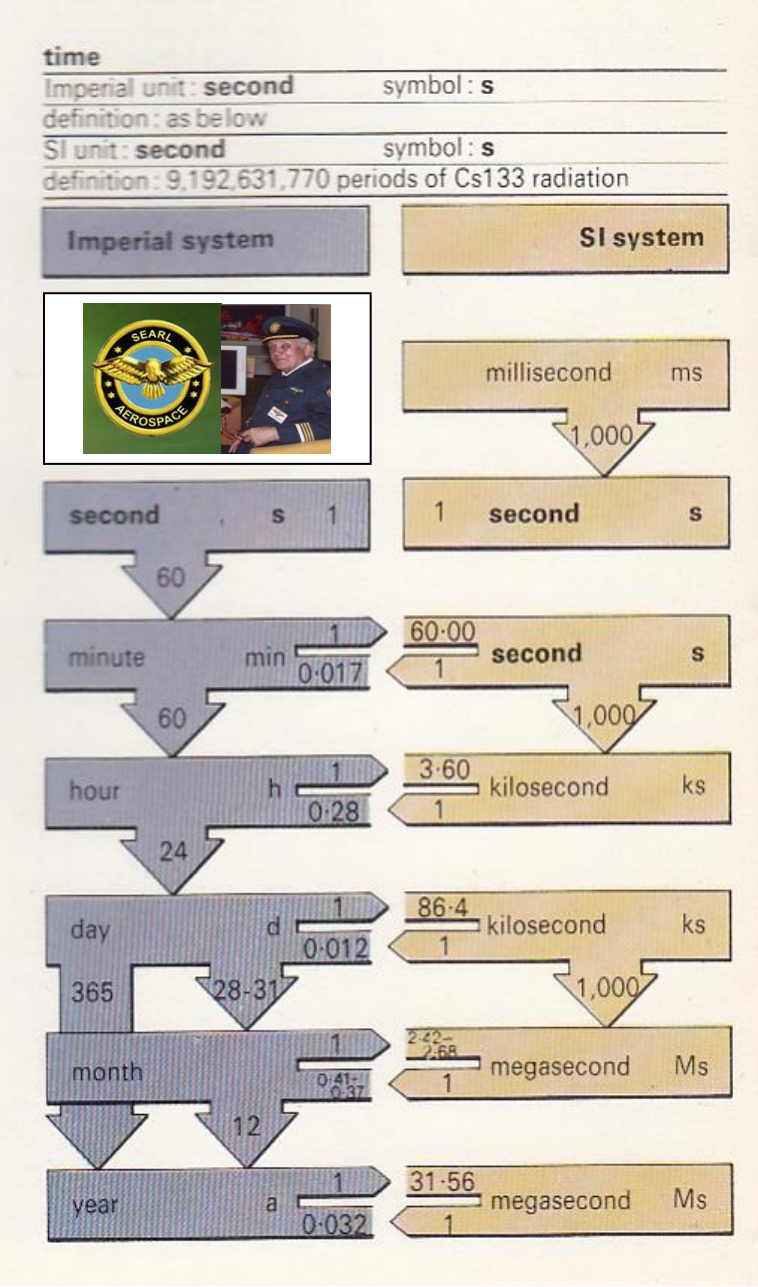
Figure CE 1-19: shows several of the symbols combined to form a schematic diagram. Figure CE -1-19A: is the schematic diagram for the pictorial drawing shown earlier in Figure CE 1-17A. Also, Figure CE 1-19B: is a schematic diagram of the pictorial shown in Figure CE 1-17B. this was clearly my understanding at the age of 14 years and 5 months, which lead me creating Christmas lights display for Christmas 1946. As the years pass; my Christmas light shows grew and got the nick name Blackpool illumination lights.

Searl sincerely hope that this will encourage young inventors to be: to experiment as Searl did. I know that I shall not be around to witness your successes to come. But Searl wish you all success for your efforts, win or lose, is not the answer but that you actually tried to win.

Searl states that the circuit shown in **Figure CE 1-19** is the **schematic diagram** of a flashlight. It is also the **diagram** for the **headlight system** in an **automobile**. In fact it can represent any system which contains a **battery**, a **lamp** and a **switch**. Searl states if the **lamp** is replaced with a motor, the circuit becomes that of the **starter system** in a **car**. In this case, the **switch** is operated by the **ignition key**. Searl states that, other circuits which operate in a similar manner are the **door bell** and the **automobile horn**. In the first case, the **bell** is the **load** while the **switch** is operated by a **push button** at the **door**. In the **second case**, the **horn** is the **load** while the **switch** is normally located on the **steering wheel**.

Searl understand that you may wonder what this is to do with the **S.E.G**. In reality, Searl says everything. Here, Searl is talking about the **movement of electrons** to preform work, as in the **S.E.G**. for it to **perform work** many **switches** are needed, but not in the **electrical sense**, but in a **magnetic sense**. First let us fully understand what we are doing **electrically**, as Searl had to study both **electrical** and **magnetic properties**, before he could start on the design of the **S.E.G**. concept. Before Searl give you a test to see what you can remember, he will explain what the terms which he uses actually mean as there appear to be problem in education that words which Searl uses get misunderstood.

FREE: does not mean that the S.E.G. is free. What he means is the energy which you are using from it; you are not paying for it. But the S.E.G. itself cost money, which you have to pay for. But it is an investment for life, and your family's lifetime and so on; which no other power device can offer you. The beauty of the S.E.G. there is no nose pollution involved, in FACT there is no pollution of any nature involved; what a machine?



TIME: **light waves** consist of extremely rapid changes in **electric** and **magnetic fields**. The rate of these changes in one particular colour of light from the **metal cesium** - **133** (Cs-133) is used in the **definition** of the **second.**

Searl: points out that in the **S.E.G.** function, **timing** is **vital ingredient**, if you failed to get that **precisely** right then you will not get an **S.E.G**.

Searl states that the Table on the left side gives a basic picture of **time**, which Searl had to **understand** to be able to create the **S.E.G**. concept. As Searl has been stating since **1946** that the **S.E.G**. is an **absolute precision negative device**; and not a **positive device** as todays generators are. Never forget, all these tables took centuries to create them for today's use by **inventors** and **scientists**, who themselves, will develop tables to help future **scientists** and **inventors** to progress in their research studies.

Searl explains that in his **S.E.G**. studies he had to bring **elements** and **compounds** together to **observe** what **reactions** which would take place, and slowly the concept fell together. All

• • • •– –•–•/ • • • ––– –•–•/ • • • – –•–•/ • • • ––• –/ •–•–•//

The **motto** Searl is stating here; is never to knock a child down when he/she is trying to understand. All children outside of my ex family; who wish to talk to me, I would stop work

We shall return to the terms which Searl uses, as to their meaning to him.

CONSTRUCTION OF MAGNETS: Magnets can easily be made by rubbing pieces of steel in a suitable manner with one or two magnets. Searl states that there are **three methods** of doing this, here comes the law of the squares, or more precise that hopscotch game, and the principle employed in each case is the same.

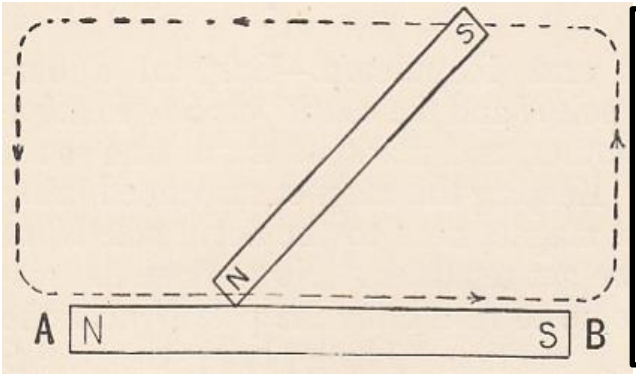


Figure BC 2: In figure **2 AB** is a bar of **steel** to be **magnetized**. Searl states stroke the bar from **A** to **B** with one end of a bar magnet, keeping it inclined as in the position shown. You must follow Searl instruction to be able to obtain the same results as Searl is explaining here.

Searl says; repeat the process many times, always stroking **AB** in the same direction. Each time the end of the magnet arrives at **B**; it should be lifted up and brought back to **A**, at a distance from the steel so that it describes the dotted line in the direction of the arrows as shown in the Figure. Searl says if the **North Pole** end of the magnet is used, the end of the bar where the magnet leaves it will be the **South Pole** and the opposite end a **North Pole**.

WARNING: Searl states it should be carefully observed that the end of the bar, where the stroking pole leaves it, is of the opposite polarity to that pole. Searl notes the

• • • •– –•–•/ • • • –– –•–•/ • • • – –•–•/ • • • ––• –/ •–•–•//

METHOD OF DIVIDED TOUCH:

Searl states that in this method the **opposite poles** of two magnets are employed to stroke the **steel bar**. Searl says suppose the end **A** of the bar **AB** is required to be a **North Pole**.

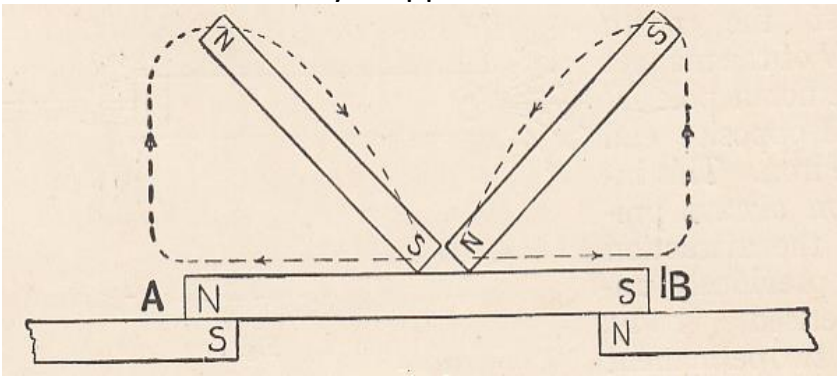


Figure BC 3: Searl says now support the bar on two magnets, with the end **A** resting on a **South Pole** and the end **B** on the **North Pole**, as shown in **Figure BC 3**: Again, Searl ask you to check you have got this right.

Searl states that the two other magnets are then held in inclined positions, with **opposite poles** resting in the middle of the bar. Searl says that the bar is then stroked a number of times with these magnets, starting from the middle and bringing them back at a distance above the bar, as indicated by the dotted lines. Searl states that the steel bar will then be magnetised with a **North Pole** at **A** and a **South Pole** at **B**.



METHOD OF DOUBLE TOUCH:

Searl states that this method is similar to that of the divided touch and is shown in Figure **BC 4**.

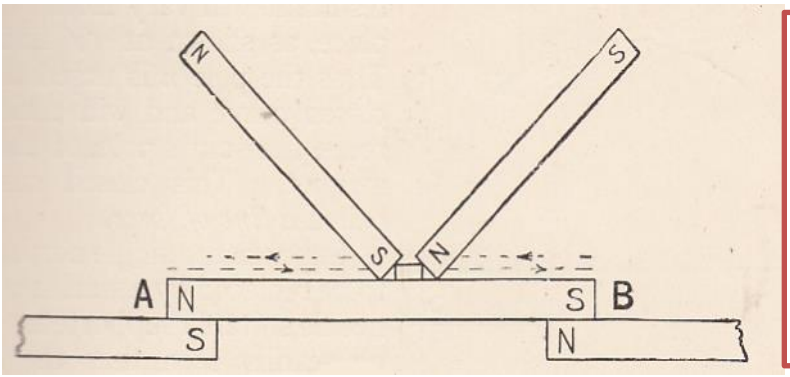


Figure BC 4: Instead of the stroking poles being separated, they are merely kept a short distance apart by means of a piece of wood, both **poles** are moved together to and fro along the bar.

Thus, starting at the middle of the bar, the poles are moved along to **B**, then back along the bar to **A**, then from **A** to **B**, until the surface has been stroked many times, finishing off finally at the middle. Searl quotes, these methods, however, are seldom used in practice, as very powerful magnets can be easily made by means of a **spiral wire** through which an **electric current** is passing. Searl will be treating this method later when he deals with **Electro-Magnetism**.

Searl will continue with his education **1946 – 1950**:

THE MAGNETIC FIELD: of a magnet is the space surrounding it, within which it can exert an influence upon magnetic materials. Searl states that this term **Magnetic Field** is confined to the region wherein the **magnet** is capable of exerting an **appreciable effect**, because, strictly speaking, the field is of infinite extent, but in practice the **magnetic effect** is diminished so rapidly that at a comparatively small distance from the **magnetic** it becomes negligible.

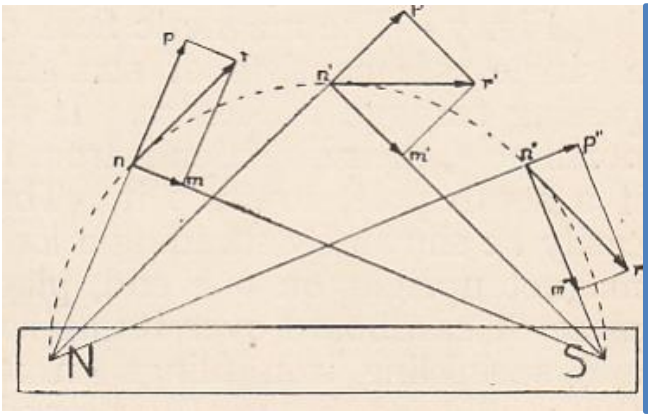


Figure BC 5: This also apples to the **roller sets** in the **S.E.G**. Imagine a single **North Pole n** to be placed in the **magnetic field** of a **magnet**, as shown in **Figure BC 5**. This isolated **pole** is **repelled** by the **North Pole** of the **magnet** in the **direction np**, and is **attracted** by the **South Pole** in the **direction nm**.

Searl points out that these two forces acting on a single pole will have a resultant force **nr**, that is, a force which would have the same effect as the two acting along **np** and **nm**. The pole n would therefore move along in the direction nr. As this pole n moves, the direction and magnitudes of the forces, with which the bar magnet acts upon it, also alter, and the direction of the resultant will vary from place to place, as shown at **n' r'** and **n" r"**.

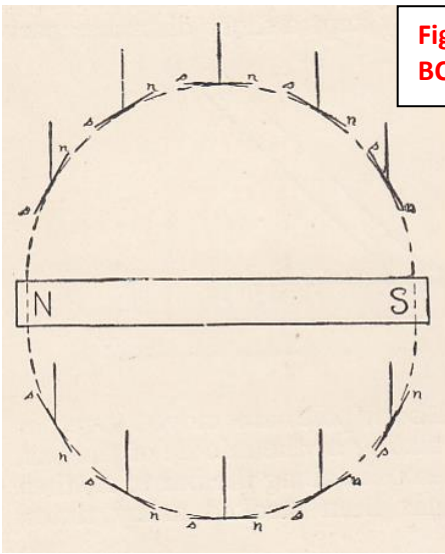


Figure BC6

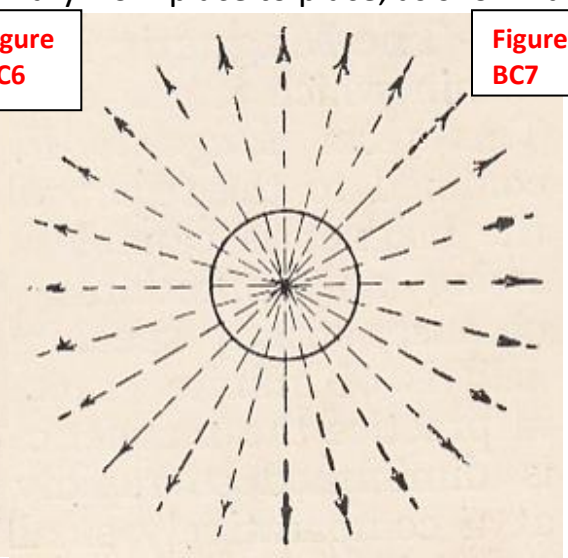


Figure BC7



Searl states thus the pole **n** is urged along a closed curve and will ultimately reach the South Pole of the bar magnet. This closed curve is called a **line of force**. Suppose the single North Pole **n** to be replaced by a small magnetic needle suitably supported. It will be readily seen that the needle will set itself in each position at a tangent to the curve. Searl states that one can say the same about the **roller sets** of the **S.E.G**. thus, each **roller sets** operate at a tangent to its plate. **2015** see **magnetism** becoming more important in the manufacturing world.

Searl states that by this means we can map out the lines of **force** in a **magnetic field** on a sheet of paper, by marking the ends of the needle in different positions, as in **Figure BC6**. It must be remembered that lines of **force** pervade the whole space surrounding the magnet, and not merely the flat plane of the paper.

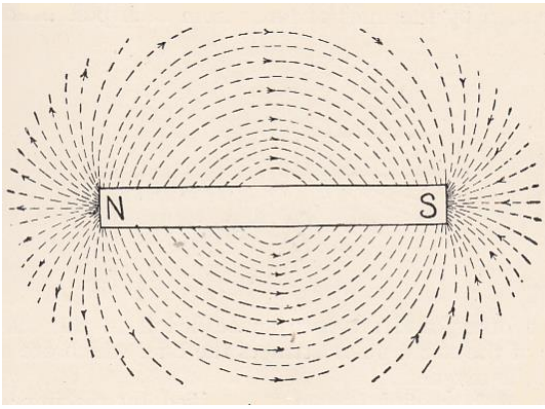


Figure BC 8:

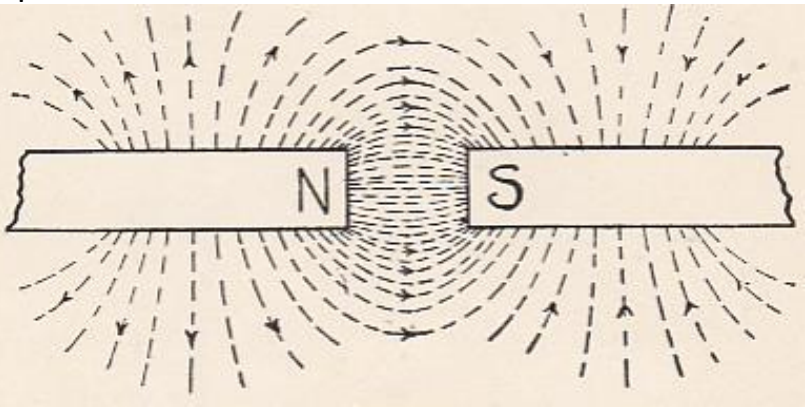


Figure BC9:

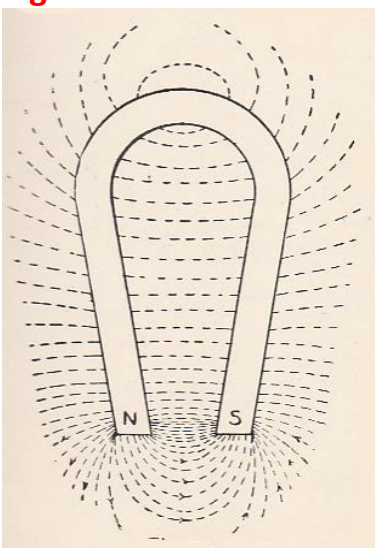


Figure BC10:

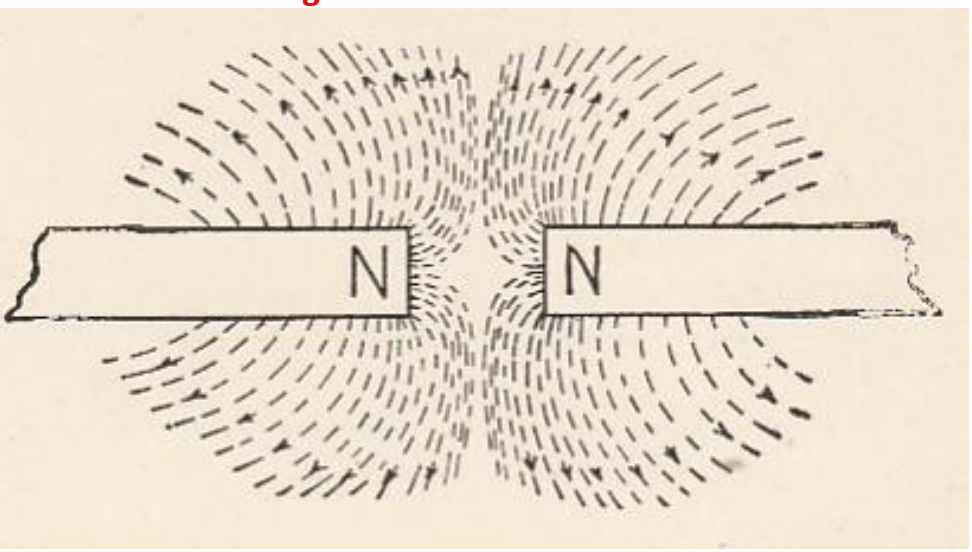


Figure BC11:

Searl says that **Figures BC7** to **BC11** illustrate a few examples of the **formation** of the **lines** of **force** in various **magnetic fields**.

Figure BC7: Searl says that the magnetic field due to a single pole consists of straight lines passing through its centre. Searl says if it be a North Pole, their direction is from it, and if a South Pole, towards it. This can easily be shown by standing a long bar magnet upright on one end, placing a piece of cardboard over its upper end, and sprinkling **iron Fe 29** filings on it. Searl says, if the cardboard be gently tapped, the filings will arrange themselves in straight lines passing through the pole.

Figure BC8: illustrates the field due to an ordinary bar magnet. The lines of **force** from a series of oval curves, the greater the number which strikes the ends of the magnet. The arrows indicate that the direction of the lines is from the North Pole end to the South Pole end of the magnet. Searl hopes that he is explaining this **magnetic information** of **1947.** Since those days knowledge has increased greatly as you will see through this document.

Figure BC9: Searl states that a **magnetic field** is shown, due to two unlike poles of two bar magnets. The lines in the centre portion emerge from the **North Pole** and enter the **South Pole**. The **influence** of the other **poles** of the **magnets** can be distinctly felt, and is shown by the **lines** of **force** to the **right** and **left** of the diagram bending round, as in this case of the single **bar magnet**.

Figure BC10: depicts the field of a **horseshoe magnet**. The lines in the region near and above the poles take the same form as that shown in **Figure BC9**: and the field between and on the outer sides of the prongs consists of lines of force which are nearly straight.

Figure BC11: Shows a very interesting magnetic field of the two North Poles of two bar magnets. The repulsion of these like poles is clearly seen by the lines of force from each pole bending away from each other, and the open space is left in the centre. The influence of the **South Poles attracts** the lines which are nearer the centre of the **magnets**.

Searl states that all the above figures can be verified by placing a sheet of paper over the magnets and sprinkling **iron Fe 29** filings upon it. On gently tapping the paper the filings will arrange themselves as shown in the sketches. Searl wonders if you spotted in **figure BC11**: that the magnetic effects are basically similar to that of the **S.E.G**. which was discovered early **18th century**, late **18th century** movies were including various demonstrations of this effect to enhance movies. But since **1946** Searl has created the **concept of the S.E.G**. which employs this effect to an advantage of producing **electrical energy**.

Let us returned to Searl continue education **1946 – 1947**:

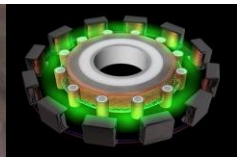




MEASURING CURRENT:

Searl states that **current** are the flow of electrons from a negative to a positive charge. To measure current flow, we must measure the number of electrons flowing past a point in a specific length of time. Before Searl discuss how **current** is measured, Searl must first define the unit of electrical charge and the **unit** of **current**.





THE COULOMB:

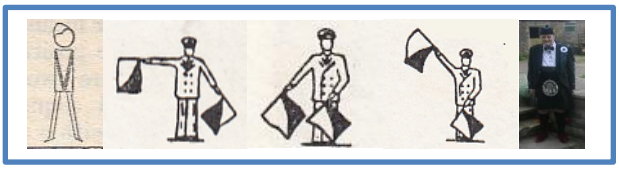
Searl understands that the charge on an object is determined by the number of electrons which the object loses or gains. If the **object loses electrons**, the **charge** is **positive**. However, an object which **gains electrons** has a **negative charge**. The **unit** of **electrical charge** is called the **Coulomb**. The coulomb is equal to the charge of **6.25 x 10^{18}** electrons. For those who are not use to expressing numbers in this way, the number is:

6,250,000,000,000,000,000

Searl may sometimes repeat things just to remind you of issues involved in his work.

SEARL GLOBAL TECHNOLOGIES – MATHS – CURRENT: DOC-M1-1-29.

Searl states that an object which has gained **6.25 x 10^{18}** electrons has a negative charge of one coulomb. Searl states that on the other hand, an object which has given up **6.25 x 10^{18}** electrons has a positive charge of one coulomb.



POWERS OF TEN AND SCIENTIFIC NOTATION:

Searl like to give you a word about powers of ten and scientific notation may be helpful at this point. The number **6,250,000,000,000,000,000** can be expressed as **6.25 x 10^{18}**. This number is read **six point two five times ten to the eighteenth power.** The expression **ten to the eighteenth power** means that the decimal place in **6.25** should be moved **18** places to the right in order to convert to a proper number. Searl states that the theory is that it is easier to write and remember **6.25 x 10^{18}** than it is to write and remember **6,250,000,000,000,000,000**. Searl states that this shorthand method of expressing numbers is known as **powers of ten** or **scientific notation**. Searl will remind you later again to help you understand his world.

Searl reminds you that it is often used in **electronics** to express very large and very small numbers. Searl says that very small numbers are expressed by using **negative powers** of ten. For example, **3.2 x 10^{-8}** is scientific notation for the number **0.000000032**. Here, **ten to the minus eight power** means move the decimal place in **3.2 eight places** to the left. To be sure you have the idea, let's look at some examples of both positive and negative powers of ten:



Positive Powers of Ten:	Negative Powers of Ten:
7.9 x 10^{4} = 79,000	**7.9 x 10^{-4} = 0.00079**
9.1 x 10^{8} = 910,000,000	**9.1 x 10^{-8} = 0.000 000 091**
1.0 x 10^{12} = 1,000,000,000,000	**1.0 x 10^{-12} = 0.000 000 000 001**
1.0 x 10^{15} = 1,000,000,000,000,000	**1.0 x 10^{-15} = 0.000 000 000 000 001**

Searl ask that you study these examples until you get the idea of this system of writing numbers. Searl will be presenting you with a programmed instruction sequence designed to teach powers of ten and scientific notation in much greater detail.

THE AMPERE:



Searl states that the **unit of current** is the **ampere**. The **ampere** is the **rate** at which electrons move past a given point. As Searl has mentioned above, **1 coulomb** equal to **6.26 x 10^{18} electrons**. An ampere is equal to **1 coulomb per second**. That is, if **1 coulomb (6.25 x 10^{18} electrons**) flows past a given point in **1 second** then the **current** is equal to **1 amperer**. **Coulombs** indicate **numbers of electrons**: **amperes** indicate the **rate** of **electron flow** or **coulombs persecond**. Searl education grew from many sources of training, from which the **S.E.G**. concept was conceived. But it took **thousands** of **people** and **millions** of **years** to do. Few people think you can make an **S.E.G**. in **3 months cheap** – really? That I would like to see.

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Searl states that when **6.25 x 10^{18} electrons flow** through a **wire each second**, the **current flow** is **1 ampere**. If **twice** this number of **electrons flows each second**, the **current** is **2 amperes**. This relationship is expressed by the equation:

$$\text{Amperes} = \frac{\text{Coulombs}}{\text{Seconds}} = \frac{6.25 \times 10^{18}}{1} = \frac{6{,}250{,}000{,}000{,}000{,}000}{1} = 1\text{A}$$

Searl state, that if **10 coulombs** flow past a point in **two seconds**, then the **current flow** is **5 amperes**:

$$\text{Amperes} = \frac{\text{Coulombs}}{\text{Seconds}} = \frac{10 \times 10^{18}}{2} = \frac{10{,}000{,}000{,}000{,}000{,}000}{2} = 5\text{A}$$



After all: **Charles Augustin. de Coulomb (1736 – 1806)** was a great **French physicist** surely he cannot be wrong, or can he be wrong ? Searl states that there is only one answer that is to check by experimenting first with values; to get to grips with the system, and then check the above value.

here is a simple question: What name is given to the numeral written below the line of the above sample, which is a **2**? Thus, what we have to do is to change **¼** to an equivalent decimal. All you need to do is to divide **1** by **4**: Which is quite simple.



Welcome to my life of work!

0.25 Answers:

4)1.00
4)10
8
4)20
0

Divide **144** by **0.006**:

$$\frac{144}{0.006} = \frac{144 \times 1000}{0.006 \times 1000} = \frac{144{,}000}{6} = 24{,}000$$

There is not enough space to do a full workout of that large number here, so will have to go to the next page.

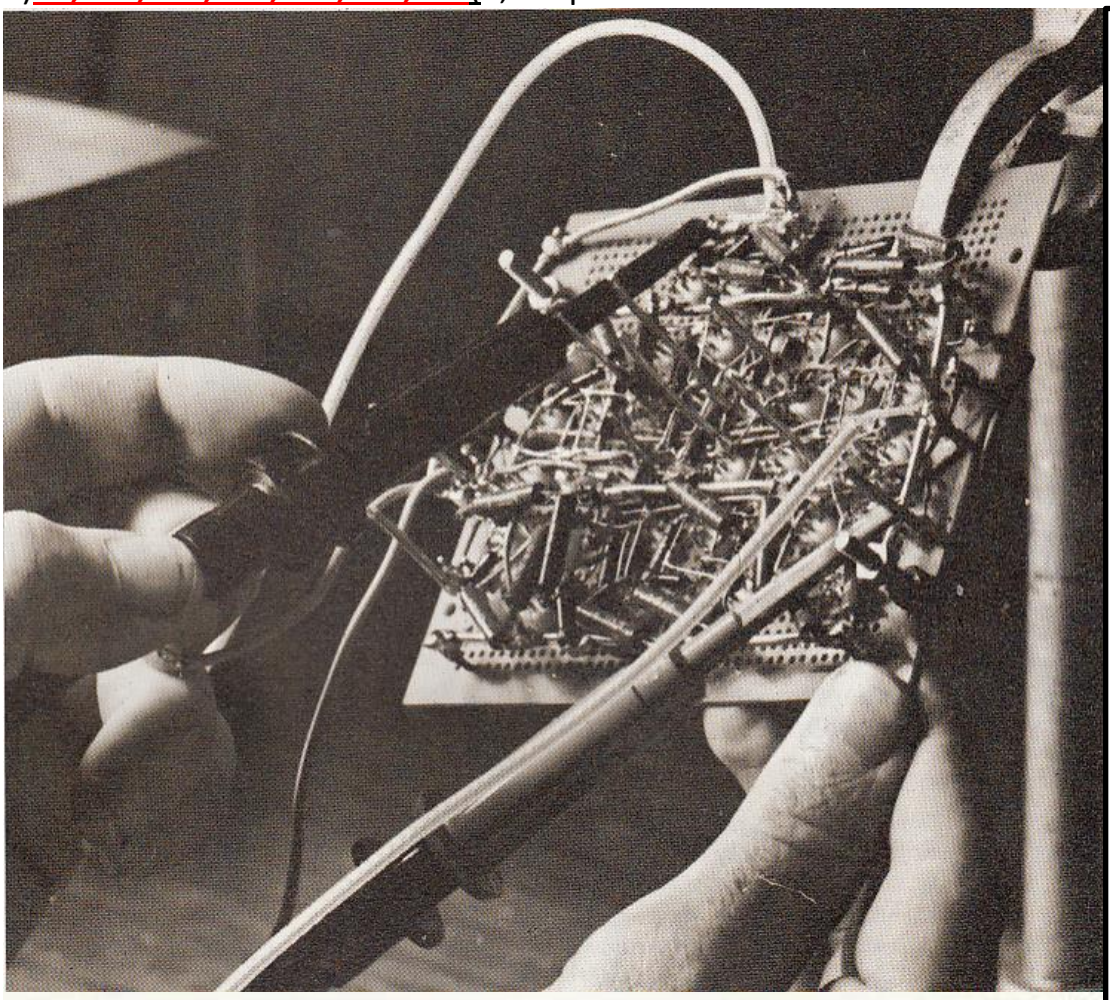
• • • – • •/–• –––/•–• • ––– –• ––• • •–•/•– –•–• – • • • • • •– •/ •–•–•//

6)144000(024,000
6)14(2
6)24(4
00

here is the proof the above answer is correct.



2)10,000,000,000,000,000,000(5, Amps.



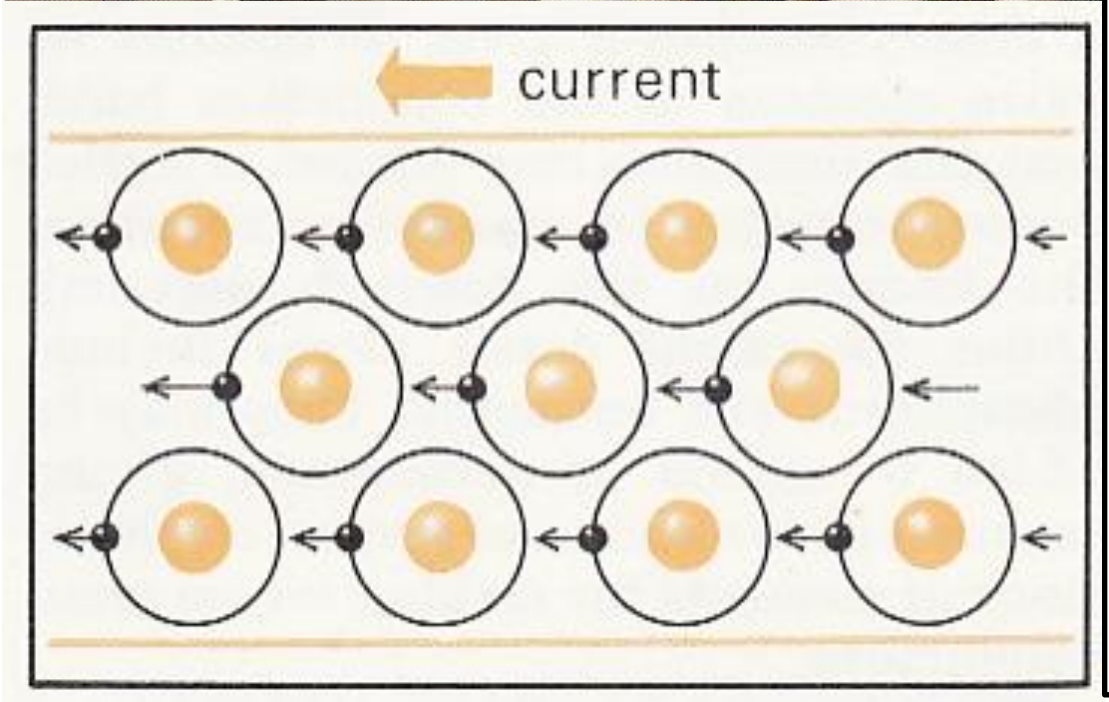


Figure PS1: Transistors the size of a pencil stubs do the work of much larger valves in controlling amplifying electric currents. But the circuit being planned on your left will be reproduced in even more miniature form as an integrated circuit in a silicon Si 14 chip less than two millimeters square.

Conductors and transistors: At temperature near absolute zero the electrical resistance of certain metals and alloys becomes vanishingly small. In certain other substances, however, it decreases as temperature rises.

Before you can understand the **S.E.G**, you need to understand materials, elements, compounds, tools, and test equipment, machinery by which you can manufacture such devices, then robotics and automation for mass production requirements. Do you really have that?

Figure PS2: an **electric current** is made up of **electrons** on the **move**. **Metals** make **good conductors** because they have a plentiful supply of **free electrons** available to move along the lattice of atoms.

Reactance of inductors at spot frequencies

	50 Hz	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz	10 MHz	100 MHz
1 µH	—	—	—	—	0·63	6·3	63	630
5 µH	—	—	—	0·31	3·1	31	310	3·1 k
10 µH	—	—	—	0·63	6·3	63	630	6·3 k
50 µH	—	—	0·31	3·1	31	310	3·1 k	31 k
100 µH	—	—	0·63	6·3	63	630	6·3 k	63 k
250 µH	—	0·16	1·6	16	160	1·6 k	16 k	160 k
1 mH	0·31	0·63	6·3	63	630	6·3 k	63 k	630 k
2·5 mH	0·8	1·6	16	160	1·6 k	16 k	160 k	1·6 M
10 mH	3·1	6·3	63	630	6·3 k	63 k	630 k	6·3 M
25 mH	8	16	160	1·6 k	16 k	160 k	1·6 M	—
100 mH	31	63	630	6·3 k	63 k	630 k	6·3 M	—
1 H	310	630	6·3 k	63 k	630 k	6·3 M	—	—
5 H	1·5 k	3·1 k	31 k	310 k	3·1 M	—	—	—
10 H	3·1 k	6·3 k	63 k	630 k	6·3 M	—	—	—
100 H	31 k	63 k	630 k	6·3 M	—	—	—	—

Values above 10 MΩ and below 0·1 Ω not shown. Values in ohms.



Figure RE35: this I had to understand in the military and civilian world and will apply to **Searl Global Technologies** as well. What about your military life?

Resistor and capacitor colour coding

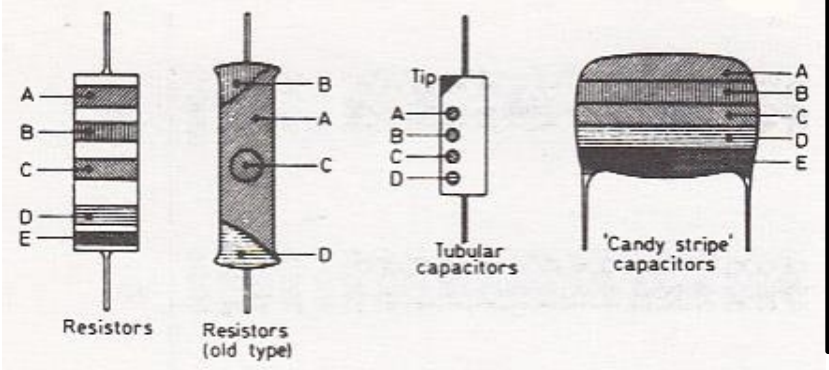


Figure RE34: **Flowerbower** this is just another requirement of my military and civilian jobs required in the electronic domain. Not needed in the medical domain.



I'm here watching you watching me, watching you. Beware I bite hard!

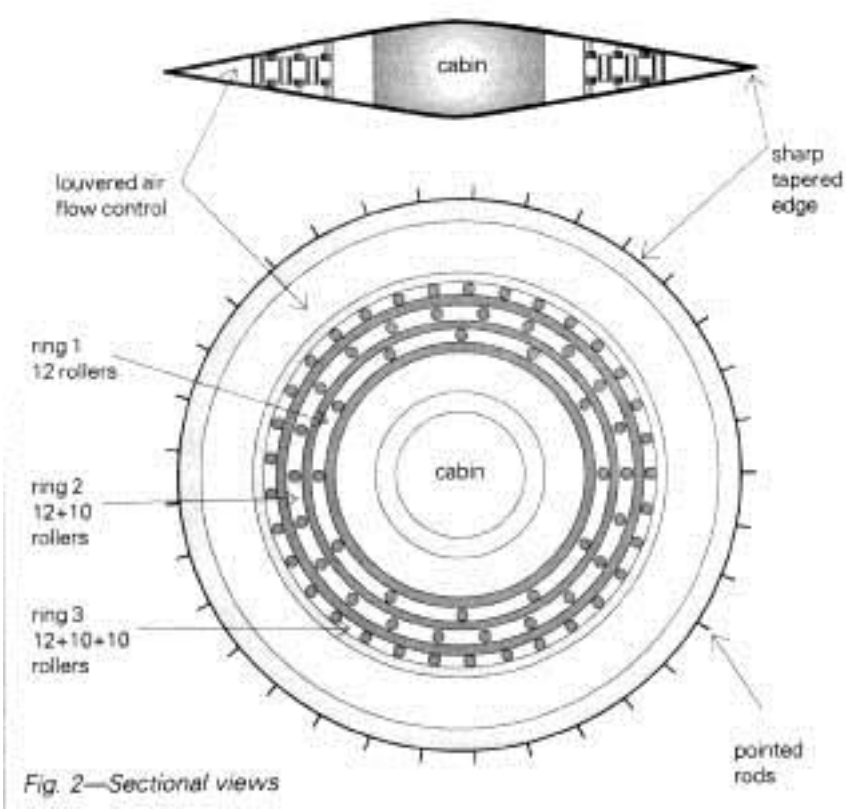
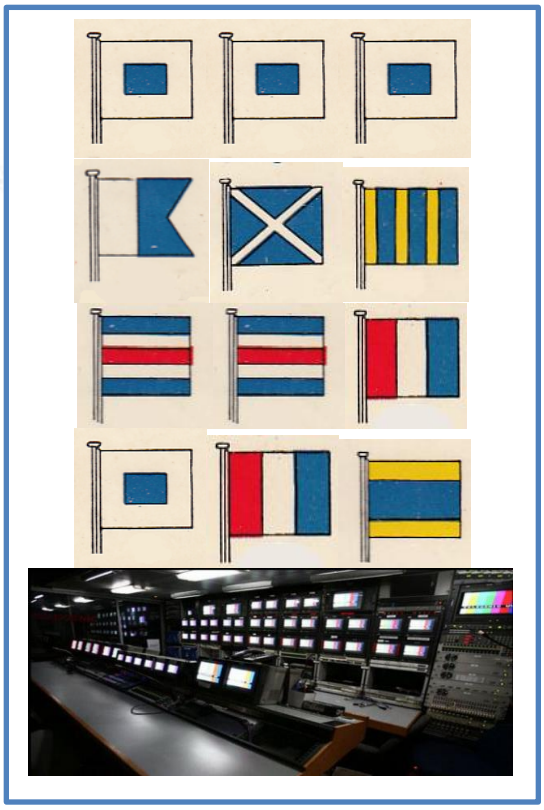


Fig. 2—Sectional views



Searl states that rotating around the nucleus are electrons. **NOTICE** that the **helium** H.2: atom has two electrons. these electrons are extremely light and they travel at fantastic speeds. Searl has always stated that the atom can be compared to the solar system since **1946** with the nucleus representing the **Sun** and the electrons representing the **planets**. Searl points out that the **electrons orbit** the **nucleus** in much the same way that the **planets orbit the Sun**. This also applies to the **S.E.G**. The roller sets act like planets, while the plate acts as the Sun

Searl reminds you that it is interesting to **note** that no one in my days has ever seen an atom because of its small size.
any picture of the atom must be based on **assumptions** rather than **actual observation**. Searl states that **Figure CE 1-3**: represents a very simple picture of the atom based on these **assumptions**. Searl states: as time changes; so do our **assumptions** change and therefore, today, much more complex models of the atom have been proposed. Searl confirms that this also applies to both the **S.E.G**. and the **I.G.V**. as their knowledge base chances; also improves our base knowledge on both subjects.

Searl has and will be showing how our knowledge has changed over time, which therefore, makes his task much more easy, than if he had to do all that research work before he could start on his tasks. That is why Searl has always stated that it's taken centuries and hundreds of real experts to have reached this stage of the **S.E.G. feasibility**. Early **18th** century started the real effort of the **S.E.G**. based upon world records and film archives.

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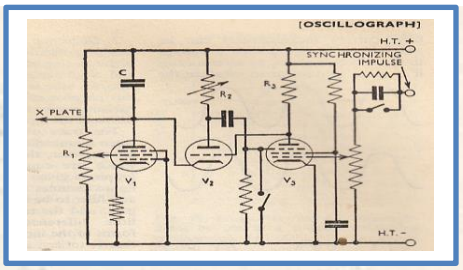
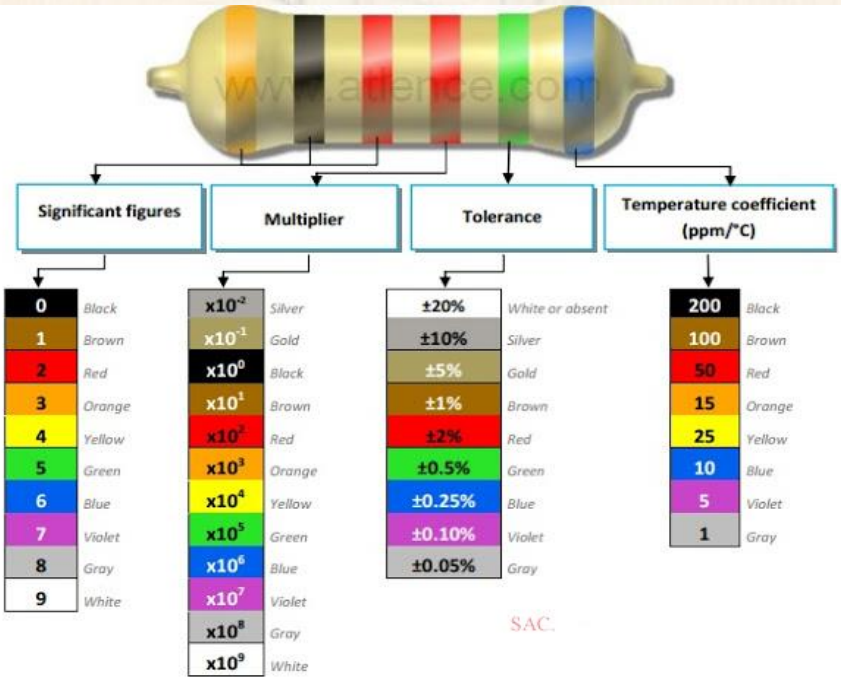
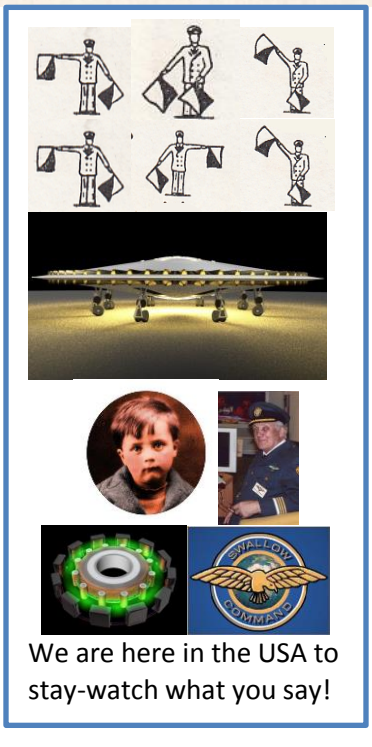


KEY No.	PART No.	QTY.	DESCRIPTION
RESISTORS (composition)			
A1	1-2	1	68 Ω 1/2 w 10% (blue, gray, black, silver)
A1	1-3	1	100 Ω 1/2 w 10% (brown, black, brown, silver)
A1	1-6	1	470 Ω 1/2 w 10% (yellow, violet, brown, silver)
A1	1-35	1	1 MΩ 1/2 w 10% (brown, black, green, silver)
A1	1-40	1	10 MΩ 1/2 w 10% (brown, black, blue, silver)
A1	1-58	1	22 KΩ 1/2 w 5% (red, red, orange, gold)
A1	1-60	1	68 KΩ 1/2 w 10% (blue, gray, orange, silver)
A1	1-80	1	1200 Ω 1/2 w 5% (brown, red, red, gold)
A1	1-90	1	2000 Ω 1/2 w 5% (red, black, red, gold)
A1	1-105	1	10 KΩ 1/2 w 5% (brown, black, orange, gold)
A1	1-123	1	100 Ω 1/2 w 5% (brown, black, brown, gold)
A1	1-137	1	200 Ω 1/2 w 5% (red, black, brown, gold)
A1	1-172	2	1000 Ω 1/2 w 5% (brown, black, red, gold)





We are here in the USA to stay-watch what you say!

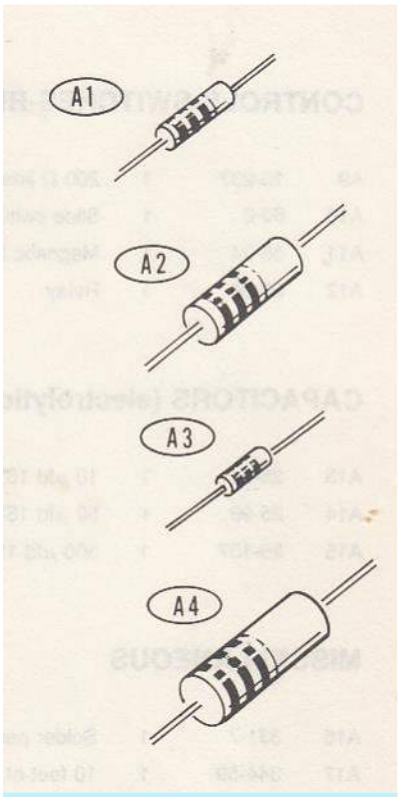
Resistance code chart which is used today: year **2014**.

NOTE: The following resistors are in the envelope labelled: RESISTORS FOR EXPERIMENT 4 or R For Exp 4. Return these parts to the envelope after you have checked them.



A2	1-1-1	1	470 Ω 1 w 10% (yellow, violet, brown, silver)
A2	1-2-1	1	1000 Ω 1 w 10% (brown, black, red, silver)
A3	1-4-12	1	2200 Ω 1/4 w 10% (red, red, red, silver)
A3	1-8-12	1	4700 Ω 1/4 w 10% (yellow, violet, red, silver)
A3	1-10-12	1	15 KΩ 1/4 w 10% (brown, green, orange, silver)
A2	1-11-1	1	10 Ω 1 w 10% (brown, black, black, silver)
A4	1-13-2	1	220 Ω 2 w 10% (red, red, brown, silver)
A3	1-13-12	1	560 Ω 1/4 w 10% (green, blue, brown, silver)
A4	1-20-2	1	100 Ω 2 w 10% (brown, black, brown, silver)
A1	1-24	1	33 KΩ 1/2 w 10% (orange, orange, orange, silver)
A1	1-29	1	220 KΩ 1/2 w 10% (red, red, yellow, silver)
A1	1-43	1	4700 Ω 1/2 w 5% (yellow, violet, red, gold)
A1	1-49	1	22 Ω 1/2 w 10% (red, red, black, silver)
A1	1-54	1	15 Ω 1/2 w 5% (brown, green, black, gold)
A1	1-57	1	2200 Ω 1/2 w 5% (red, red, red, gold)
A1	1-64	1	5100 Ω 1/2 w 5% (green, brown, red, gold)
A1	1-105	1	10 KΩ 1/2 w 5% (brown, black, orange, gold)
A1	1-129	1	4.7 Ω 1/2 w 10% (yellow, violet, gold, silver)
A1	1-139	1	100 MΩ 1/2 w 20% (brown, black, violet)
A1	1-141	1	1000 MΩ 1/2 w 20% (brown, black, gray)

Parts List EE-3101



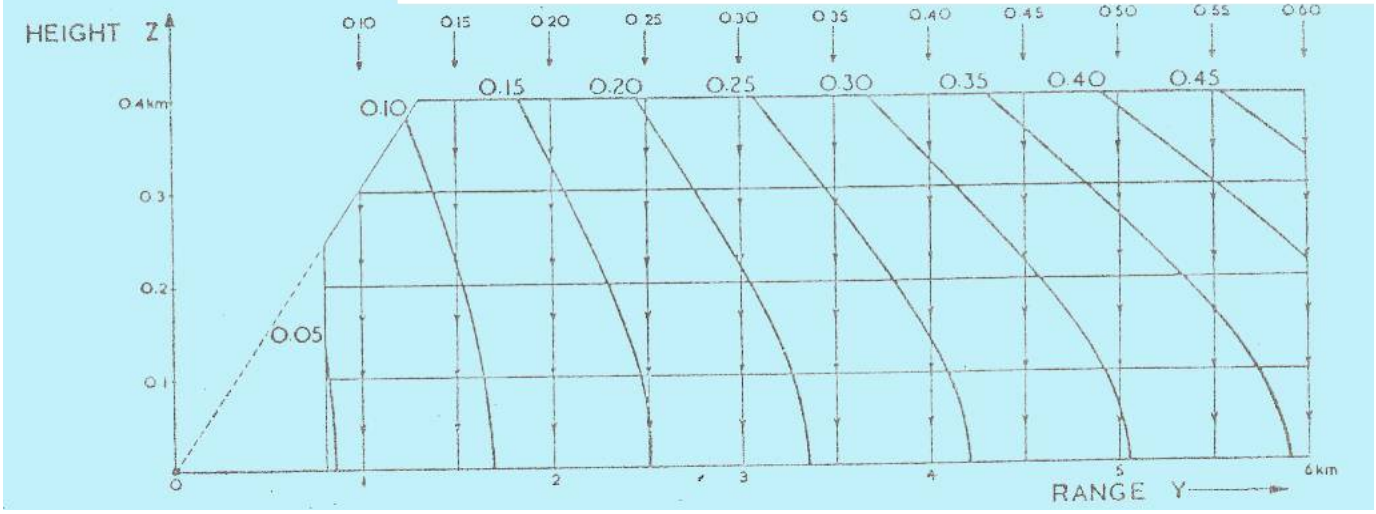
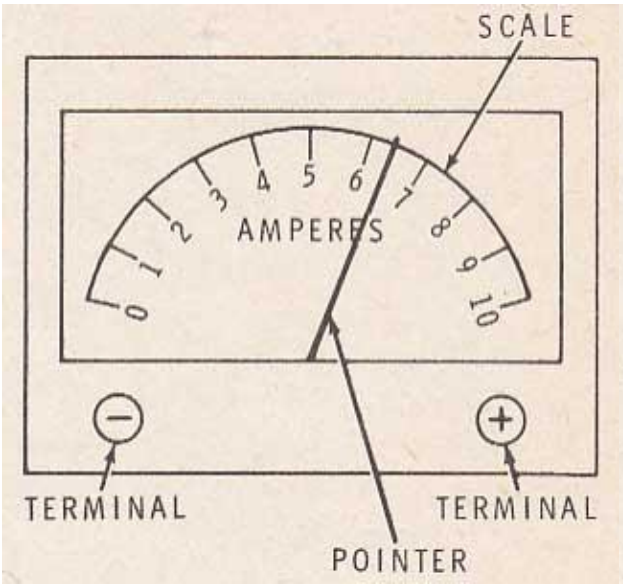


Figure AM4-3: **CAA requirement of understanding**, which Searl will discuss within the document **AERODROME MANUAL PART 3**: **obstruction Restriction, Removal and Marking**.



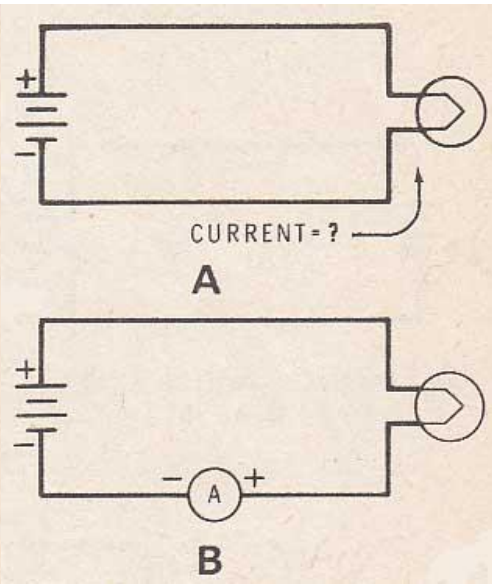




Figure CE 1-21: Ammeter. **Figure CE 1-22: Measuring Current.**

Searl; points out that the name ampere is often shorten to amp and is Abbreviated A. Many times the ampere is too large a unit. In these cases Metric prefixes are used to denote smaller units. The milliamperes (**mA**) Is one thousandth (**0.001**) of an ampere? The microampere: (**µA**) is one Millionth: (**0.000 001**) of an ampere. Searl say that in other words, there Are 1000 milliamperes or 1,000,000 microamperes in an ampere?

We change from amperes to milliamperes by multiplying by 10^3. Thus, 1.7 amperes is equal to 1.7 x 10^3 milliamperes. Also, we can change From Amperes to microamperes by multiplying by 10^6. Therefore, 1.7 Amperes is equal to 1.7 amperes is equal to 1.7 x 10^6 microamperes.

THE AMMETER:

Searl states that this is a device for measuring current. The name **ammeter** is a shortened form of the name ampere meter. **Figure CE 1-21** shows a diagram of an **ammeter**. It has a pointer which moves in front of a calibrated scale. In this figure, the scale is calibrated from **0** to **10 amperes**. The movement of the pointer is proportional to the amount of current flowing through the meter. Therefore, an accurate indication of the amount of current flowing in the circuit is obtained by reading the pointer against the scale. This meter is presently displaying a reading just over **6 amperes**.

Figure CE 1-22A: shows a circuit in which an unknown amount of current is flowing. Searl states that we can measure this current by inserting an ammeter into the circuit as shown in **Figure CE 1-22B**. **NOTICE** that the schematic symbol for the ammeter is a **circle** with the letter **A**. Before the **ammeter** can measure current, it must be placed in the circuit in such a way that the **current**; we wish to measure actually flows through the meter. Searl says that the **ammeter** is connected in **series** with the **circuit elements**.

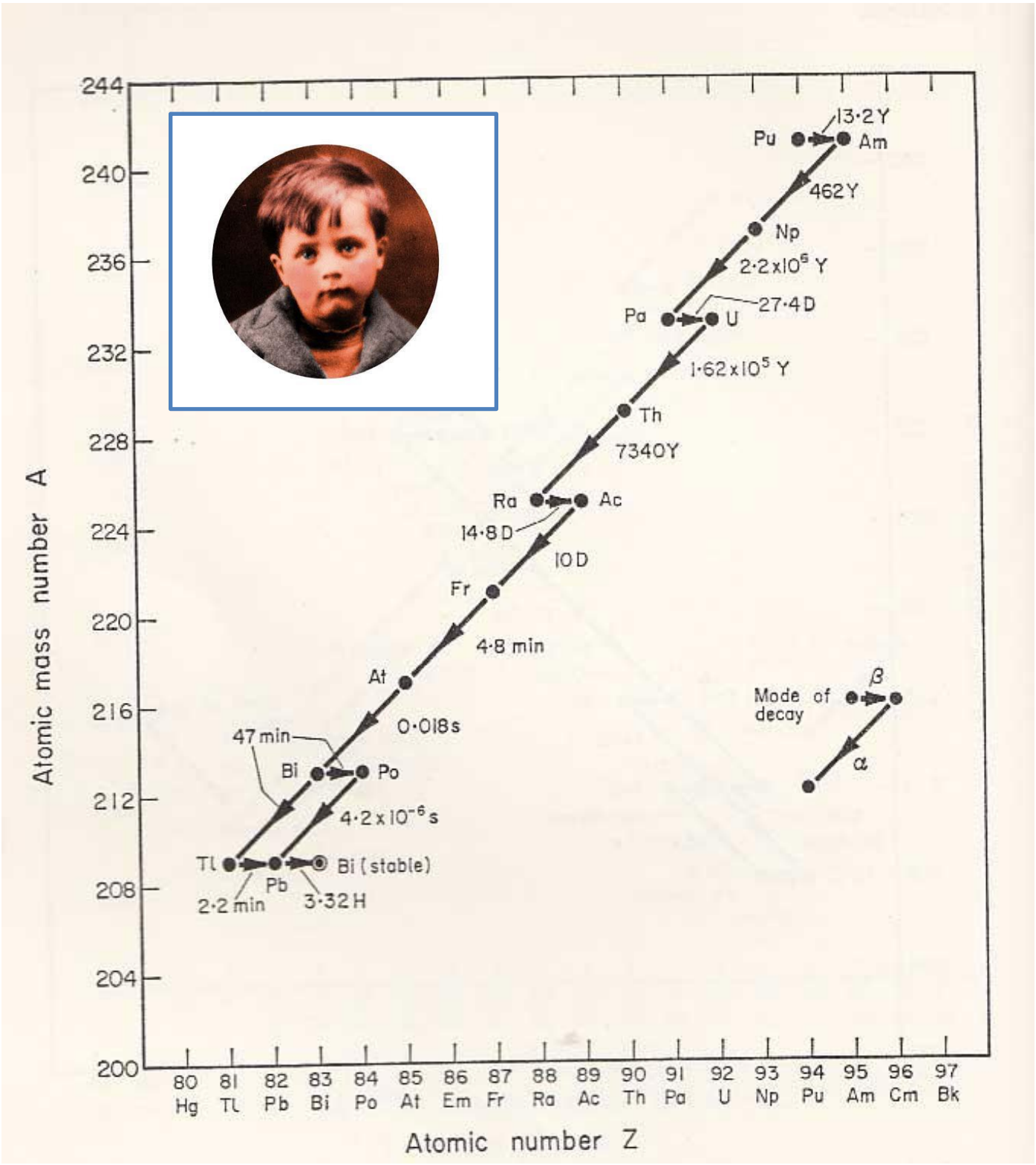


Figure ANP 4-8: The Neptunium series (**A = 4n+1**)

Searl says that incidentally, a circuit like the one shown in **Figure CE 1-22B** is called a **series circuit**. Searl states that a **series circuit** is one in which the **same current flows** through all the elements in one continuous loop. **NOTE** that the highest current that the ammeter in **Figure CE 1-21** can safely measure is **10 amperes**, Searl says that this is called its full **scale reading**, Searl accepts that many current meters are much more sensitive. Some have a full scale reading of 1 milliampere. Others provide a full scale reading with only **50 microamperes** flowing through them.

Searl states that **ammeters;** are delicate instruments and can be destroyed if the **current** applied greatly exceeds the full scale reading of the meter. Searl say that for this reason, we must exercise certain precautions when using the **ammeter**.

Searl states that to protect yourself and the **ammeter**, there is a definite procedure which must be followed when using an **ammeter**. The first step is to insure that the **ammeter** you are using is heavy enough for the job. As mentioned above, if the current rating is exceeded, the meter may be damaged. The second step: which Searl adviser you to do are to remove power from the circuit to be tested. In battery powered circuits this can be done by removing the battery or by disconnecting one of the battery leads. the purpose of this step is to protect yourself from electrical shock as you connect the **ammeter**?

SEARL GLOBAL TECHNOLOGIES – MAGNETISING: DOC-M1-2-37.

••• •–––•–•/ ••• ––––•–•/ ••• ––––•–•/ ••• ––– •–/ •–•–•//

The **motto** Searl is stating here; is never to knock a child down when he/she is trying to understand. All children outside of my ex family; who wish to talk to me, I would stop work and listen to what they had to say and answered them correctly. Should they had asked something which Searl could not answer, Searl would tell them: I do not know that answer I shall try to find out the answer for you, as soon as possible. In the case of Searl family: he was not allowed to educate them, or to look after their health state either.

Clearly Searl had no family. Other people's children became Searl family to teach. But then Searl was in the **wrong** by their mothers that, Searl should not give them such large sums to work out. Strange they love them, because they could do them and fast as well, with no errors. It also **bonded** them to Searl, because Searl would listen to them, which many parents have no time to do. Another issue was when Searl had the child to care for: once it was potty train they want them back again, as the dirty work was done. All Searl undertaking was made with no charge for Searl time. When Searl hear **adults insulting** him, Searl **wonder** if they had any **education at all of worth**.

We shall return to the terms which Searl uses, as to their meaning to him.

CONSTRUCTION OF MAGNETS: Magnets can easily be made by rubbing pieces of steel in a suitable manner with one or two magnets. Searl states that there are **three methods** of doing this, here comes the law of the squares, or more precise that hopscotch game, and the principle employed in each case is the same.

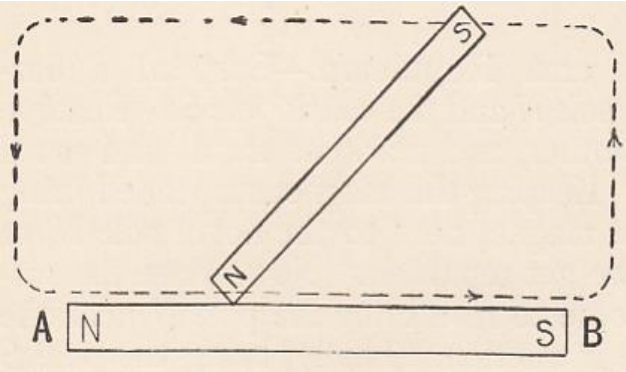


Figure BC 2: In figure **2 AB** is a bar of **steel** to be **magnetized**. Searl states stroke the bar from **A** to **B** with one end of a bar magnet, keeping it inclined as in the position shown. You must follow Searl instruction to be able to obtain the same results as Searl is explaining here.

Searl says; repeat the process many times, always stroking **AB** in the same direction. Each time the end of the magnet arrives at **B**; it should be lifted up and brought back to **A**, at a distance from the steel so that it describes the dotted line in the direction of the arrows as shown in the Figure. Searl says if the **North Pole** end of the magnet is used, the end of the bar where the magnet leaves it will be the **South Pole** and the opposite end a **North Pole**.

WARNING: Searl states it should be carefully observed that the end of the bar, where the stroking pole leaves it, is of the opposite polarity to that pole. Searl notes the comments made by people who either do not understand English, English: otherwise they would not be making **insane statements** about Searl. These books: if you like to use that term; explains in child's language about Searl education and work success. Searl admits that he does not understand some **American English**, which has a completely different meaning.

Searl knowledge 1946-1968: Legal: SEARL NO: 013787346: Legal: SEARLE NO: 013787451.
• • • •– –•–•/ • • • ––– –•–•/ • • • – –•–•/ • • • ––• –/ •– •– •//

METHOD OF DIVIDED TOUCH:

Searl states that in this method the **opposite poles** of two magnets are employed to stroke the **steel bar**. Searl says suppose the end **A** of the bar **AB** is required to be a **North Pole**.

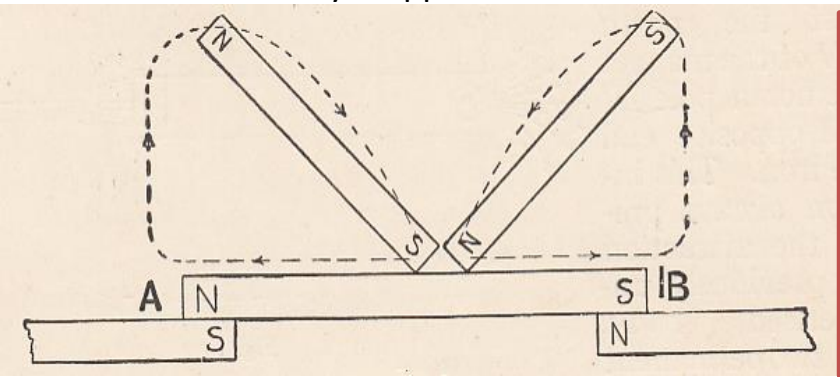


Figure BC 3: Searl says now support the bar on two magnets, with the end **A** resting on a **South Pole** and the end **B** on the **North Pole**, as shown in **Figure BC 3**: Again, Searl ask you to check you have got this right.

Searl states that the two other magnets are then held in inclined positions, with **opposite poles** resting in the middle of the bar. Searl says that the bar is then stroked a number of times with these magnets, starting from the middle and bringing them back at a distance above the bar, as indicated by the dotted lines. Searl states that the steel bar will then be magnetised with a **North Pole** at **A** and a **South Pole** at **B**.



METHOD OF DOUBLE TOUCH:

Searl states that this method is similar to that of the divided touch and is shown in Figure **BC 4**.

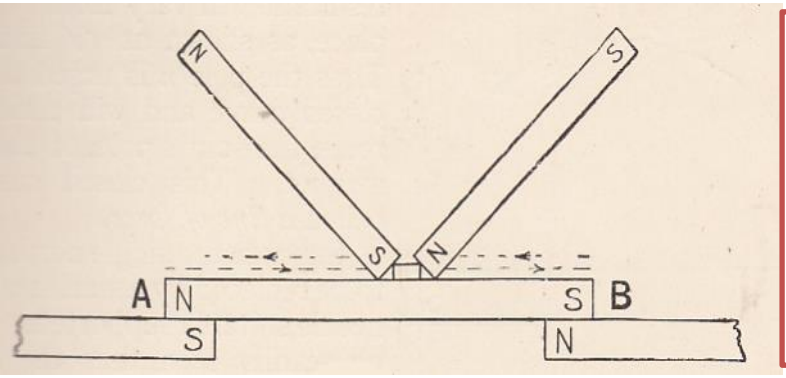


Figure BC 4: Instead of the stroking poles being separated, they are merely kept a short distance apart by means of a piece of wood, both **poles** are moved together to and fro along the bar.

Thus, starting at the middle of the bar, the poles are moved along to **B**, then back along the bar to **A**, then from **A** to **B**, until the surface has been stroked many times, finishing off finally at the middle. Searl quotes, these methods, however, are seldom used in practice, as very powerful magnets can be easily made by means of a **spiral wire** through which an **electric current** is passing. Searl will be treating this method later when he deals with **Electro-Magnetism**.

Searl will now present you with a Programmed Review: to test your memory. As he is aware that some just like to rush through and only read what they want. **NOTE** these **documents** are **education** that covers everything including deep **space exploration** covering the problems of the Homo sapiens structure problems Nudity will be involve within these books

ELECTRICAL FORCE:

Searl have shown that **current** will not flow in a circuit unless an external **force** is applied. In my books I have discussed circuits where the **force** was supplied by **batteries**. But in the case of the **S.E.G**. the **force** is supplied by a **magnetic river**. Within the **structure**, and is not an **outside external force**. Searl showed that the **battery changes chemical energy to electrical energy** by separating **negative** charges **(electrons)** from **positive charges (ions)**. These charges produce the **force** or **pressure** which causes **electrons** to **flow** and do useful work. **NOTE**: That in the **S.E.G**. the **magnetic river** effect creates the **force** which makes the roller sets move. And it is the load drainage that creates the **velocity** of the rollers function. Searl explains that this **force** is given several different names that are used more or less interchangeably. Searl suggest let's examine the three most popular names and see what each name implies.

Electromotive Force (EMF):

One popular name is **electromotive force** which is **abbreviated emf**. This name is very descriptive since it literally means a **force** which moves **electrons.** Thus, **emf** is the **force** or **pressure** which sets **electrons** in **motion**. This **force** is a natural result of **Coulomb's Law.** Searl trust that you can follow what he is stating here.
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Searl states that you will recall that **Coulomb's law** states that **like charges repel** while **unlike charges attract.** You recall that the **battery**, by chemical action, produces a **negative charge** at one terminal and a **positive charge** at the other. Searl remind you that the **negative charge** is simply an excess of **electrons** while the **positive charge** is an excess of **positive ions**. Searl states that if a closed circuit is connected across the **battery** as shown in Figure 2.1A, a path for **Electron flow** exists between the **battery** terminals. **Free electrons** are **repelled** by the charge on the **negative terminal** and are **attracted** by the charge on the **positive terminal**. Searl explains that these two opposite charges exert a **pressure** which forces the **electrons** to flow. Thus, the **force** or **pressure** is the results of the **attraction** of the **unlike charges**. To summarize, **emf** is the **force** which sets **electrons** in **motion** in a **closed circuit**.

The **S.E.G**. uses the **force** of the switching on and off of the **magnetic river**. In other words the **positive** and **negative magnetic** action generates the **force** by which the **roller sets actually moves**. As the **load increases** the **magnetic field increases** in the **frequency** of its **function** of **on** and **off action**. Which is a **natural function inherited** in the **design** of the **S.E.G**. But in this case; it is an **open circuit**, and **not a closed circuit**. As **electron replacement** must be available at all times from whatever source that is available.
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Potential Difference:

Searl states that another name for this **force** is **potential difference**. This name is also very descriptive. It describes the **characteristics** of **emf** in an **open circuit**. This is why when I speak about the S.E.G. I always say **potential difference**. EMF is the **force** which causes **electrons** to move as shown in Figure 2.1A. Searl states: however, consider the situation shown in Figure 2.1B. Here, **electrons** cannot flow because the switch is **open**. Nevertheless, the **battery** still produces the same **pressure** or **force** as before. This also applies to the S.E.G. if the products are all switch off, then no **electrons** can move, even though the S.E.G. still producing the same **pressure** or **force** as before. But: is now running at an ideal speed. Which is a natural function generated by the sum of the square which it was manufactured from.

Thus, the **potential** for producing **current flow** exists even though no **current** is presently flowing. As used here, **potential** means the possibility of doing work. If the switch is closed, **current flows**, the **lamp lights**, and useful work is done. Therefore, whether a **batter**y is connected into a **circuit** or not, it has the **potential** for doing work. This also applies to the **S.E.G**. Searl trust that this is helpful to the beginner.

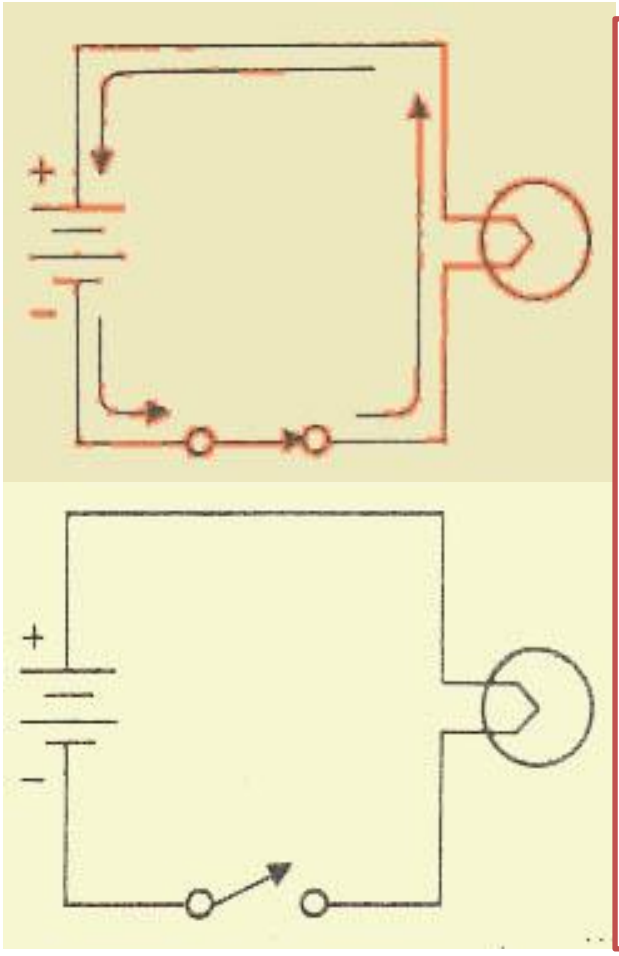

Figure 2.1A: **EMF** causes electrons to flow in closed circuit.

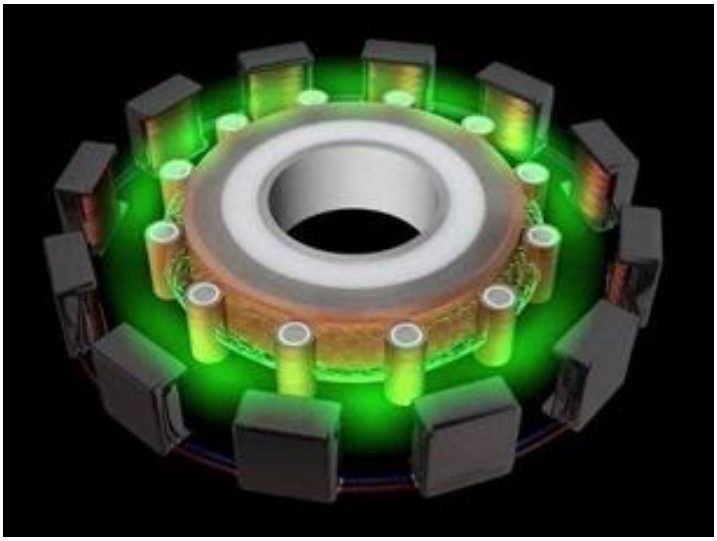

Figure 2.1B: **Potential** for current flow exists even though there is no current. The S.E.G. is precisely the same functions. I should know as I am the inventor Prof. John Roy Robert Searl. Who is determining to give birth to this baby in the United States or China!

Figure 2.1: Emf and potential difference.

Searl states that actually, any **charge** has the **potential** for doing work. For example, it can move another **charge** either by **attraction** or **repulsion**. Even a **single electron** can **repel** another **electron**. Searl points out that if one **electron** moves as the result of the action of the other **electron**, some small amount of **work** is done. In the **battery**, Searl are concerned with two **different types** of **charges** rather than a single **charge**. Searl points out that the **electrons** at the **negative terminal** are straining to rush to the **positive terminal** and cancel out the **positive charge** there. In the same way, the **positive ions** at the other **terminal** are straining to **draw** the **electrons**. Searl call this **force potential difference**. It is the **potential** for doing **work** that exists between **two different charges**.

Searl states: the amount of work that can be done must be related in some way to the **characteristics of the charges**.



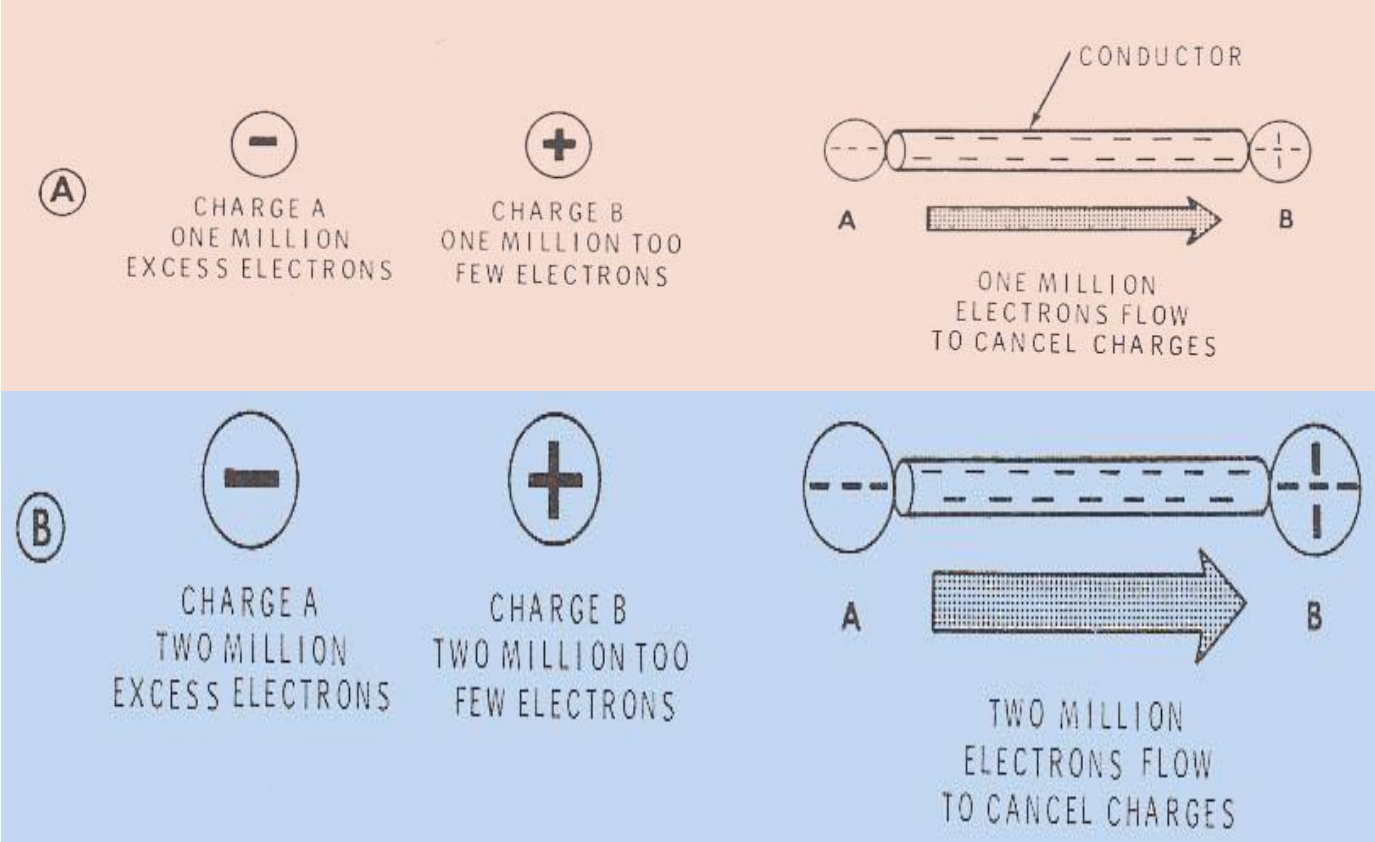

Figure 2.2: Static charges have the potential for doing work.
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Searl can illustrate this point by considering some **static charges**. **Figure 2.2A** shows a small **negative charge** separated from a small **positive charge**. Searl suggest let's assume that **charge A** has an excess of **one million electrons** while **charge B** has a **deficiency** of **one million electrons**. If a conductor is connected between the **two charges**, **electrons** will flow from the **negative** to the **positive charge**. The work done here is the moving of **electrons**. To cancel the **two charges, one million electrons** will flow from **charge A** to **charge B**.

Searl says now consider what happens if the **two charges** are doubled as shown in **Figure 2.2B**. Here **charge A** has an **excess** of **two million electrons** while **charge B** has a **deficiency** of **two million electrons**. If a conductor is connected between the **two charges**, then **two million electrons** will rush from **charge A** to **Charge B**. Thus, twice as much work is done.

Searl however, states that the magnitude of the charges is not the important consideration. As Searl points out, that it is the difference between the two charges that is important.

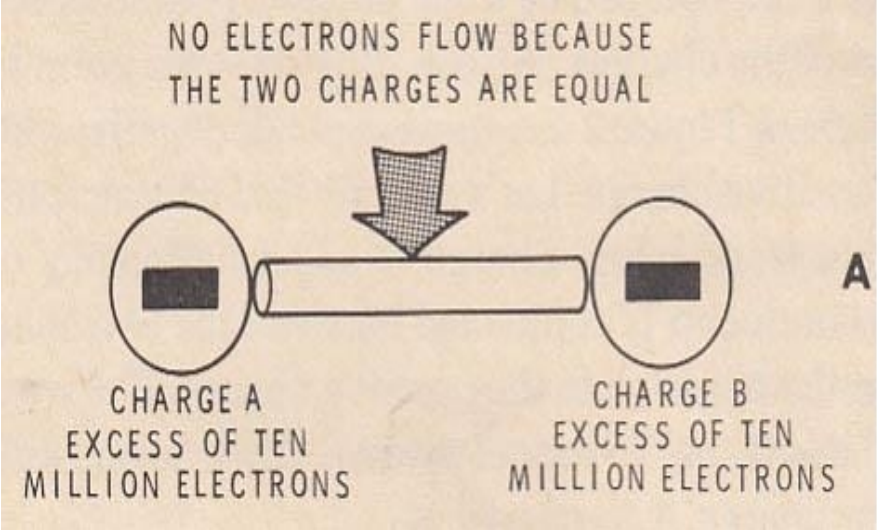

Figure 2.3A: No potential for doing work exists between equal charges
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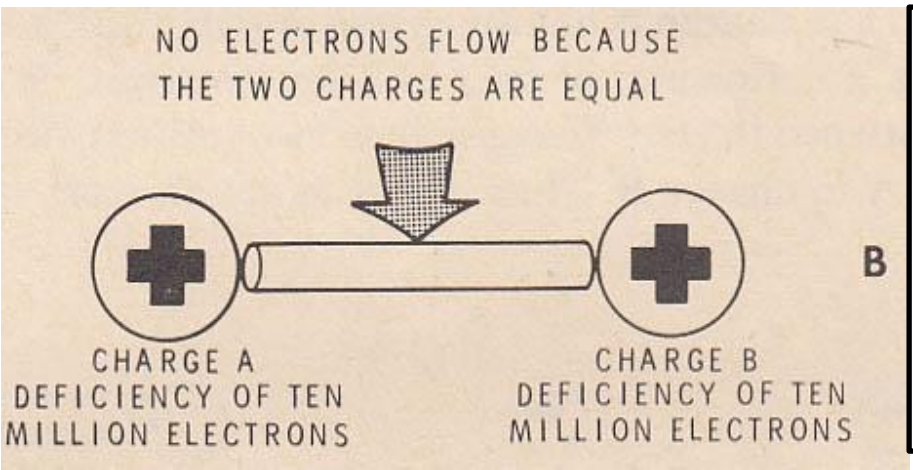



This is my world, the world of equipment that acts as your eyes.

Figure 2.3B: No potential for doing work exists between equal charges. **NOTE**: that **Figure 2.3 illustrates** that **no work** can be done if **both charges** have the **same polarity** and **magnitude**. **Figure 2.3A: two charges** are shown. Each has a **negative charge** caused by an excess of **ten million electrons**. How much work is done if these **two charges** are connected by a conductor? Searl states that the answer, of course, is that **no work** is done. Because the **two objects** have exactly the **same charge**, **no electrons** can flow from one to the other. Thus, there is **no potential** for doing work. Searl should know as he was an **electrical engineer apprentice**, at **British Electrical Rewinds Ltd. London, UK**.
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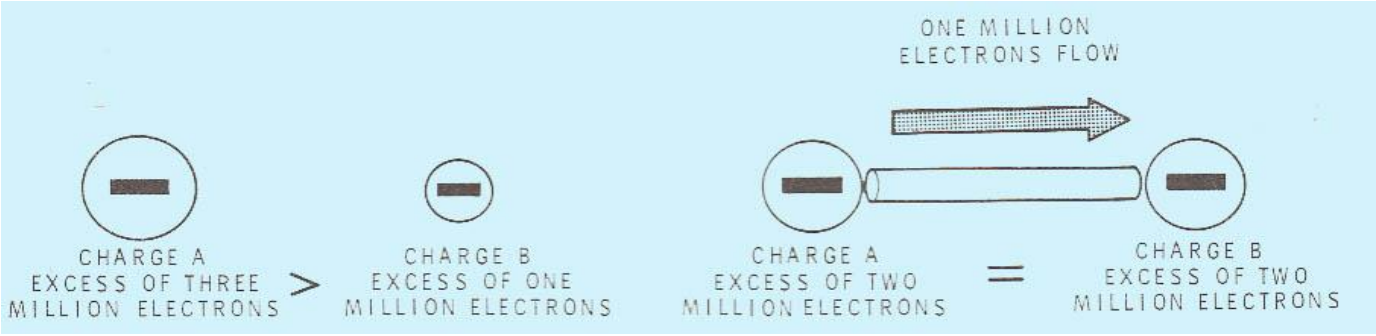
Figure 2.3B: shows that the same is **true** for **equal positive charges**. The **potential** to move **electrons** exists between any **two unlike charges**. That is, when **two charges** are **different**, **electrons** will flow from **one charge** to the other if given the chance. **Charges** can differ in two ways. First, they can be of **opposite polarity**. This simply means that one is **positive** and the other is **negative** as shown in **Figure 2.2**: Second, they can have **different magnitudes**. For example **2.4A** shows **two charges** have the **same polarity** (**negative**) but have **different magnitudes**. **Charge A** is more **negative** because it has more **excess electrons.**



A **B**

Figure 2.4: A **potential** exists between **two charges** of the **same polarity** if they have **different magnitudes**.

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Than charge B. If a conductor; is connected between the **two charges** as shown in **Figure 2.4B**: **electrons** will flow from the **greater negative charge** to the **less negative charge**. The number of **electrons** will be exactly the right amount to **equalize** the **two charges**. In Searl example **charge A** originally has **three million excess electrons** while **charge B** has only **one million excess electrons**. To **equalize** the **two charges**, **one million electrons** will flow from **charge A** to **charge B**. **Electron flow** ceases as soon as the **two charges** become equal. Notice that the **direction** of current flow is from the more **negative charge** to the **less negative charge.** Unfortunate: a private business meeting, which I cannot disclose here, but may show photos of a couple of the **4** who came to see the demonstration of the **S.E.G**. and tour of our engineering complex. The meeting went **perfect absolutely** after **testing** the **force**, which **clearly surprised all 4 of them**.

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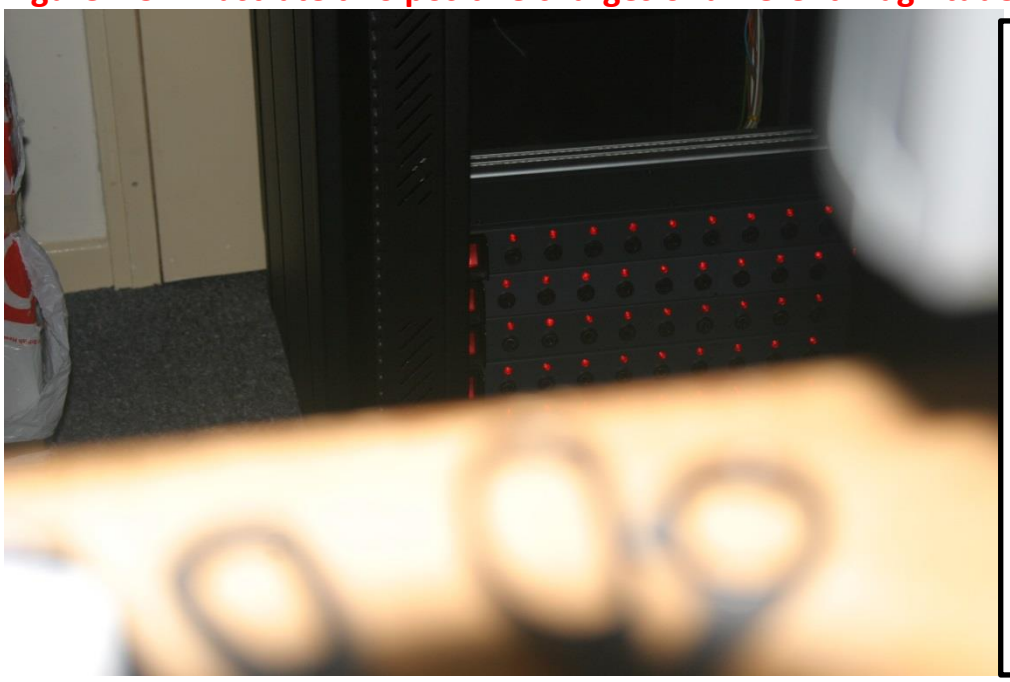
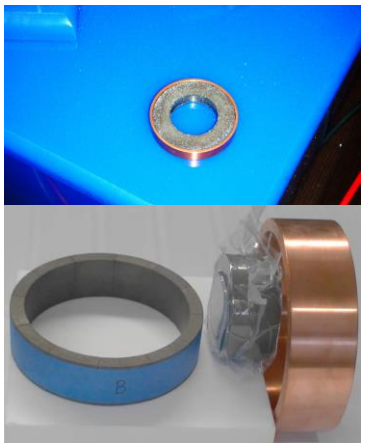
Figure 2.5A illustrate two positive charges of different magnitudes.





Impossible say the experts – really? Searl don't think so – he should know, after all he is doing it, not them!

Start to construct the power distribution unit for the equipment.

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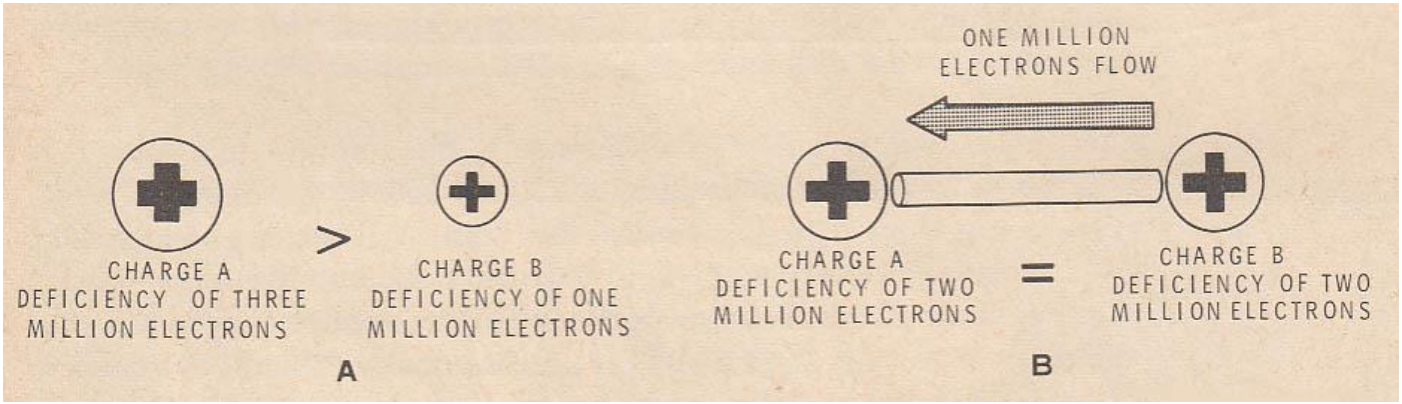

Figure 2.5: **Electrons** flow from the **less positive** to the **more positive charge**.

A **potential** exists here because **electrons** will flow if given a chance. **Figure 2.5B**: shows a conductor connecting the **two charges**. NOTICE: Those **electrons** will flow from the **less positive** (**more negative**) to the more **positive potential**. Again, the number of **electrons** which flow is the amount necessary to exactly balance the **two charges**. Searl hopes that this discussion is interesting to you and helpful.

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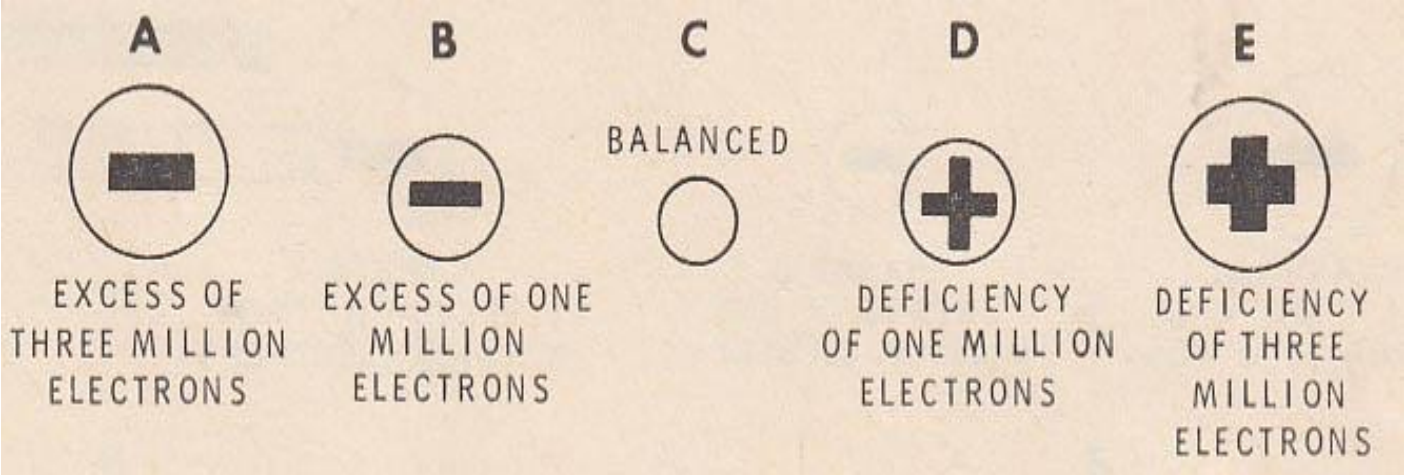

Figure 2.6: **Five Levels** of **charge** at various levels of charge. Searl says that since **no two** are at the same charge level, a **difference of potential exists between any two terminals**. Consequently, if a conductor is placed between any two terminals, **electrons** will flow until those **two charges** are balanced. **Notice** that **terminal C** has **no charge**. That is, it contains the same number of **electrons** as **positive ions**. Nevertheless, if **terminal C** is connected to any other terminal, **electrons** will still flow. If it is connected to one of the **negative terminals**, **electrons** will flow into **terminal C**. If it is connected to one of the **positive terminals**, **electrons** will flow from **terminal C**. Searl states remember that **electrons** always flow from the **more negative** to the **more positive terminal**. **This is important to understand the S.E.G. functions, as Searl is coming to that issue.**
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VOLTAGE:

Searl informs you that another term which is often used interchangeable with **emf** and **potential difference** is **voltage**. Searl states, however, strictly speaking there is a **difference between voltage and emf**. **Voltage is the measure of emf or potential difference**. For example, the battery in your **car** has an **EMF** of **12 volts**. A small **S.E.G**. could replace that. The **emf supplied** by wall outlets is **115 volts** while that required by most electric stoves is **220 volts**. In FACT, such a power unit is being developed in the **U.S.A**. Termed the **S.E.G** that is being planned for an **emf** of **240 volts** with a **capacity** of **15Kw**. A **large screen colour TV receiver produces** an **emf** at one point which may be **25,000 volts** or **higher**. **High tension power lines** often have a **difference of potential** as high as **500,000 volts**. A **S.E.G**. appears feasible that would match that **emf output**, but it would be **extremely heavy** and **costly** to **construct**, but the **cost would be reasonable as no fuel cost or maintenance** would be required, and it would be expected to run **24 hours a day 7 days a week** nonstop for hundreds of years. Searl has no doubt such units will appear but not in his lifetime now. Of course there is no reason why **S.E.Gs** cannot be design for any **emf** that is required.
Page 465©

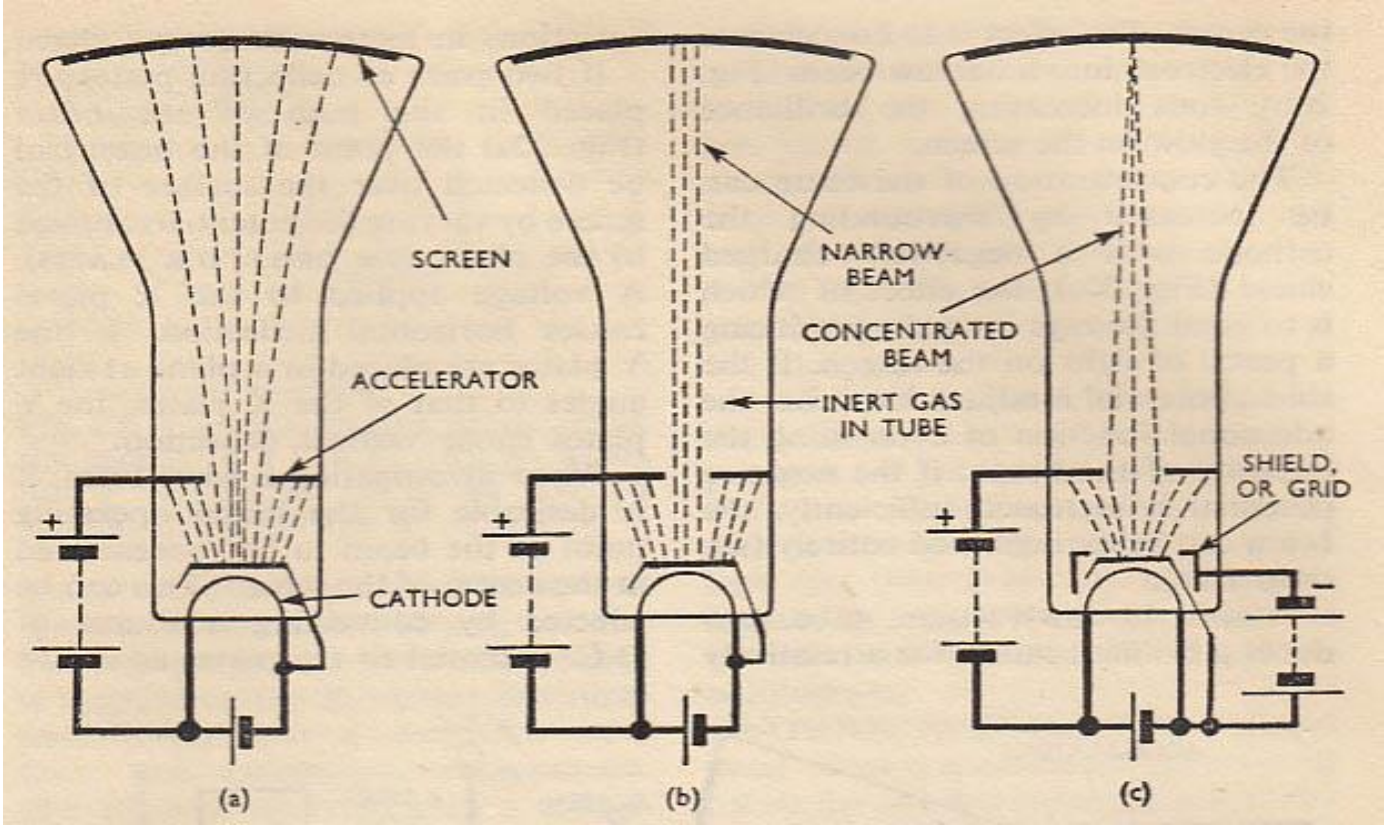

Figure 101.20: This was my world: **cathode Ray Tube**, from the **old 9 inch** right through to the big boys of the **2010**. Principles of electron emission in a cathode ray tube: (a) a proportion of the electrons passes through the aperture in the positively charged accelerator to impinge on the fluorescent screen. In a soft-vacuum tube focusing is achieved (b) by the release of positive ions from an inert gas, and (c) by the additional effect of a negatively charged shield which surrounds the cathode.

The unit of emf or potential difference is the volt. Searl states that at this point it is difficult to visualize exactly how much emf constitutes one volt. Searl states; however, as you work with electronics, this point will become clearer. Searl quotes that one volt is the magnitude of emf which will cause one unit of energy or work to move one coulomb of charge from one point to another. Searl reminds you that the **metric unit of energy** or work is the joule. Searl points out that this unit is equally difficult to visualize since it is defined in other unfamiliar terms such as **newtons.** Searl is please however, **joules** can be expressed in the more familiar English units. For example, **one joule** is equal to **0.738 foot-pounds**. Searl says that a **foot-pound** is the amount of work required to lift **one pound one foot**. Thus, a joule is approximately the amount of work required to lift ¾ of a pound one foot off the ground.

Searl says using this information, let's return to the volt. One volt is the **emf** required to cause one joule of work to move one coulomb of charge (**6.25×10^{18} electrons**) from one point to another. Some of you may wonder what **10^{18} means. = 1000000000000000000.** There is nothing wrong if you never knew that, nor did I before I learnt what that meant. Shortly; I shall give you some questions to answer, to show that you studied the subject.

Searl says, to look at it another way, when the movement of **one coulomb** of **charge** between **two points** produces **one joule (or 0.738 foot-pounds)** of work. The **emf** between the **two points** is **1 volt**. Later on, after Searl have discussed **resistance**, Searl will define the **volt** in terms of **current** and **resistance.** It will be much easier to visualize then.

The abbreviation of **volt** is **V**. Thus, **1.5 volts** is abbreviated **1.5V**. As with **amperes**, metric prefixes are attached to indicate smaller and larger units of **voltage**. Thus, **one millivolt** equals **1/1000 volt**, while **one microvolt** equals **1/I,000,000 volt**. Also, **one kilovolt** equals **1000 volts** while **one megavolt** equals **1,000,000 volts**.

PROGRAMMED REVIEW:

This **review** is **presented** in a **programmed instruction format**. It will enhance your understanding of the material presented in this section. Searl ask you to read each of the numbered lines carefully and fill in the missing blanks at the end of each line.

No cheating, asking your friend to answer them for you, just because you got a date.

QUESTIONS:

1 A force or pressure exists between charges as a result of Coulomb's law. This law states that like charges repel and unlike charges attract. Electrons have a negative. Consequently, they are repelled by negative charges and are attracted by _____ charges.

I have to admit that I am utterly confused who actually prove Coulomb's law. One official statement gives – 1850 – 1855 = 5 years there is no way a child could had defined such a law. Another statement quotes Charles Augustin de Coulomb (1736 – 1806) which means he was dead when that law was accepted. He was a French physic and inventor at least that make sense; if he is the right man.

2 The force which causes electrons to move is given several names. One name is electromotive force and is abbreviated _____

3 Although this is the force which causes electrons to move in a circuit, the force can exist without the movement of electrons. For example, a battery which has been removed from a circuit still has an emf between its terminals. Therefore, emf can be thought of as a potential for producing the movement of electrons. Because of this, another name often given to emf is _____ difference.

4 Often the name potential difference is turned around and called a _____ of potential.

5 A difference of potential exists between any two charges which are not exactly alike. Figure 2.6 shows five terminals each of which is at a different potential of state of change. Terminal A has the most negative charge while terminal E has the most positive charge. Therefore, the greatest difference of potential exists between terminals A and _____.

6 If a conductor is connected from charge A to charge E, electrons will flow from A to E until both charges are neutralized. Therefore, _____ electrons will flow from A to E.

7 It is important to remember that even an uncharged body has a difference of potential with respect to a charge body. Thus, although terminal C is electrically neutral, it is more negative than terminals D or E. Also terminal C is more positive than terminals ____ and ____.

QUESTIONS:

8 An emf exists between two unequal negative charges. For example, charge A is more negative than charge B. Or stated another way, charge B is more _____ than charge A.

9 Consequently, if a conductor is connect from A to B, electrons will flow from the more negative terminal to the more positive terminal or from _____ to _____

10 A difference in potential also exists between two unequal positive charges. For example, Charges D and E are both Positive but charge _____ is more positive.

11 An emf exists between these two charges. Emf is measured in volts. Thus, voltage is a measure of potential difference or _____

12 A volt represents o0ne joule of energy (or work) per coulomb of charge. Don't worry that this magnitude of emf is difficult to visualize. As you continue your study in the units that follow, you will develop a better understanding of this quantity. As you will see later, the volt has a very simple relationship to the ampere.

PRODUCING EMF:

Emf is produced when an **electron is forced from its orbit around the atom**. An **electric pressure** exits between the **free electron** and the **resulting positive ion**. Thus, any form of energy which can dislodge electrons from atoms can be used to produce an emf. In no case is energy actually created. It is simply **changed to electrical energy** from other forms. For example, a battery converts chemical energy to electrical energy while a generator converts mechanical energy to electrical energy.

There are **six common methods of producing emf**. Each has its own applications. Searl say let's briefly discuss each of these.

MAGNETISM:

This is the most important method of producing electrical power in the world today. But in **1946**, that was not the case. The first encounter with electrical energy was at **Russell Cotes Navy School**, in **1944**. At our present level of **technology** (**1974**), it is the only method which can produce enough electrical power to run an entire city. Searl accepts that **well over 99 percent of all electrical power** is produced by this method. Remember that searl started his study on what his dreams meant. Thus by the end of **1946** had a good **understanding** as to they **meant**. Without knowing that **magnetism**, which he chose was the **best solution**, for the **investigation** he was about to embark upon.

The principle behind this technique is quite simple. When a **conductor is moved through** a **magnetic field**, an **emf is produced**. This is called **magnetoelectricity**. The **force** of the **magnetic field** and the movement of the conductor provide the energy necessary to **free electrons** in the **conductor**. If the conductor forms a **closed loop**, then the **electrons** will **flow through the conductor**.

S.E.G. consists of **66** roller sets constructed of **528 segments**, made up from **2,112 materials**, and **462 layers** which are **not magnetic** which in **each roller set** there are **8 magnetic layers** = **528**. As each roller set are **complete circular rods**, they must be a closed **conductor system**, while at the same time they are an **open system** in **function**. Any roller jerks, then there must be an **emf generated**.

To construct a S.E.G. you need a mass created from some materials. But what materials which you are intending to use? What quantise for the materials selected? Let us assume that the following materials are available for our selection – (1) Mb-Hi: for this material you decide to use 5 grams, (2) C-Ti: for this material you decide to use 25 grams. (3) Nd-Ni: for this material you decide to use 30 grams. And finally – (4) V-W: for this material, you decided to use 50 grams.

Now that you have made your selection of **materials** to create the object = MASS. Now what are your intentions? What is the **power output** which you seek to produce? First problem how does this **generator function**? Does it meet **Sir Isaac Newton's rules**? What does **Sir Isaac Newton's second law** states?

I like to point out a simple experiment, which was done on BBC film studies: One actor dress up to look like an ordinary man, standing on a busy street in London. Making the following offer "£10 note, for one of your £1 note" In 12 hours not one person accepted his offer. WHY? Because they thought that those £10 notes were faked. That is precisely what people think of the S.E.G. because the energy is free it has to be a con, as nothing is free in this world – yet there is – AIR – WATER in some areas are still available free.

So you decide that you're going to make a **S.E.G**., or by any other name; should look like the **S.E.G**. That is; it contains rollers running around a magnetic material as a perfect circle; but how? What diameter will your roller be? What length will your roller be? All this will be vital **information**, for success. Not only that; there is another problem which is what will be the diameter of the plate, upon which those rollers have to operate? Plus the fact that its height has to be set correct for the rollers to function if all other characteristics are correct. Then there is the magnetiser, a vital component, just not any old one will do.

Sir Isaac Newton made the **position absolute clear** within his **second law**, to which the **S.E.G. meets each condition** as **defined by Sir Newton's second law**. Which: has nothing to do with **heat engines**, as you people apply. It is all about **forces acting** and their state either 1 or 0, yes the force can be greater than >0. In the S.E.G. the force = 5 starts the other forces to switch from = 0 to = 1 once momentum switches from = 0 to = 1, most other forces switches to = 0, except velocity and direction which remains at = 1 as long as drainage = 1. Once the drainage switches to = 0, then v = 0 as the S.E.G. **is now ideal and** runs at cruising speed which is control by the sum of the square which it has been constructed from. This frequency blocks the S.E.G. from stopping. As: I have no need to repeat the Second law of Sir Isaac Newton, as I have already done that here in this document.

Searl knowledge: 1946-1968: Legal: SEARL NO: 013787346: Legal: SEARLE NO: 013787451.

$$r(i) = \frac{\sum_{j=1}^{120} \left[(\text{thisline}(i+j) - \overline{\text{thisline}}) * (\text{storedcoarse}(j) - \overline{\text{storedcoarse}}) \right]}{\left[\sum_{j=1}^{120} (\text{thisline}(j) - \overline{\text{thisline}})^2 * \sum_{j=1}^{120} (\text{storedcoarse}(j) - \overline{\text{storedcoarse}})^2 \right]^{1/2}} \quad (2.1)$$

$$r(i) = \frac{\sum_{j=1}^{120} (\text{thisline}(i+j) * \text{storedcoarse}(j)) - \text{nscans} * \overline{\text{thisline}} * \overline{\text{storedcoarse}}}{\left[\left(\sum_{j=1}^{120} (\text{thisline}(j))^2 - \text{nscans} * \overline{\text{thisline}^2} \right) * \left(\sum_{j=1}^{120} (\text{storedcoarse}(j))^2 - \text{nscans} * \overline{\text{storedcoarse}^2} \right) \right]^{1/2}} \quad (2.2)$$

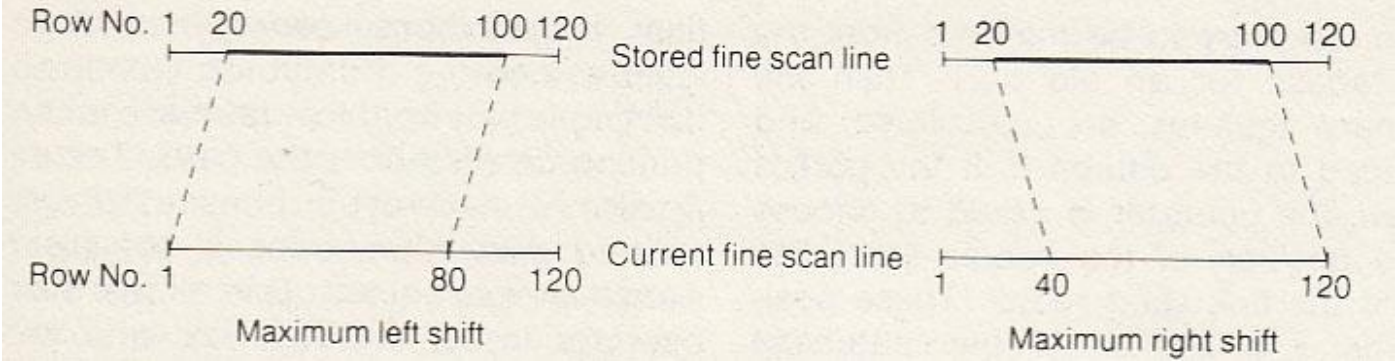

Figure OU2.13: Offset limits of fine scan correlation: This is **one of my studies** with the **Open University**, **thanks to the BBC program** which brought them to my attention. I may have taken these studies a bit early, but then I never expected to be **robbed by my brother** and **his gang**, which has **delayed progress**, add to that **problem materials** and **equipment** has also **changed, including their costs**.

The toaster and electric stoves are examples where electricity is used to produce heat. Searl states when current flows through a wire, the wire is **surrounded by a magnetic field**. This **magnetic field** is put to practical use in **motors, load speakers**, and **solenoids**. Searl says recall that a crystal produces a voltage when it is bent or twisted. Searl informs you however, when a voltage is applied to a crystal, the structure bends or twists. Thus, emf can produce **pressure**. Searl states: finally, emf can produce **chemical activity**. An example of this is the **electrolysis of water**. Searl states that when an **electric current** flows through **water**, the water is broken down into its component parts of **hydrogen H** and **oxygen O 8**. Searl points out that **electroplating** is another example of **chemical activity** caused by **electricity**, Searl should know, he has done **electroplating** at Vanderviel.

The time has now arrived to test what you can remember from this last section. Searl states: remember that I give no answers in this document to these questions, as you should be able to answer them without any problems. If, for any reason you do not understand the question, the only option for you is to re-study this section, until you grasp its contents.

1609: Telescope: Galileo was not the first, but he did improved on the system, so imagine was the correct way up, even if it was burry. He managed to study the stars etc.
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Searl states that as with most other forms of energy, **heat** can be converted directly into electricity. The device for doing this is called a **thermocouple**. Searl states that a **thermocouple** consists of two dissimilar metals joined together. A typical example is **copper Cu 29** and **zinc Zn 30**. Searl has shown **that copper Cu 29** will readily give up **electrons**. This is especially true when **copper Cu 29** is heated. As shown in **Figure 2.12**: the **free electrons** from the **copper Cu 29** are transferred to the **zinc Zn 30**. Thus, the **copper Cu 29** develops a **positive charge** while the **zinc Zn 30** develops a **negative charge**. Searl says, since more heat will cause more electrons to transfer, the charge developed is **directly proportional** to the heat applied. Searl points out that this **characteristic** allows the **thermocouple** to be used as a **thermometer** in areas which are too hot for **conventional thermometers**.

Searl points out that a **specific voltage** across the **thermocouple** corresponds to a **specific temperature**. Therefore, the **voltage** can be measured and compared to a chart to find the **corresponding temperature**. The process by which **heat** is converted directly to electricity is called **thermoelectric effect**.

Effects of Emf:

Searl has shown that an **emf** can be produced by **light**, **heat**, **magnetism**, **pressure**, and **chemical activity**. Searl states that it is interesting to note that the reverse is also true. That is, an **emf** can produce **light**, **heat**, **magnetism**, **pressure**, and **chemical activity**. The **light bulb is an application of light produced by Electricity.**
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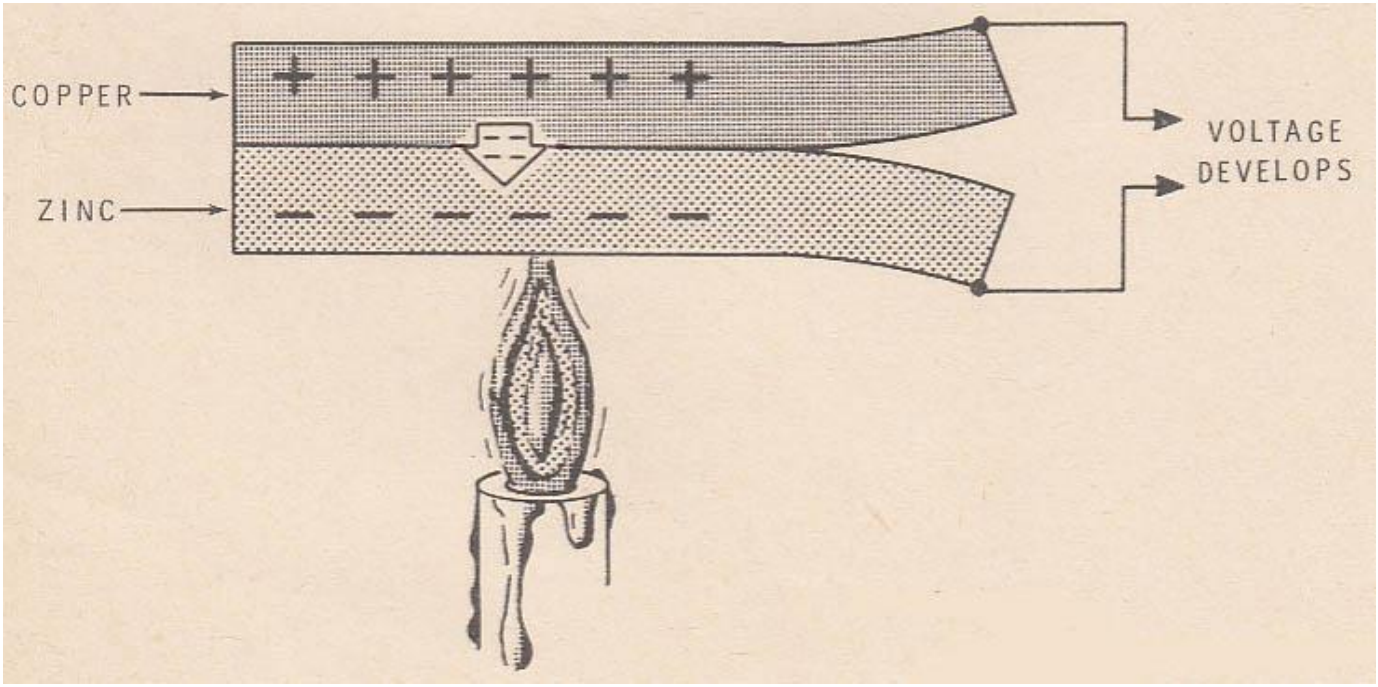
HEAT:



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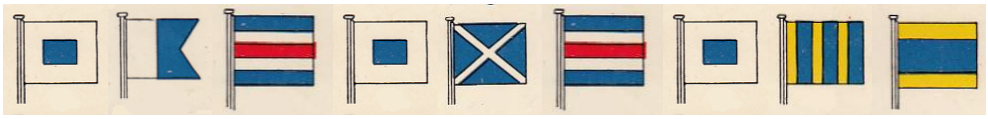
PRESSURE:



Searl understands that a **small electrical charged developed** in some **materials** when they are **subjected to pressure**. Searl informs you that this is referred to as the **piezoelectric effect.** It is **especially noticeable** in **substances** such as **quartz: tourmaline**: and **Rochelle salts** all of which have a **crystalline structure**. **Figure 2.11**: **illustrates** how the **charge** is **produced**. In the normal structure negative and positive charges are distributed so that no overall charge can be measured. Searl says, however, when the material is subjected to pressure, electrons leave one side of the material and accumulate on the other side. Thus, a **charge is developed**. When the **pressure is relieved**, the charges are again distributed so that the **net charge disappears**.

Searl understands that this effect is put to good use in **crystal microphones**, **phonograph pick-ups**, and **precision oscillators**. Searl says that the **voltage produced** is very small and it must be **amplified** before it can be used. Searl will end here on this subject and on next page take a brief look at heat.

1543: Copernican system: published by Polish astronomer Nicolaus Copernicus **1473 – 1543** who place to my understanding the Sun as being the centre and the planets circle it. Took 200 years: for it to be replaced by Ptolemaic model that the Earth was the centre.
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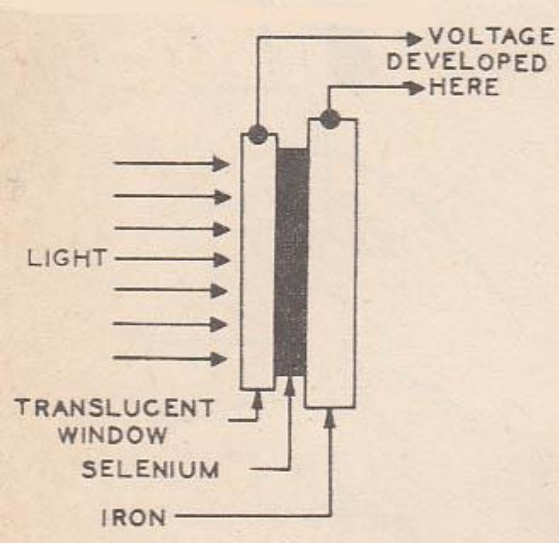

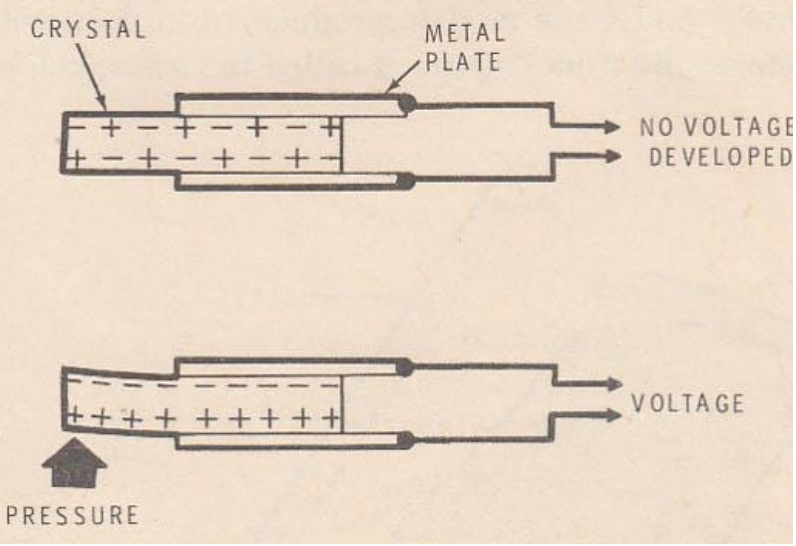

Figure 2.10: Electricity from light **Figure 2.11 Electricity from pressure.**

Searl states that in many cases, **static electricity** produced by **friction** is **troublesome** or **annoying**. However, there is a device used in **physics laboratories** which uses this principle to develop very **high voltages**. It is called the **Van de Graaff generator** and some models produce **10 million volts or more**. Searl says that producing electricity from friction is called the **triboelectric effect**.



LIGHT:

Searl confirm that **light energy** can be **converted** to **electrical energy in large enough** quantities to provide limited amounts of power. A familiar example of this is the **solar cells frequently used on spacecraft**. In my days their cost was too high for **commercial use**. However, Searl knows that sometime in the future, the price may decline to the point that this type of **energy** can be used on a much broader scale.

Figure 2.10: shows the construction of one type of **solar or photo cell**. Searl states that it consists of some type of photosensitive material sandwiched between two plates which act as electrodes. Searl states that a **photosensitive material** is one which develops a **charge** when it is bombarded by light. Searl understand that some substances which will do this are **Sodium Na 11: Germanium Ge 32: Selenium Se 34: Cadmium Cd 48**: and **Cesium Cs 55.** Searl says when these materials are struck by light some of the atoms release **electrons.** Searl informs you that this is known as **photoelectric effect**. In **Figure 2.10**: light passes through the translucent window and strikes the **selenium Se 34** alloy underneath. Some of the **selenium Se 34** atoms give up electrons and a charge is developed between the two plates. When exposed to **sunlight**, a single cell can provide a fraction of a volt charge and deliver a few milliamperes of current. When used as a power source, hundreds of the cells are tied together so that they produce usable voltage and current levels. Searl will close upon the subject of light for now. And will take a quick look at pressure.

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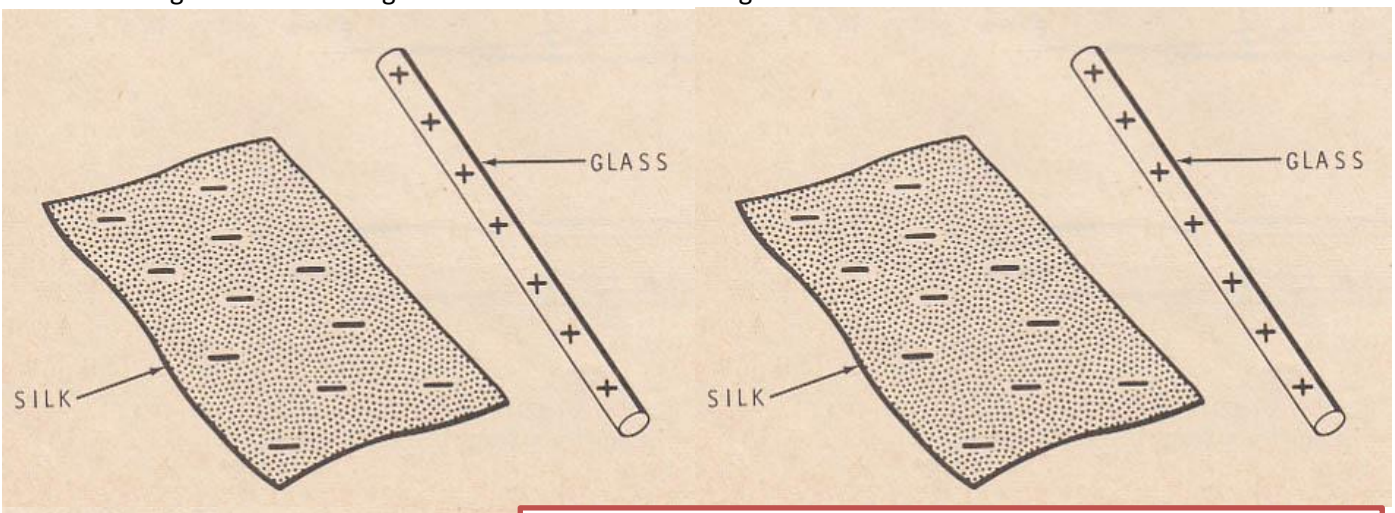

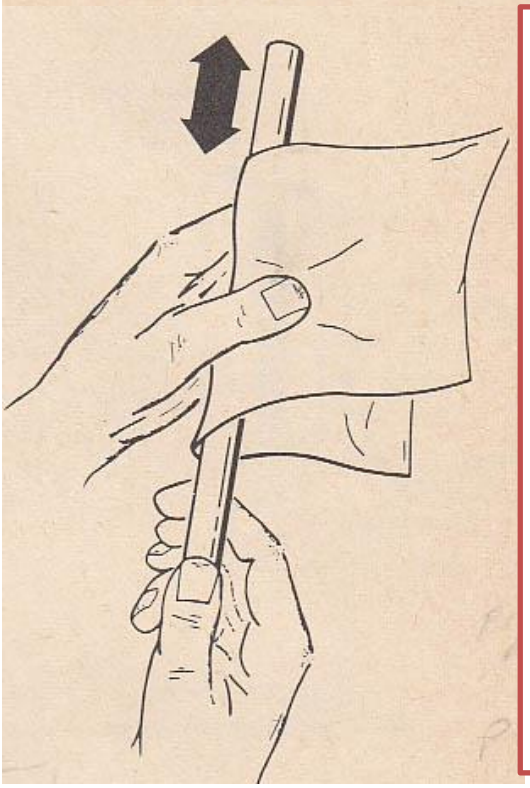



Here we see proof that raw materials for Searl research comes in all shape and sizes, and still do at this date. Nothing much has changed except the price. As cost mounts work goes down. That is a law.

Figure 2.9: Electricity from friction.

FRICTION:



Searl proudly states: that all men know that the oldest method known for producing electricity is by friction, don't we? Searl has discussed some examples of this in his previous books. **Figure 2.9**: shows that a rubber rod becomes negatively charged if rubbed with fur. Searl also remind you that a glass rod becomes positively charge when rubbed with silk

Searl expects that you have probably experienced this phenomenon yourself many times. When you scuff your feet across a nylon or wool rug, your shoes develop a charge which is transferred to the body. When you touch a neutral object such as a metal door knob or another person, a discharge occurs. Frequently, there is a tiny arc between your finger and the neutral body.

Searl reminds you that the **Zinc Zn 30** reacts with sulphate in much the same way. The sulphate molecules have a negative charge. Thus, positive **Zinc Zn 30 ions** are pulled from the bar. This leaves the **Zinc Zn 30 bar** with surplus of electrons and a net negative charge.

Searl says that if a conductor is connected between the **Zinc Zn 30** and **Copper Cu 29 bars**, electrons will flow from negative to positive terminal. Because current flow is always in the same direction, Searl call this direct current or **DC**. Searl says to compare this to the **AC voltage** produced by **magnetism** in **Figure 2.7**.
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Searl states that because of the chemical action involed, the **hydrogen H.1**. atoms give up electrons to the molecules of sulfate. Thus, the hydrogen atoms exist as positive ions while the sulfate molecules act as negative ions. Even so, the solution has no net charge since there are the same number of negative and positive charges.

Next Searl takes two bars called electrodes are inserted into the solution. One bar is **copper Cu 29**, while the other is **zinc Zn 30**, The positive ions of hydrogen attract the free electrons in the **copper Cu 29**. Thus, the **copper Cu 29** bar gives up electrons to the electrolyte.

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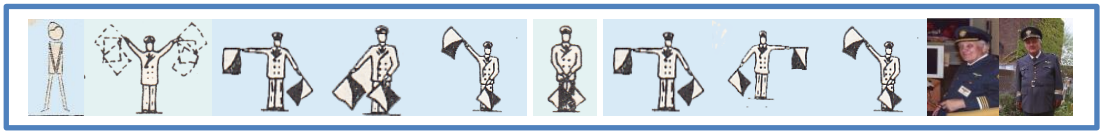
CHEMICAL:



Searl understands that the next most popular method of generating electricity is by chemical means sometimes called electrochemistry. Searl points out that automobile and flashlight batteries are examples of two typical applications. Searl just remind you that there are many chemical reactions that will transfer electrons so that an emf is produce.

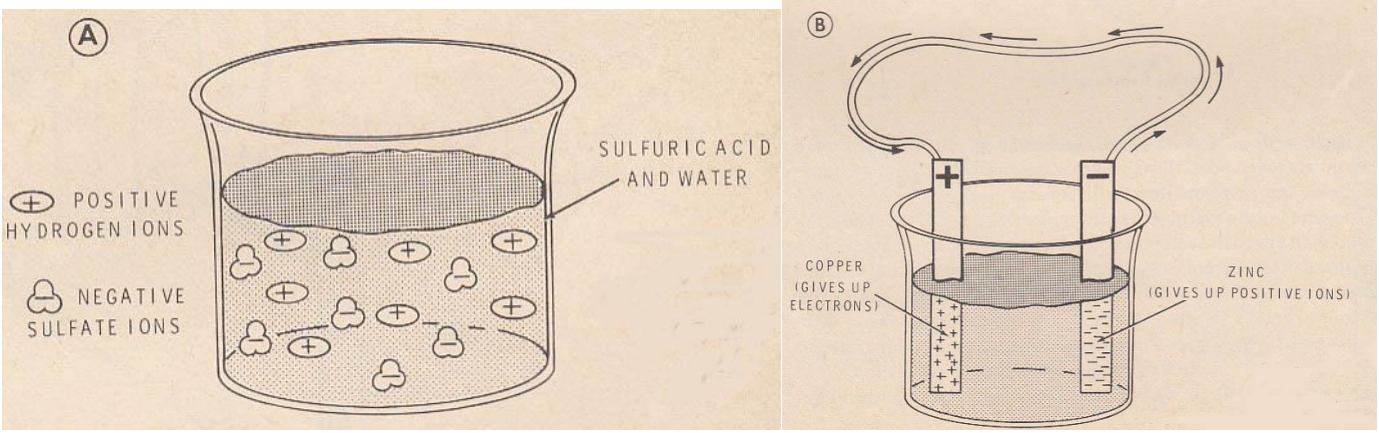


Figure 2.8: Electricity from chemicals.

Figure 2.8: illustrates how a basic battery or cell can be made. Searl points out that a glass beaker is filled with a solution of sulphuric acid and water. This solution is called the electrolyte. In the electrolyte, the sulphuric acid breaks down into hydrogen and sulphate. Searl will continue this reaction on the next page.
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Searl points out if the conductor is moved up and down in the magnetic field; the electron flow will reverse each time the motion reverses. Searl reminds you that in generators, a reciprocal motion like this is required. Thus, the current produced alternately flows in one direction then the other. Searl states that this is known as alternating current or simply AC. Searl states that we all should thank **Nikola Tesla 1889 – 1945** for his efforts to invent such a generator, by which a large part of this planet can enjoy the results which it offered us.

Searl remarks that in power generating stations the reciprocal motion occurs **60 times each second**. Or **50 times each second**. Searl says thus, the power supplied to our homes is often referred to as **60 or 50 cycle AC**. This is an alternating current which goes through the forward-and-reverse current cycle **60 or 50 times each second**. Sadly Searl says that in this document, he will not be concerned with alternating current although Searl will discuss **magnetism** in some detail later.

As: Searl stated earlier, that there are more ways than 1 to **create electricity**. Searl will attempt to explain them at lease their basic details within this document. Which: is not a book as such, but a **record of FACTS**. Example **1232:** the first rocket like weapon used to defend the villagers themselves against invading Mongols. You thought we invented the rocket. Again we **see how wrong we are** about **world knowledge** of success.
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Searl states as always that all that is require is relative motion between the magnetic field and the conductor.

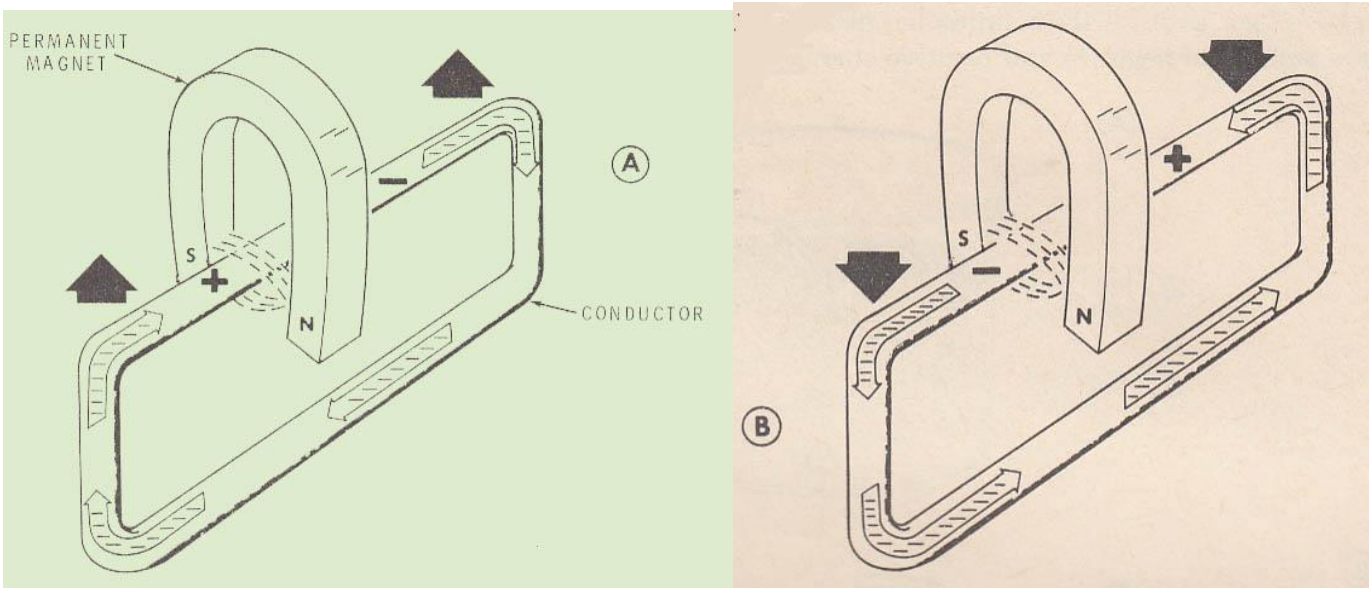

Figure 2.7: Electricity from magnetism A B
Figure 2.7B shows that electrons will flow in the opposite direction if the relative motion is reversed.
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In reference to the **magnetism**, Searl informs you that the **basic requirements** are a **magnetic field**, which **creates** a **wave imprint**, a conductor, and a relative motion between the two – simple? **Figure 2.7**: shows a simple example of conventional thinking. Searl points out that here the **magnetic field** is produced by a **permanent magnet**. The field is resented by the lines drawn from the north to south poles of the magnet. If a conductor: is move up so that it cuts the field as shown in **Figure 2.7A**: electrons will flow in the direction indicated.

Searl says that the same effect will be obtained if the conductor is held still and the magnet is moved down. Searl has been stating that since late **1946** in his newsletters and books and lectures with demonstrations that proved that to be correct. Unfortunate for Searl, is the **FACT** that people have ears but cannot hear, and they have eyes but they cannot see. Sad to say that Searl cannot change this condition until **education changes** its **structure**. When will that be, no one knows, may be never because, we have ran out of **time**. Searl guess that **Albert Einstein** had also come to that **assumption**. The **S.E.G. functions precisely** the same, with the **fact** that it **kick starts itself** due to its **construction**.

Sir Isaac Newton made the position absolute clear within his **second law**, to which the **S.E.G**. meets each condition as defined by **Sir Newton's second law**. Which: has nothing to do with heat engines, as you people apply. It is all about forces acting and their state either 1 or 0, yes the force can be greater than >0. In the S.E.G. the force = 5 starts the other forces to switch from = 0 to = 1 once momentum switches from = 0 to = 1, most other forces switches to = 0, except velocity and direction which remains at = 1 as long as drainage = 1. Once the drainage switches to = 0, then v = 0 as the S.E.G. is now ideal and runs at cruising speed which is control by the sum of the square which it has been constructed from. This frequency blocks the S.E.G. from stopping. As: I have no need to repeat the Second law of Sir Isaac Newton, as I have already done that here in this document.

While the effects listed, can produce an emf, an emf can produce the effects. Match each of the following applications with the effect produced by the emf.

	Application		Effect
1	flash light	A	heat
2	Automobile Cigarette lighter	B	chemical activity
3	Electroplating	C	light
4	Electromagnet	D	pressure
5	crystal earphones	E	magnetism
6	light bulb		
7	toaster		
8	motor		
9	electrolysis of water		

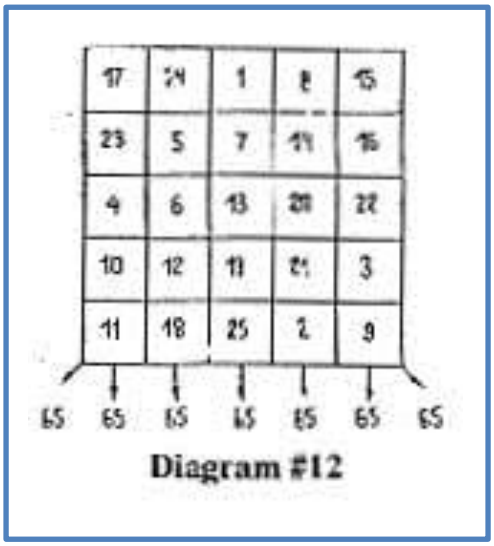
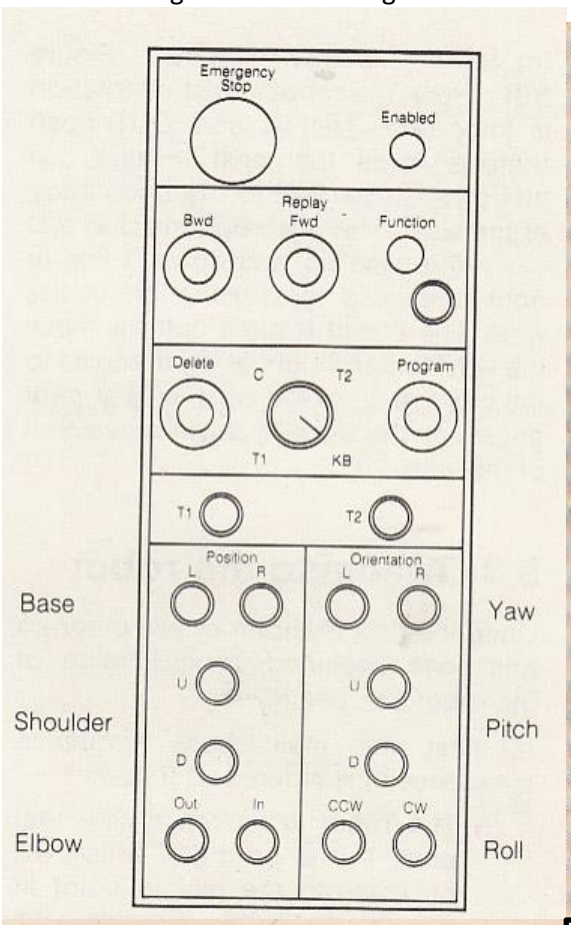
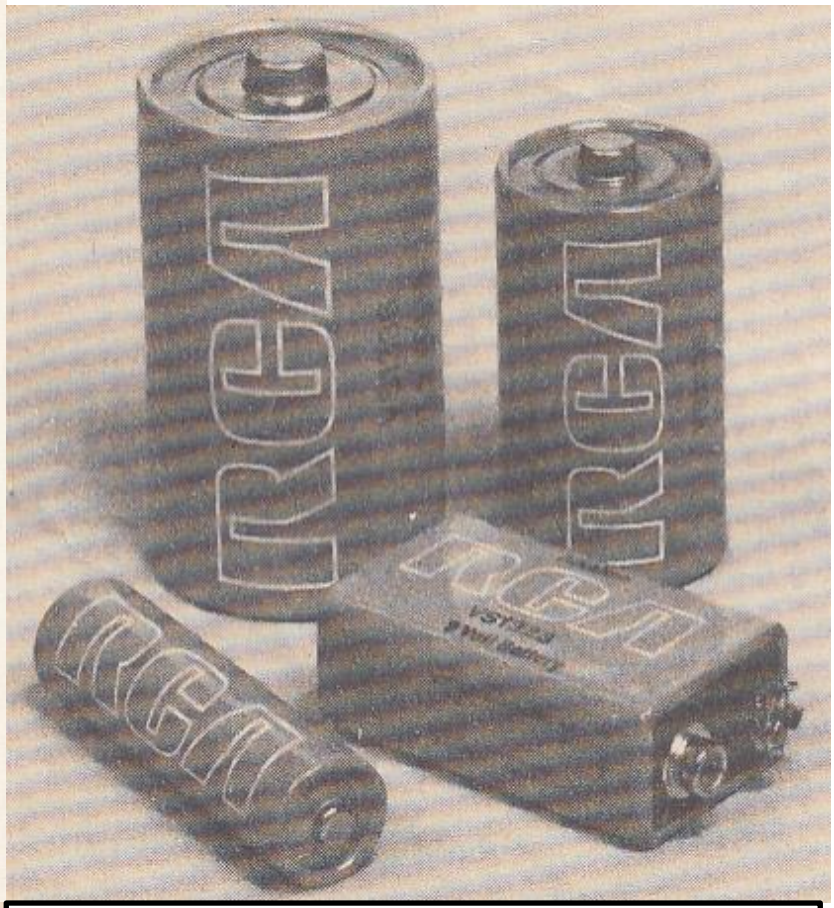


Diagram #12

Searl will end his questions here, more will follow later. Searl has mention batteries, which they are many types of design and power. Which he will cover just the basic facts?

1896: Climate Change: Svante Arrhenius Swedish Scientist calculated that every time the increase in carbon dioxide levels double, the temperature would go up by **5^{0}C**. Searl notice that **G. S. Callendar** in **1938** rechecks **Arrhenius figures** and sounded the **alarm** that **global warming** was a **fact** even the **ancient Greeks** were concern about **global warming**.





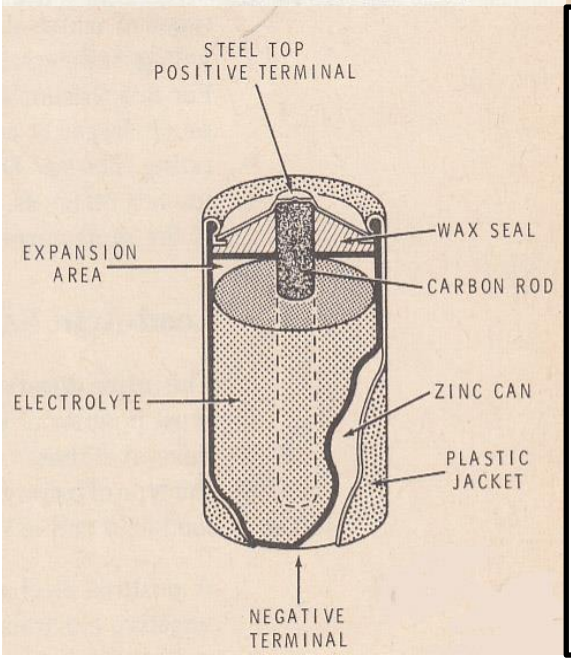
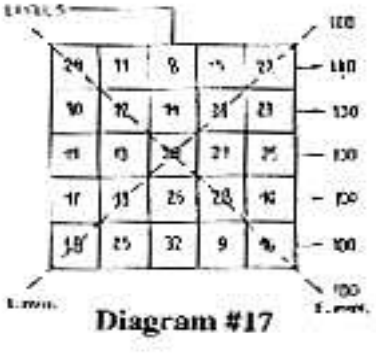


Figure OU5.6: Top Left: teach pendant layout

Figure B: Top Right: Four popular size batteries, which most people must know by now what they are, TCA are not the only battery manufactures.

Figure B2.13: Bottom left: construction of a dry cell.



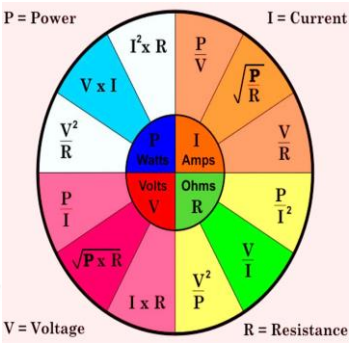


Figure B2.13:

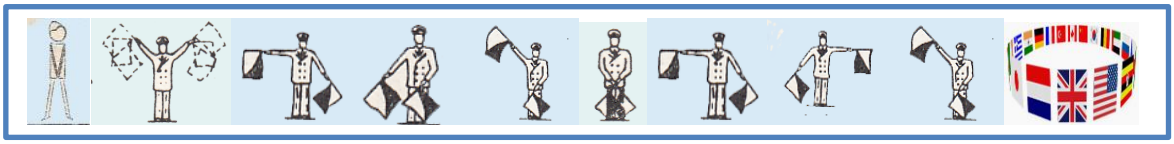
Top right hand illustrate: the most **popular domestic batteries available today**. The **illustration** on the **bottom left shows** the **construction** of a **flashlight** or **dry cell**. The positive terminal is the steel top at the end of the **carbon C 6 electrode**. The negative terminal is the **zinc Zn 30 can** or container which holds the rest of the cell. A plastic jacket protects the **zinc Zn 30 container** and **insulates** the negative terminal from the positive terminal.

Searl has discussed one type of battery or cell in the previous section. It consisted of **zinc Zn 30** and **copper Cu 29 electrodes** inserted into an **electrolyte** of **sulphuric acid** and **water**. In this section Searl will discuss the construction and operation of several more common types of batteries. But first let's discuss the difference between a **battery** and a **cell**. A **cell** is a single unit which contains negative and positive electrodes separated by an electrolyte. A **battery** is a combination of two or more **electrochemical cells**. Thus, what you call a flashlight battery is really a **cell** since it contains only one unit for producing an emf. In spite of this technical definition the word battery is loosely used to describe a single cell.

There are two basic types of cells. One type can be recharged and is called a secondary cell. The other type cannot be recharged and is called a primary cell. All cells and batteries store energy in a chemical form which can be released as electricity. Even though this type of cell is referred to as a **dry cell**, it is not dry on the inside but contains a moist paste. A wax seals off the open end of the **zinc Zn 29 container**. This prevents any paste from oozing out when the battery is turned upside down or placed on its side. Thus, this type of cell can be used in any position without the electrolyte escaping.

Well, Searl better get a couple of hours sleep to rest his eyes, it's already another day.

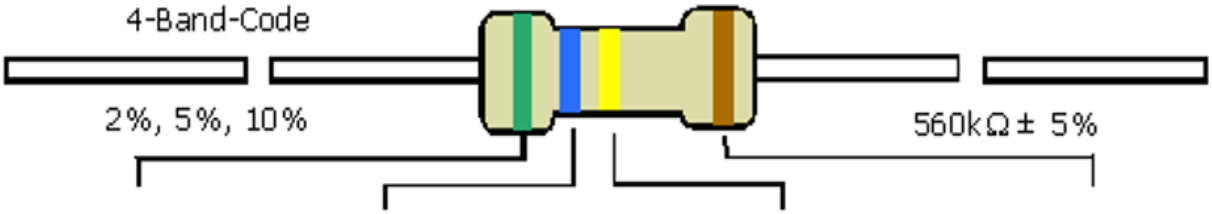
Dry Cell:



The electrolyte used in this cell is a solution of **ammonium chloride** and **zinc chloride**. The electrolyte gradually dissolves the **zinc** by pulling off away positive ions. This process leaves behind an excess of electrons. Thus, the remaining **zinc** acts as the negative electrode. If it were not for the **carbon rod**, the electrolyte would develop a positive charge by virtue of the positive ions pulled from the **zinc**. Searl states that however, the positive charge is neutralized by electrons pulled from the **carbon rod**. Thus, the **carbon rod** has a deficiency of electrons which causes a positive charge.

This type of cell if referred as the **Leclanché cell** and it produces just over **1.5 volts** when new. Searl states that as it is used, the chemical action slows down and the voltage gradually decreases. This type of cell cannot be recharged so it is considered a primary cell. Also, because the paste gradually dries out, the dry cell slowly loses its ability to produce an emf. This occurs even if the battery is not in use. For this reason, the **dry cell** must be used within about two years of the time it is manufactured. That is, it has a shelf life of about two years.

The voltage delivered by this type of cell is determined strictly by the types of material used as the electrodes and the electrolyte. Which: applies the same but with a difference to the contents of the materials used in the **roller sets** and the **plate**. Thus, the voltage is determined by the chemical reaction and not the size of the cell. In the **S.E.G**. voltage depends upon the velocity and the mass, but do not reduce its output over the years. For this reason, a small pen light cell produces the same voltage as the much larger D cell. However, the larger battery has a higher current rating.



COLOR	1st BAND	2nd BAND	3rd BAND	MULTIPLIER	TOLERANCE
Black	0	0	0	1Ω	
Brown	1	1	1	10Ω	± 1% (F)
Red	2	2	2	100Ω	± 2% (G)
Orange	3	3	3	1KΩ	
Yellow	4	4	4	10KΩ	
Green	5	5	5	100KΩ	±0.5% (D)
Blue	6	6	6	1MΩ	±0.25% (C)
Violet	7	7	7	10MΩ	±0.10% (B)
Grey	8	8	8		±0.05%
White	9	9	9		
Gold				0.1	± 5% (J)
Silver				0.01	± 10% (K)



This **illustration relates to modern system of colour and shape.**

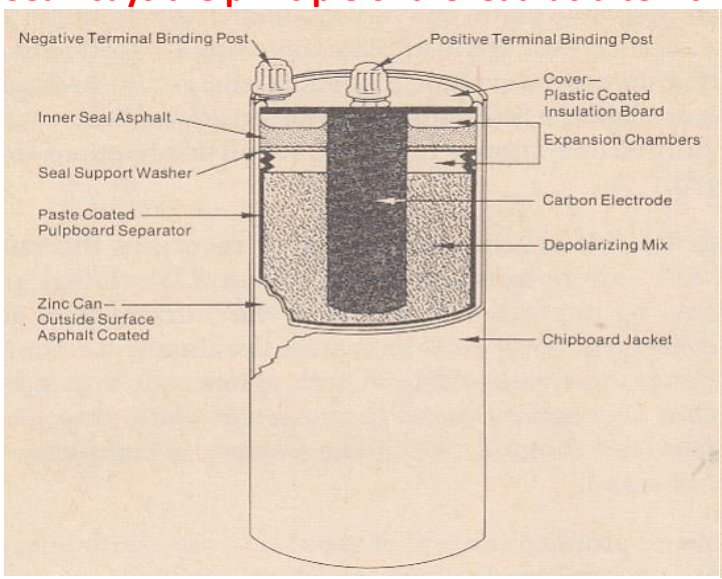
Searl states that the size **D cell** can deliver **50 milliamperes** of current for **approximately 60 hours**. A small **penlight cell** becomes exhausted much sooner at the same current.

Lead Acid Battery:

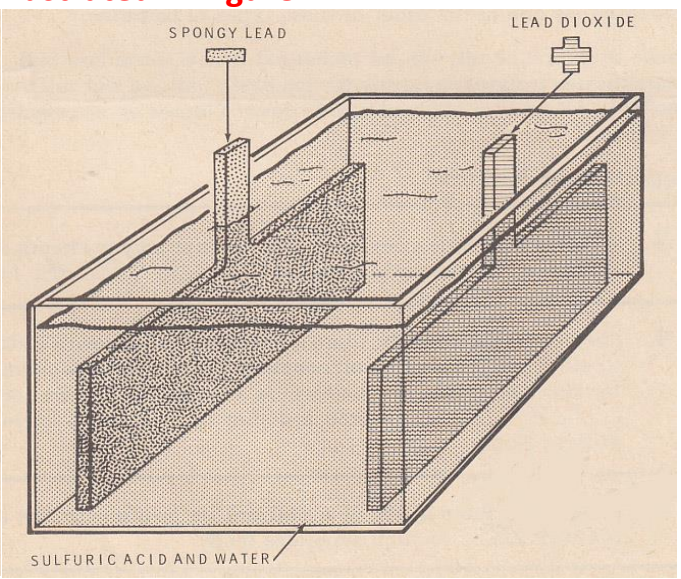
The prime disadvantage of the **dry cell** is that it cannot be recharged. The most popular of the cells which can be recharged is the **lead acid cell**. Searl states that several of these cells are combined to form the lead-acid battery. This is the type of battery found in virtually all automobiles. **Flowerbower** you have to agree that Searl has wee bit of **education**.

13 old age electric/**magnetic** and **naval officers** gave me free hand on their holidays and weekends. That world has **change today**, agree here in the **U.S.A**. I admit there are a few that are working hard in the back ground to help me to win. It not yet total **30** of them, but at least they are **real experts**; who just want to see this become **reality**, as the Earth is in such a sad state. To them all, I thank them from the bottom of my heart sincerely for their help, likewise, so do **Fernando Morris, Jason and Mike**. It is hard work as **materials** are now so costly.

Searl says the principle of the lead-acid cell is illustrated in Figure 2.14.

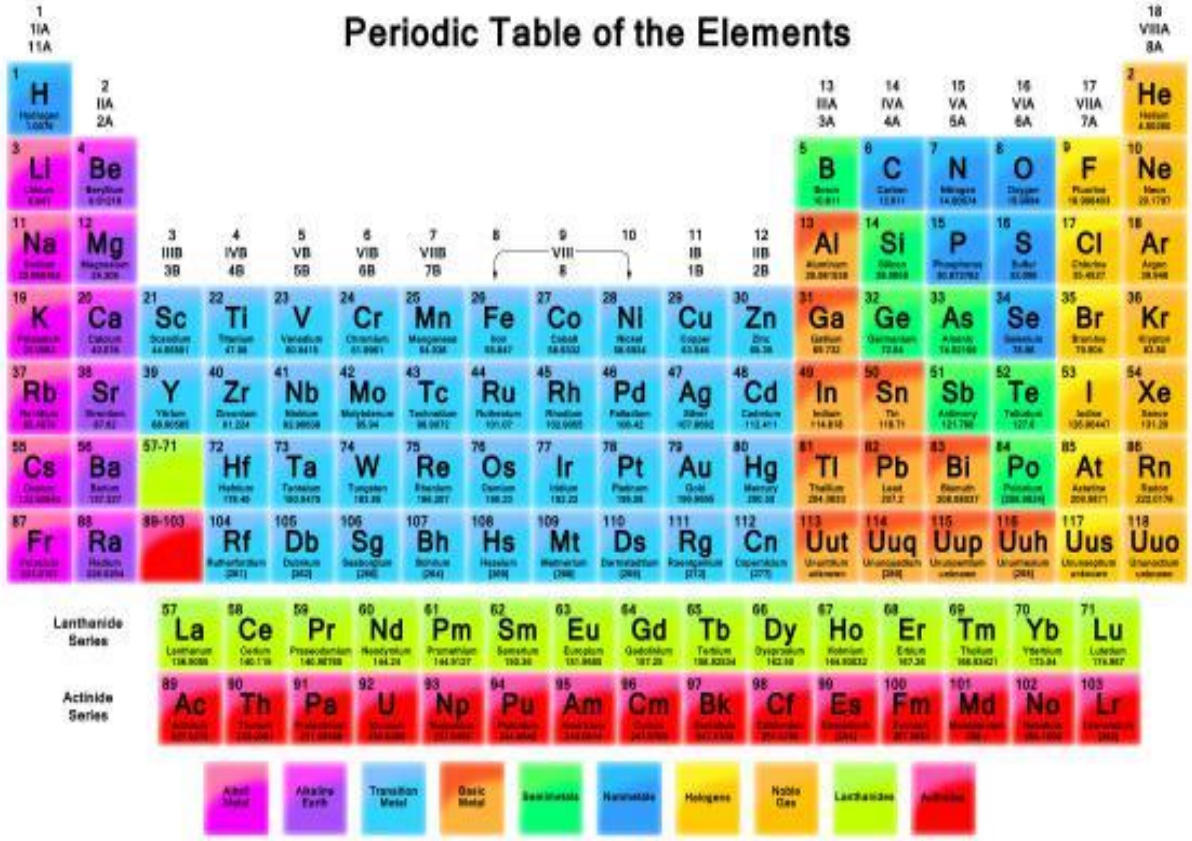


Cross section of a no.6 dry cell.



The basic lead-acid cell.

Page 502©



for me to create either the **S.E.G**. or **I.G.V**., some **expert**(**s**) had to **create** such **charts**, so people like me; who have **no formal education**, can create these products

Searl states that a positive electrode of lead dioxide (**also called lead peroxide**) and a negative electrode of spongy lead are immersed in an electrolyte of **8 parts** of water (**recall my dream one – the hopscotch game of 8 squares**) to **3 parts concentrated sulphuric acid**. **Sulfuric acid** is a combination of **sulfate** and **hydrogen ions**. When the cell is discharging, the sulphuric acid combines with both the lead dioxide (**positive plate**) and the spongy lead (**negative plate**) converting them to lead-sulfate. The chemical reaction is such that the lead plate develops a negative charge while the lead dioxide plate develops a positive charge. Searl says, if the discharge continues long enough the lead-sulfate covers the two plates to the point that normal operation is impeded. Searl points out that when this happens the cell must be recharged.

Recharging the cell is simply a matter of reversing the current flow through it. This is done by connecting a source of DC voltage greater than the produced by the cell. Searl has shown that current can initiate certain chemical reacts. Here it reverses the chemical action described above. It changes the lead-sulfate in both plates back to sulphuric acid. In doing so, this once again leaves the negative plate **pure lead Pb 82** and the positive plate lead dioxide. When this process is complete, the cell is again fully charged. Now **Flowerbower** you have learnt something useful, that is of course if you can remember it.

Searl states that this type of cell produces an emf of about 2.1 volts. Normally, either 3 or 6 of the cells are combined to form a battery. **(Strange how that dream of the hopscotch comes into play here again**). The cells are connected so that the voltages add. Thus, a three cell battery has an emf of about 6.3 volts while a six cell battery has an emf of approximately 12.6. Searl states that your automobile has one or the other of these types of batteries.

Because this type of cell can be recharged it is a secondary cell. Also because the electrolyte is a liquid, the lead-acid cell is a wet cell. It must not be on its side nor turned upside down. Searl warns you: otherwise, the electrolyte will spill out. Searl feels he has explained his knowledge back there in **1947**, the good news is that he is still kicking, where many who have helped him have left the planet for good, sad to say. But I shall remember them.

CONNECTING BATTERIES:

Searl have shown that cells can be connected together to increase the voltage or current rating. Here come the Law of the squares – there are four different ways that cells or batteries can be connected. These are series adding, series opposing, parallel, and series parallel. Searl say's let's examining each of these methods in detail.

Series aiding connection::

In the 12 volt automobile battery six cells are connected together so that the individual cell voltages add together. In the 6 volt battery, three cells are connected in the same way. To save breaking up the following part due to lack of space here, he will carry over to next page.
Page 515©

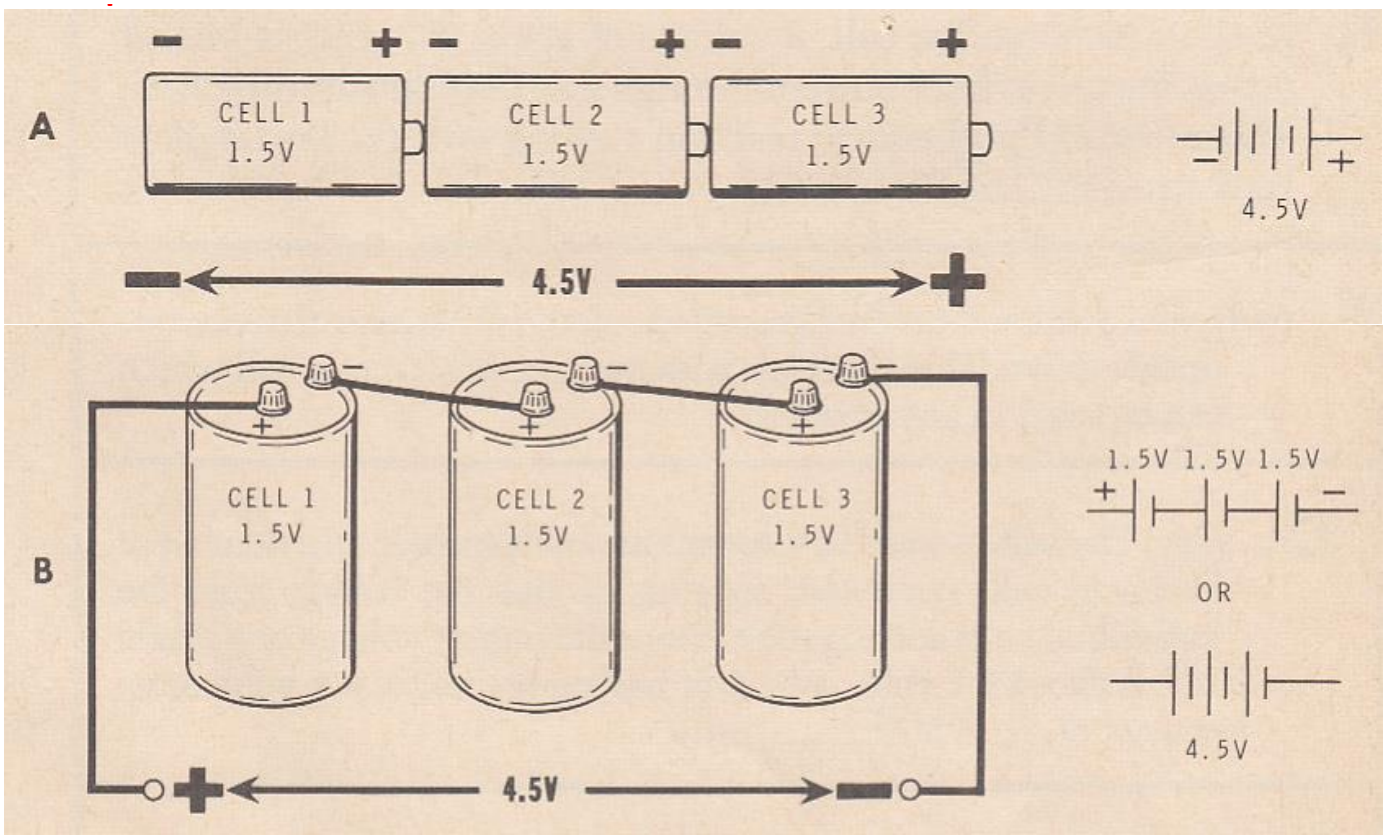
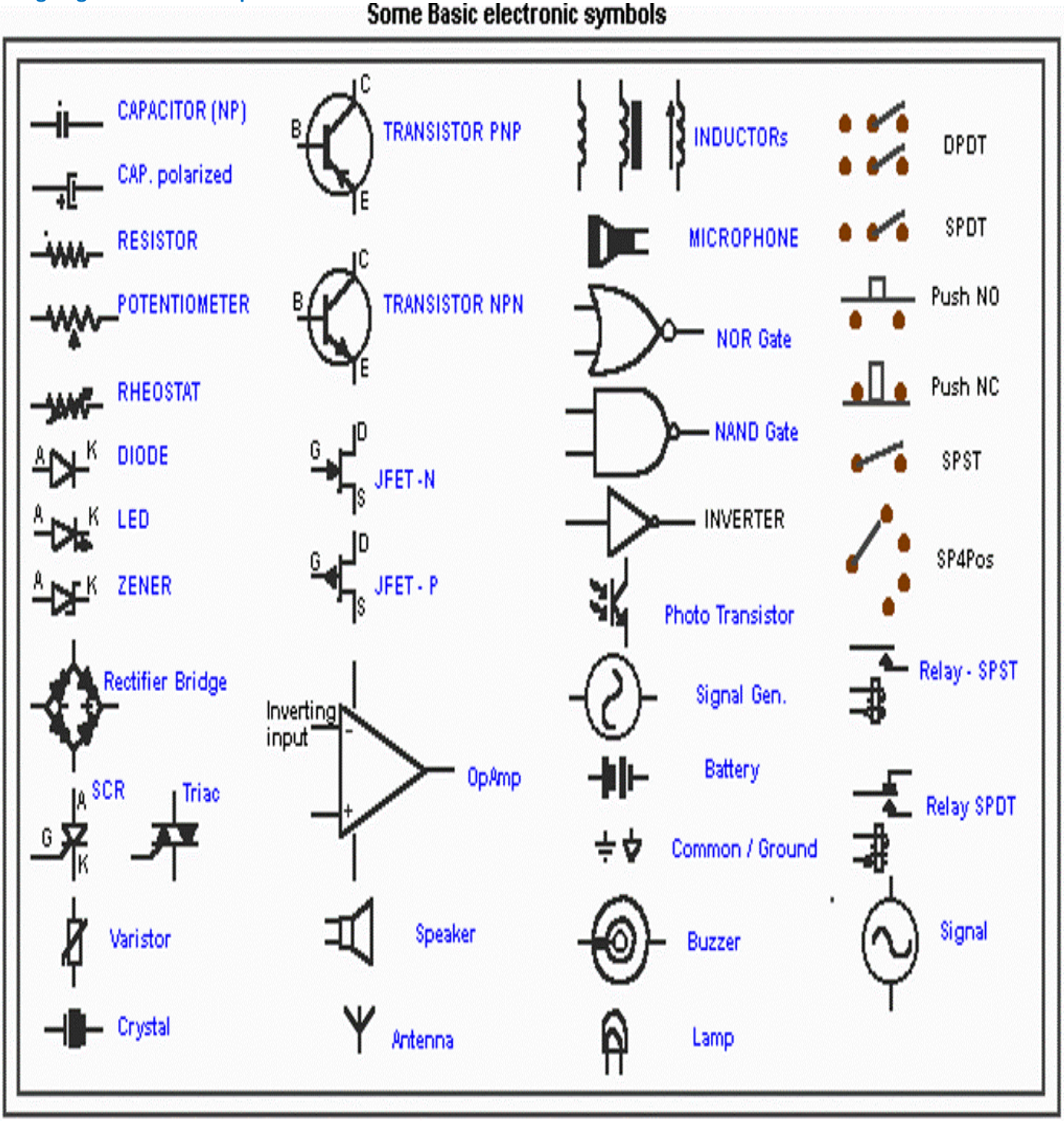


Figure 2.15: The series aiding connection.

This arrangement is called a series aiding connection and is shown in **Figure 2.15A**: as it occurs in a three cell flashlight. The cells are connected so the positive terminal of the first connects to the negative terminal of the second; the positive terminal of the second connects to the negative terminal of the third; etc. This is a series connection because the same current flows through all three cells. It is an aiding connection because the voltages add together. Since the individual emf of each cell is **1.5 volts**, the overall emf is **4.5 volts**. The schematic diagram for this connection is shown on the right.
Page 516©

Searl knowledge: 1946-1968: Legal: SEARL NO: 013787346: Legal: SEARLE NO: 013787451.

Designing Demo One – required this kind of information.



Here again are signs I have to know, and understand, for the jobs which I have had to do. And my future will depend upon me remembering that too,

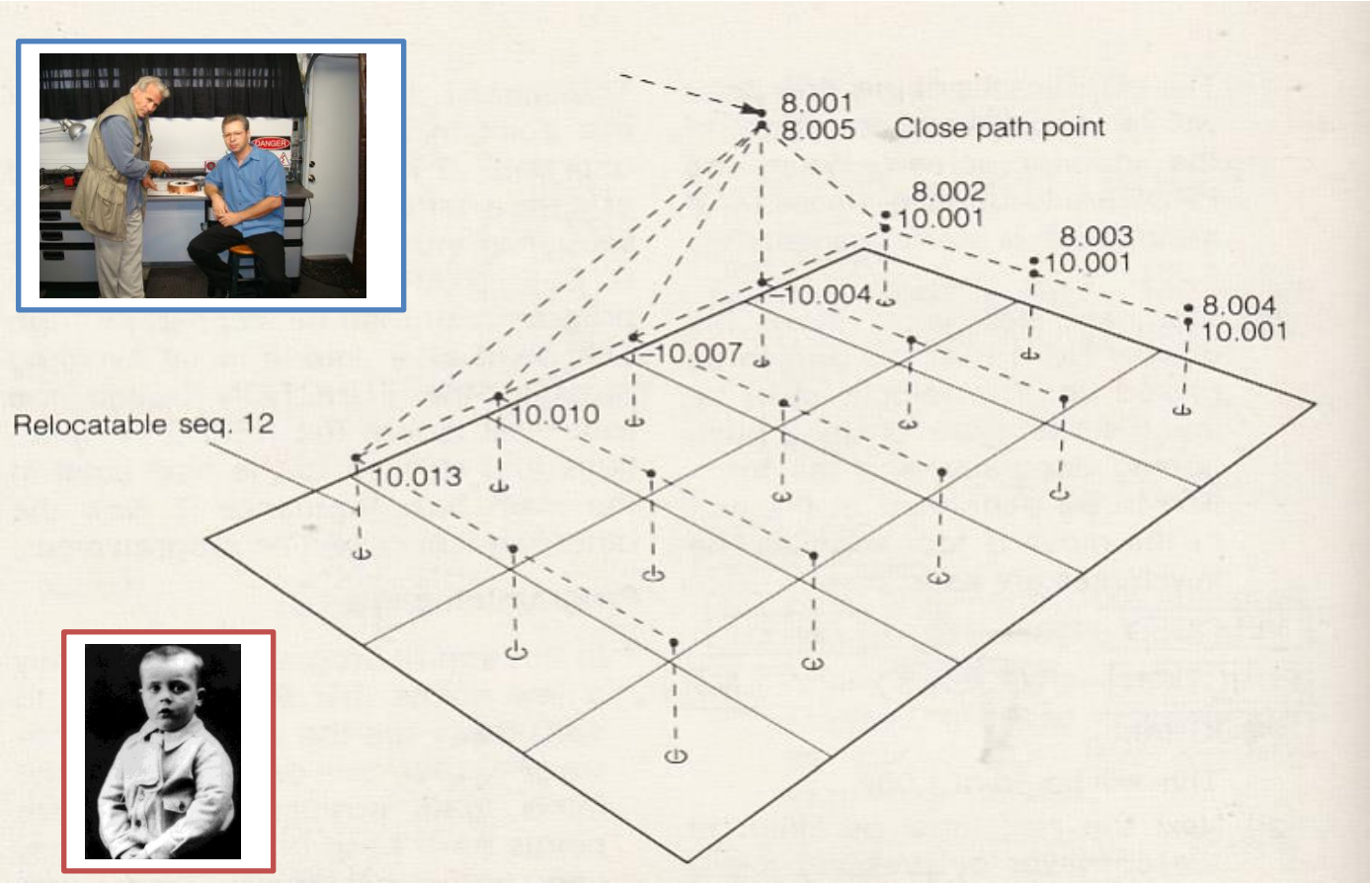


Figure ou5.12: Use of a locatable sequence in programming pallet loading.

Figure 2.15B: shows a different type of cell. Here again the three cells are wired together in series. **NOTICE**: that the voltages add together because between cells the opposite polarity terminals are connected. That is, the negative terminal of the first cell connects to the positive terminal of the next and so on. Thus, the three **1.5 volt cells** provide a total emf of **4.5 volts**. The schematic symbol is shown on the right.

Searl says with the series aiding connection, the total voltage across the battery is equal to the sum of the individual values of each cell. However, the current capacity of the battery does not increase. Since the total circuit current flows through each cell, the current capacity is the same for one cell.

Series Opposing Connections:

The series aiding connection just discussed is extremely important and is widely used. The series opposing connection of cells is just the opposite. It has little practical use and is usually avoided. Searl has mentioned it here because an inexperienced person may inadvertently connect cells in this way. The series opposing connection of two cells is shown in **Figure 2.16A**.

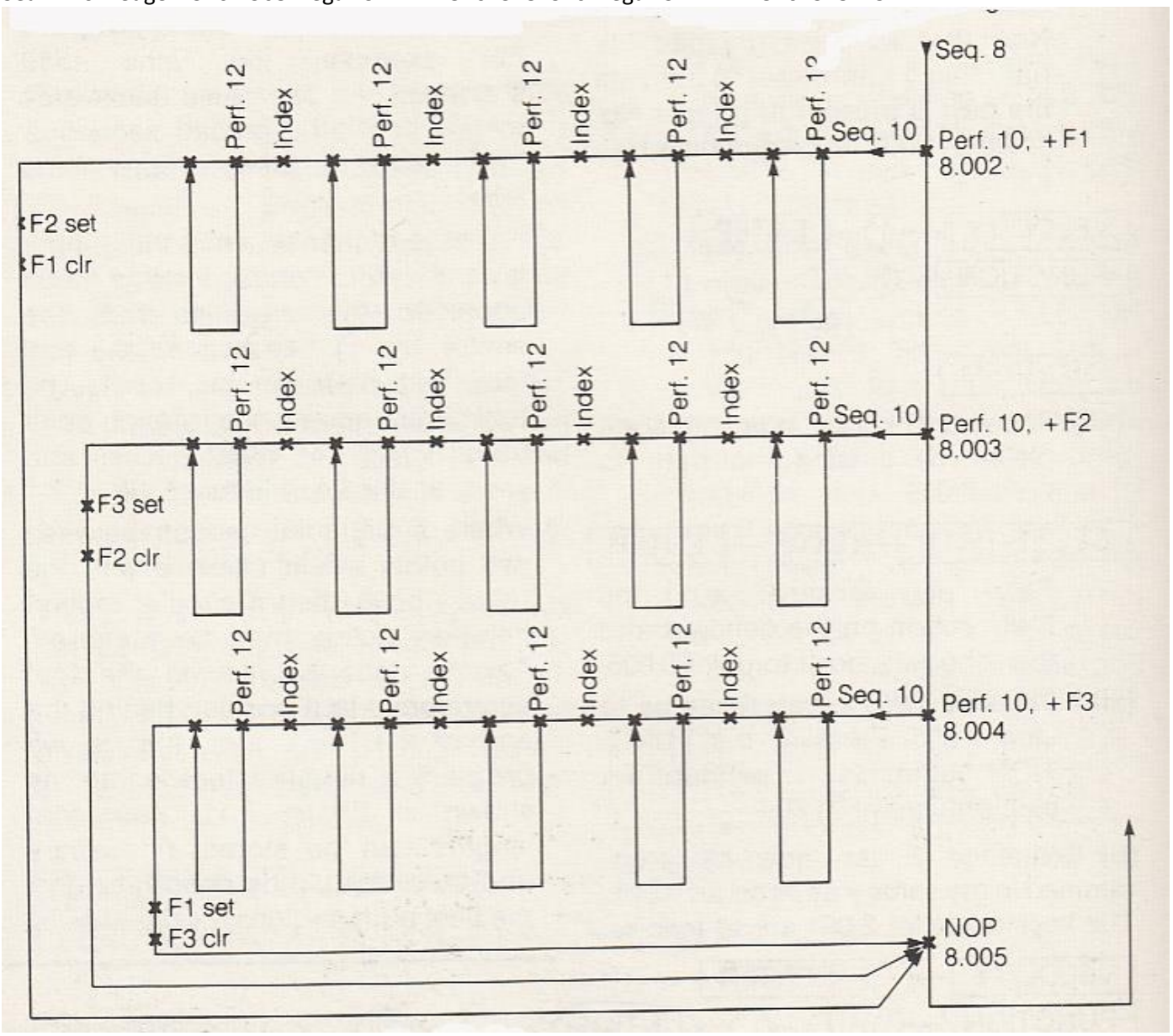


Figure OU5.13: Line diagram of the palletising program: OU course PT615 case studies:

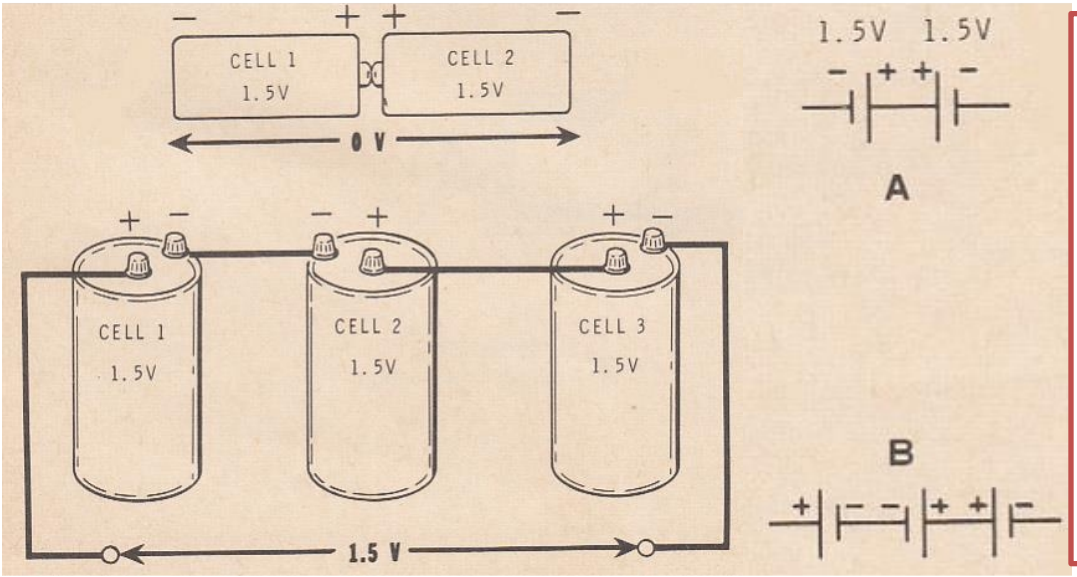


Figure 2.16: The series opposing connection.



I'm coming soon; to study you, watch out.

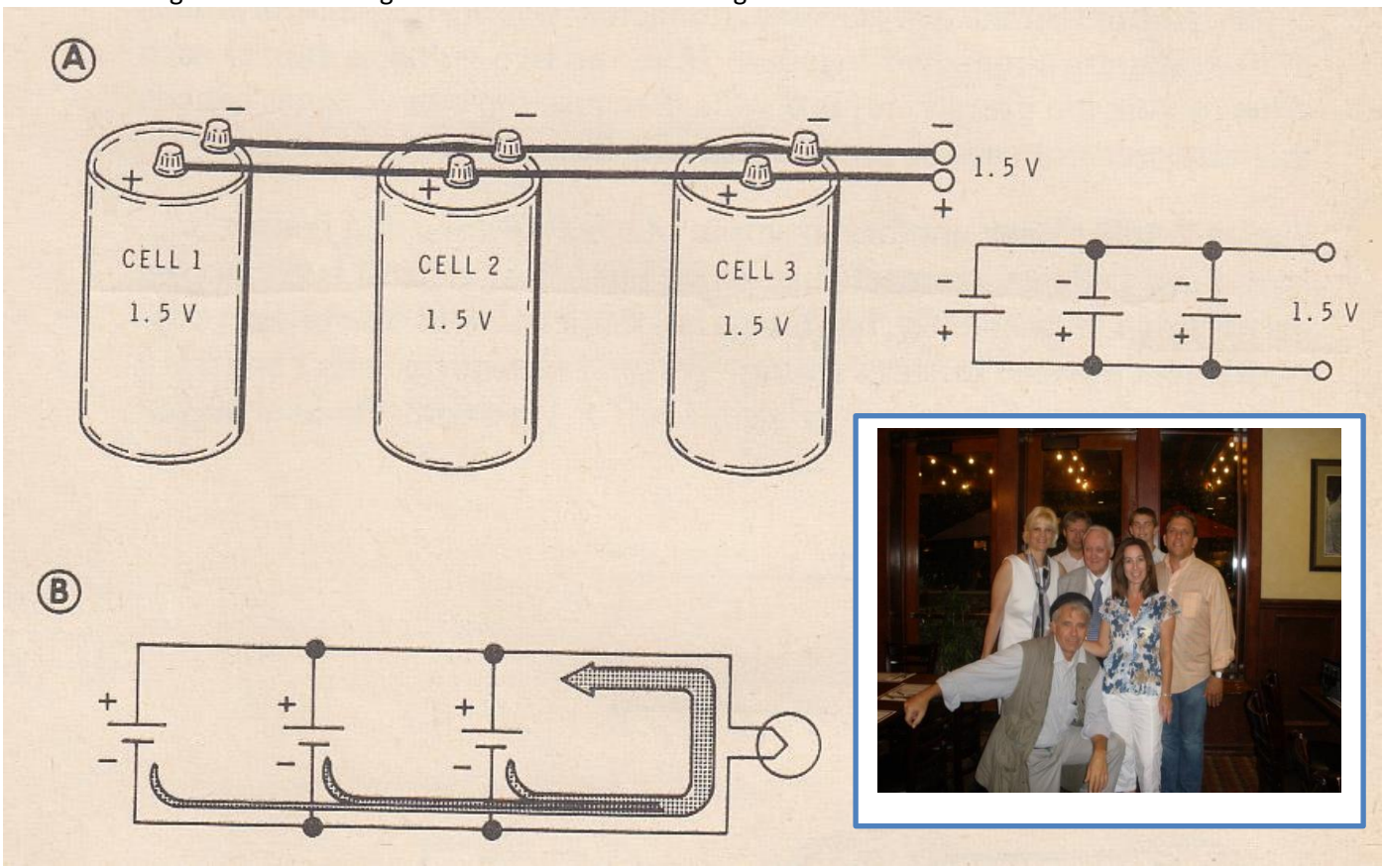


Figure 2.17: The parallel connection.

Notice: that the two cells are connected in series, but like terminals of the cells are connected together. Here the two voltages cancel each other so that the overall emf = 0 volt. Because the two voltages cancel, this arrangement cannot produce current flow.

Figure 1.16B: shows another example of a series opposing connection. Here three cells are connected in series but cell number 2 is connected backwards. Consequently, its voltage is subtracted from the voltage of the two cells connected in series aiding. The: total voltage for cells **1** and **2 = 0 volts**. This leaves the output voltage of cell **3**. Therefore, the total output of the three cells is only **1.5 volts**.

Parallel Connection:

Searl has shown that the series aiding connection of cells increases the output voltage but not the current capabilities of the cells. However, there is a way to connect cells so that their current capabilities add together. This is called a parallel connection and is shown in **Figure 2.17A**: Here, like terminals are connected. That is, all the positive terminals are connected together as are all the negative terminals.

1931: approximately 5 months before I appeared on planted Earth the Big Bang Theory was created. Searl wonder if his mother broke wind, which created the big bang?

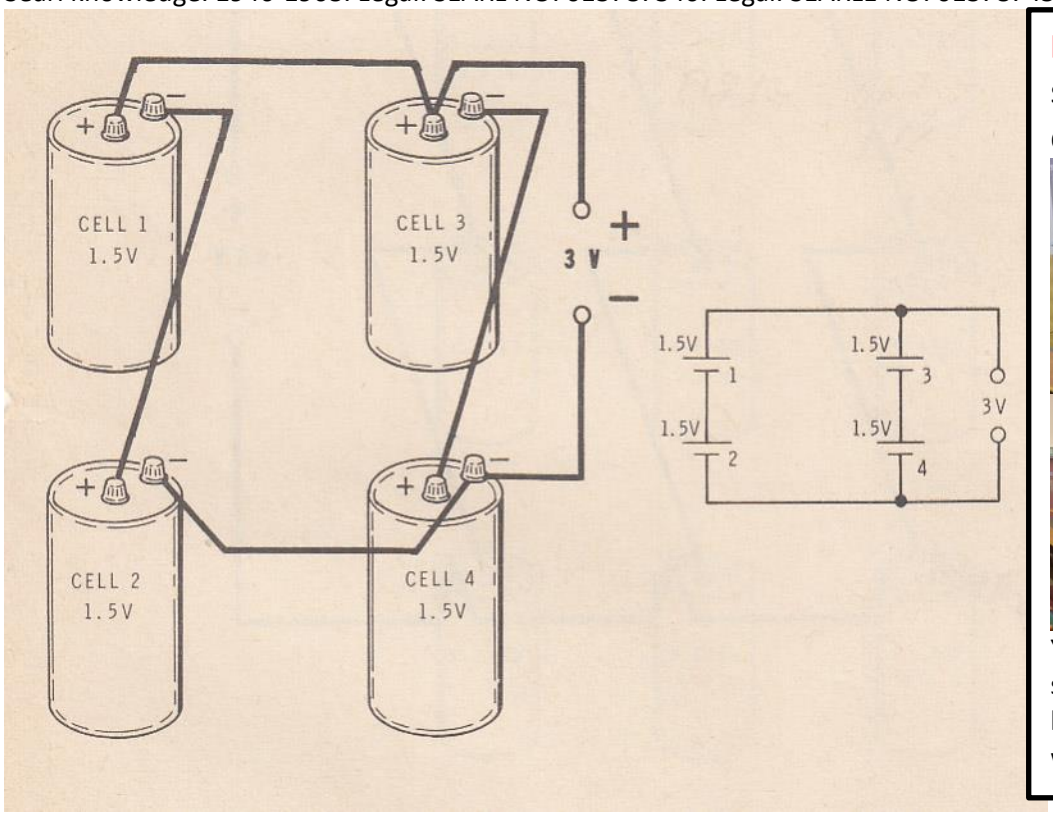


Figure 2.18: The series – parallel connection.



You never know when I shall be in your district, so keep watching our website. Searl Aerospace.

Figure 2.17B: shows why the current capacities of the cells are added together. **Notice** that the total current through the lamp is the sum of the individual cell currents. Each cell provides only one third of the total current. Thus the total current capacity is three times that of any one cell. However, connecting the cells in this way does not increase the voltage. That is, the total voltage is the same as that for any one cell. If **1.5 volt** cells are used, then the **total voltage = 1.5 volts**.

Series-Parallel Connection:

When both a higher voltage and an increased current capacity are required, the cells are connected in series-parallel. For example, suppose Searl have four **1.5 volt cells** and Searl wish to connect them so that the emf is **3 volts** and the current capacity is twice that of any one cell. Searl can achieve this by connecting the four cells as shown in **figure 2.18**. To achieve **3 volts**, **cells 1 and 2 are connecting in series**. However, this does not increase the **current capacity**. To double the current capacity Searl must connect a second series string (**cells 3 and 4**) in **parallel** with the first. The result is the series-parallel arrangement shown **Figure 2.18**.

Searl says that to be certain that you have the idea, let's consider another example. Let's suppose that wish to construct a battery with an emf of **4.5 volts** and a current capacity three times of the individual cells. **Figure 2.19** shows that nine cells are required. **Cells 1, 2**, and **3** are connected in a series string to provide **4.5 volts**. However, to achieve the higher current, three of these strings must be connected in parallel. Searl feels it's time for another programmed review:

FACTS:
The rollers which operate in the **S.E.G. concept** are similar in structure and function to that of the batteries which you are used to. The difference between them is the fact that your batteries do not speed around a plate to generate vast amount of electricity, which the **S.E.G. functions requires**.

Your battery even when not in use is running out of energy, while the **roller sets** are in constant motion, thus not running out of power. Why your battery might run for a year, the S.E.G. should run for hundreds of years. Where your battery might leak the **S.E.G**. cannot leak. Your battery has **3** main parts; the **S.E.G**. has **4 main parts**. Your batter is cheap if you only going to use one until it die. The **S.E.G**. is **not cheap**, but over its lifetime it will be cheaper than your batteries. That is the picture as I see it at this date. In other words it is an investment for life. Though I cannot see the **S.E.G costing** any more than the heavy duty lorry batteries do today.

Searl knowledge: 1946-1968: Legal: SEARL NO: 013787346: Legal: SEARLE NO: 013787451.

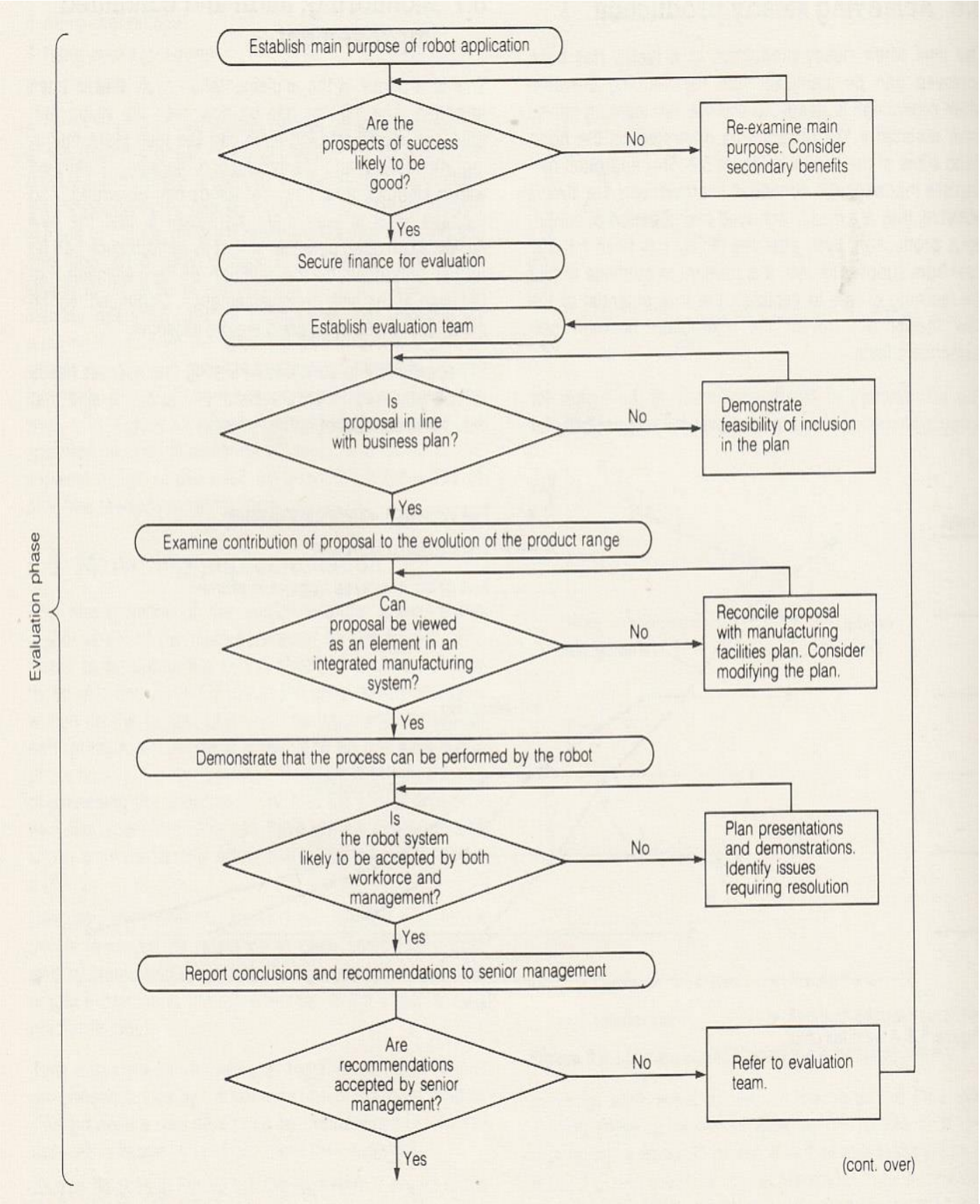


Figure OU6.1: IMPLEMENTATION PROCDURES: Robotic Systems. There is not enough room here to complete this requirement, and will be dealt with later. **NOTE**: that Searl creates his filming by such a flow chart as he terms it. This saves time from recording to the marketplace.

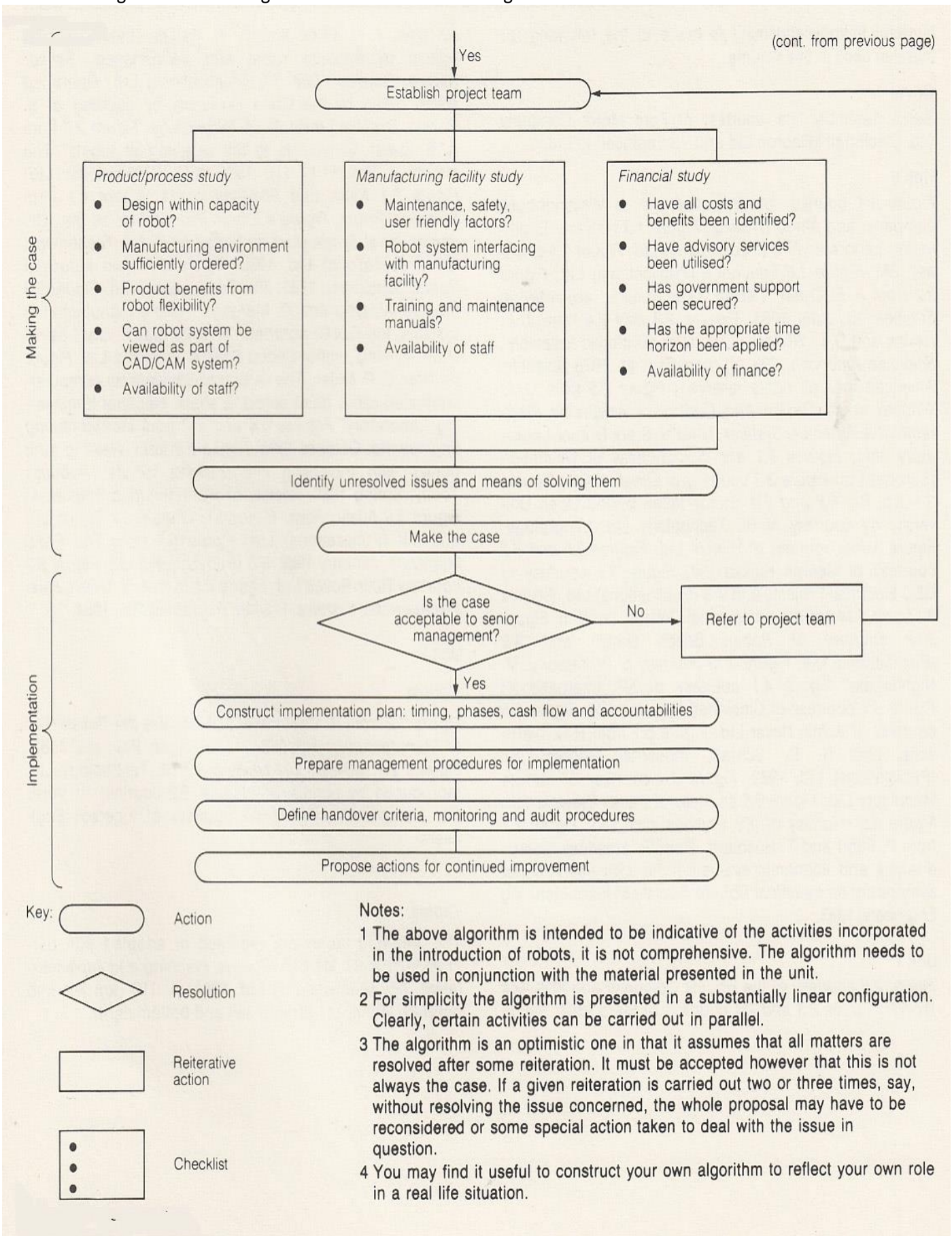


Figure OU6.1: Rest of the layout on page 526. This represents part of **my education training** with the **OPEN UNIVERSITY course PT615 3 Robotic systems**.

Searl request that you look back at page at question number **43** and study that very careful. Can you find anything wrong with it? Agree, you cannot find anything wrong with it, Searl agrees **100%** that it's correct in all details. But the problem that occurs is when students ask the teacher to explain the **S.E.G**. they say it's a con, a fake, and impossible.

Now for the benefits of all experts, Searl will educate you on basic battery functions. If: what the manufactures state that a battery may last 2 years (if you are lucky) from the date of manufacture. The problem of batteries that they are stationary devices, where in reality you need something which moves to generate large emf, and thereby last much longer. The roller sets used in the S.E.G. actually moves in respect to current drain, which can be maintain for hundreds of years, due to its structure it can replace the lost electrons just as fast as it loses them. The roller sets are just the same as your battery cell, the only difference is that each consist of 8 cells connected in parallel and on the first plate there are 12 batteries connected in series, thus, you have voltage and current available at all times, as it never stops running.

Page 530©

Searl states that the S.E.G. functions according to Sir Isaac Newton's Second Law, that a force (magnetic) acts upon a mass (S.E.G. roller sets) experience a force and converts that force into an acceleration force, which converts it into a velocity force, which then convert it into momentum. At this point all forces except momentum switches to = 0. That now means that force of demand, velocity and momentum continue to hold at =1 leaving the rollers set to continue at that steady rate until some change takes places which can only be demand. I trust that I have made my point clear. If you fools had listened to me in the first place, we would not have been in the mess which we find ourselves today. I understand the main public at large will not understand this as they still have electricity supply.



VOLTAGE RISES AND VOLTAGE DROPS:

Searl points out that in electronics and electrical work there are two kinds of emf or **potential difference** (**that is the law of the squares again**). Both are expressed in **volts** but they have somewhat **different characteristics**. One type of emf is called a **voltage rise**. The other is called a **voltage drop**. Searl says let's take a look at the **voltage rise first**.

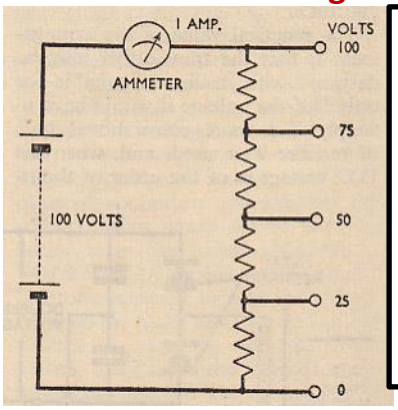


Figure 722.23: Voltage drops produced when a **current of 1 amp**. Pass through a succession of **25 Ω resistors**. Fall in potential between certain points resulting from the passage of a current through resistance connecting those points. This term is almost synonymous with **POTENTIAL DIFFERENCE**. But: is more commonly used when referring to **differences of potential** produced by resistance. **Figure 722.23** shows a case in which **potential differences** are produced across **resistors**, with figures which indicate the **voltage drops** round the circuit.

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NOTE: do not stop at just the producing the **S.E.G**. or the **I.G.V**. He only knows too well that if the **Searl Aerospace** actually goes into **flying new technology**, a hospital will be needed. As you have heard I got promoted to one and had to learn their **mathematics**. Here is some of that **training**, as I can recall it:

Searl states that medical literature draws on and refers to such a wide range of **science** and **technology** and whatever Searl learn then must have **change beyond belief**. By now you should understand that a **new approach appeared term**:

The SI Units:

SI is an example of a **coherent system of units**; only one unit is generated for each **physical quantity**, and relationships between units employ product and **quotient operations** involving no **numerical factor** other than unity (1).
Page 534©

Quantities, Units, and Symbols:

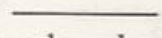
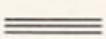
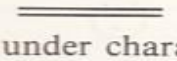
Searl points out that a measurement is generally describe by a number and a unit: **150 metres** for example. Such a result involves a **quantity name** and a **unit name**. Associated with each measured quantity are one or more quantity symbols according to the requirements of the particular discipline and the actual context, and a unit symbol allocated to the unit thus:

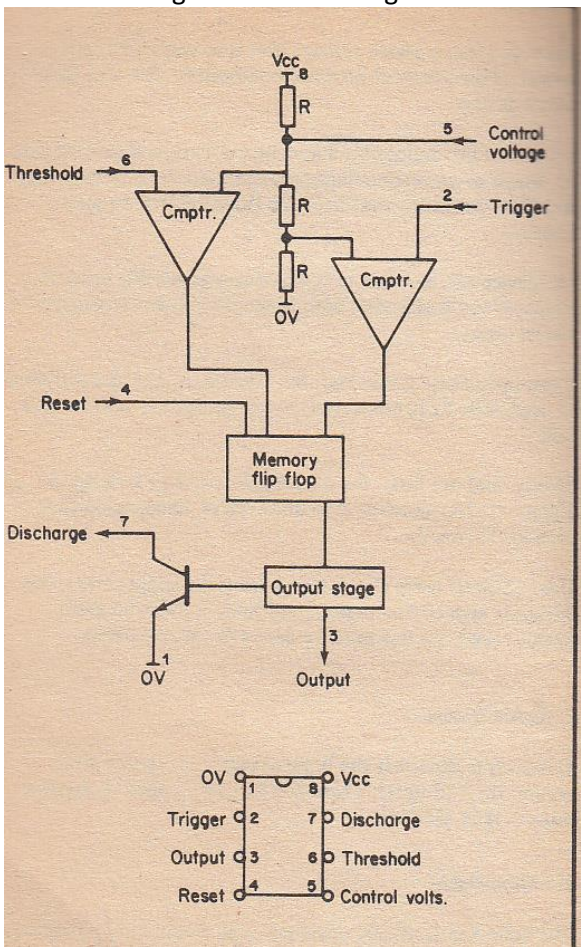
Quantity name	Quantity symbol(s)	Unit name	Unit symbol
Distance	l, x etc.	metre	m

A statement such as l = 150 m may be read as 'the quantity l equals the product of (the number) 150 and (the unit) metre'; this is analogous to reading an algebraic equation such as x = 3y.
Page 535©

Deletion, insertion and substitution

Insert in text the matter indicated in the margin		New matter followed by 	Large insertions, on a separate sheet, to be indicated by a letter in a diamond e.g. 

Instruction	Textual mark	Marginal mark	Notes
Delete	/ through character(s) or ⊢⊣ through words to be deleted		
Delete and close up	 through character or  through character e.g. characcter character		
Substitute character or substitute part of one or more word(s)	/ through character or ⊢⊣ through word(s)	New character or new word(s)	
Wrong fount. Replace by character(s) of correct fount	Encircle character(s) to be changed		Replaces 'w.f.'
Set in or change to italic	 under character(s) to be set or changed		Replaces 'ital'
Set in or change to capital letters	 under character(s) to be set or changed		Replaces 'CAPS'
Set in or change to small capital letters	 under character(s) to be set or changed		Replaces 'small caps'



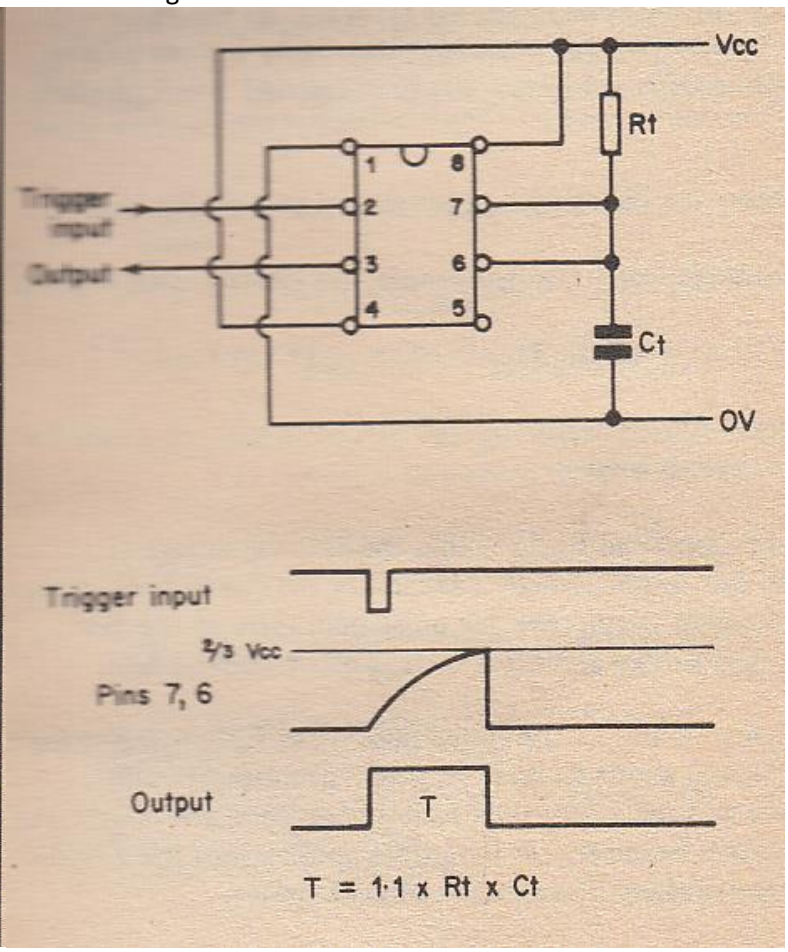


Figure IC2.1: 555 connections. **Figure IC2.2: Monostable.**

Every so often a device appears that is so useful that one wonders how life went on before; With-out it. Searl favoured **555 timers** is such a device which he used in many of his show devices and of cause in **Demo one**. This goes back to **1977**. It was first introduced by **Signetics**, but is now manufactured by almost every **semiconductor manufacturer**. It was cheap and probably the most versatile of the three devices which Searl employed in his products.

The **555 device** can be made to operate as a **monostable** as shown in **Figure IC2.2** above, or as an **oscillator** (**multivibrator**) with times from **micro seconds** to **several hours**. It could operate on power supplies from **5v to 18v** and was used with **TTL** for **my model railways** layout it could if needed run motor car circuits with ease. Finally, and not least, the device can source or sink up to **200mA** (**0.2A**) allowing it to drive relays, which I use **50 to 100** of, lamps and other large loads directly. The **555** itself takes about **10mA** from the supply when the output is high (**time period**) and **1mA** in the **rest state** (**output low**). To this must be added the **load current**.

Basic Circuits:

This section may describe the basic circuits that Searl found could be built around the **555 timer**. These were used in specific applications. Searl: at least trying to give you a **true image** of his life and the **lectures** which contain such **working products** using the **555**.

The energy comes from the chemical reaction within the battery. This energy has a capacity to do work and the amount of work is determined by the voltage of the battery. After all, it is the emf or voltage of the battery which causes the electrons to flow in the first place. The battery is a source of emf. This type of emf is referred to as a voltage rise. Thus, in an electrical circuit a voltage rise is an emf which is provided by a voltage source.

Earlier, Searl discussed several different types of voltage sources. The two most common are the generator and the battery. However, solar cells and thermocouples also produce an emf so they are considered voltage sources. Any emf introduced into a circuit by a voltage source is called a voltage rise. Thus, a 10v battery has a voltage of 10v.

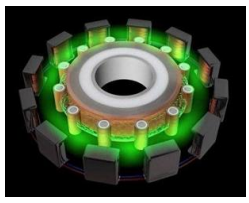
Voltage Drop:

Electrons which leave the negative terminal of a battery have been given energy by the battery. As the electrons flow through the load, they give up their energy to the load. Most often the energy is given up as heat. However, if the load is a light bulb, both heat and light are given off. The point is that the electrons released to the circuit the energy given to them by the battery.

Since the energy introduced into the circuit is called a **voltage rise**, the energy removed from the circuit by the load is called a **voltage drop**. A **voltage drop** is expressed in **volts** just as in the case with the voltage rise. In fact Searl says that the same equation expresses the relationship between **volts, joules**, and **coulombs** in both cases. The equation is:

$$\text{volts} = \frac{\text{joules}}{\text{coulombs}}$$

Using this equation, Searl can determine the voltage drop across a load if Searl know the energy consumed by the load (in joules) and the number of electrons flowing through the load (in coulombs). For example, let's assume that a light bulb releases **10 joules** of energy in one second when a **current of ten amperes** flow through the bulb each second. Using the above equation, Searl can determine the voltage drop:



This is the property of Professor John Roy Robert Searl!

$$\text{volts} = \frac{\text{joules}}{\text{coulombs}}$$

$$\text{volts} = \frac{10 \text{ joules}}{2 \text{ coulombs}}$$

$$\text{volts} = 5$$



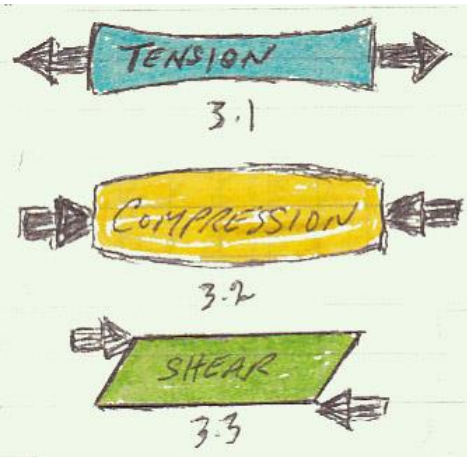


Figure 3.1; to load the body, or a part of it, in Tension or (Figure 3.2): in Compression or in (Figure 3.3) Shear, or in some combination of these loads. The force must act on a body; it must have magnitude of definite number of units. It acts in a straight line. Therefore, has direction, quantities, which can be specified in this way, are called vector quantities, because they can be represented on paper by a straight line drawn to scale.

Page 571©

Thus, the voltage drop of the light bulb is **5 volts**. It is important to realize that this voltage exists between the two terminals of the bulb and it can be measured by a meter. In fact the meter cannot tell the difference between a voltage rise produced by the battery or **S.E.G**. and a voltage drop produced by the load. This is the reason that a battery and a light bulb may both have a rating of **12 volts**. In the case of the battery or **S.E.G** it means that the battery or **S.E.G**. supplies **12 volts**. This is a **voltage rise**. However, for the **light bulb**, it **means** that **12 volts** is required to make it work. This is the **voltage drop**.

Searl says that there is one difference between the **voltage drop** and the **voltage rise** is that the voltage drop occurs only when current flows through the load. Thus, a battery or **S.E.G**. has a voltage rise whether or not it is connected to a circuit. However, **a load produces a voltage drop only when current flows through it.**

1954: imagine a world without **polyethylene**, from **plastic grocery bags**, **Gallon milk containers**. Many products are **found by accident**, and this was one of them.
Page 572©

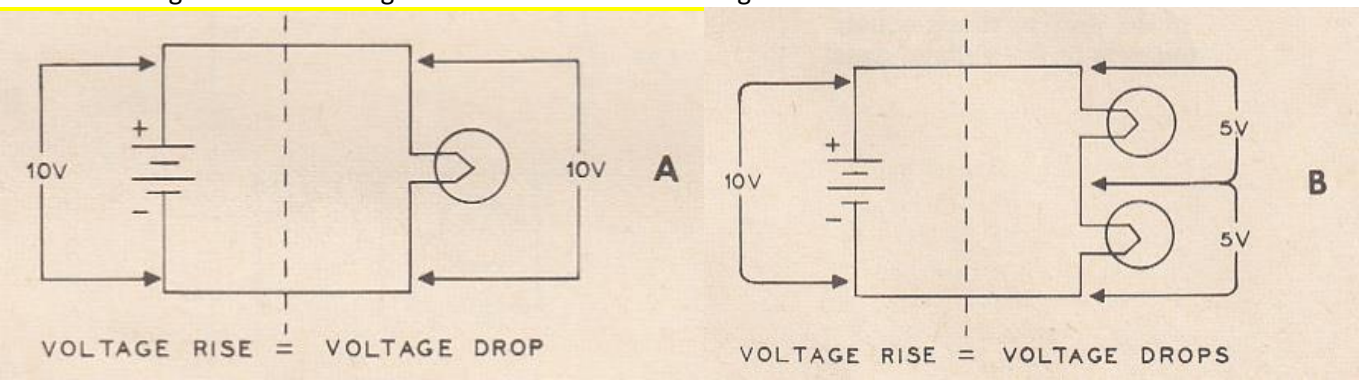


Figure HE2.20: the voltage drops are equal to the voltage rises.

Voltage Drops Equal Voltage Rises:

Figure HE2.20A: shows a **10V battery** with a **light bulb** connected across it. The **battery** provides a **voltage rise of 10 volts**. As electrons flow through the lamp, a **voltage drop** is developed across it. Since the lamp consumes the same amount of energy that the battery provides, the voltage drop across the **lamp is equal** to the **voltage rise** across the battery. This also applies to the **S.E.G**. That is, the voltage drop is **10 volts**.

In **Figure HE2-20B**: two light bulbs are connected in series across a 10V battery. Each bulb drops part of the **10v** supplied. If the two lamps are identical, then each will drop half the supplied voltage as shown. If the two lamps are not identical, one bulb will drop more voltage then the other. However, the sum of the voltage drops will always equal the sum of the voltage rises.

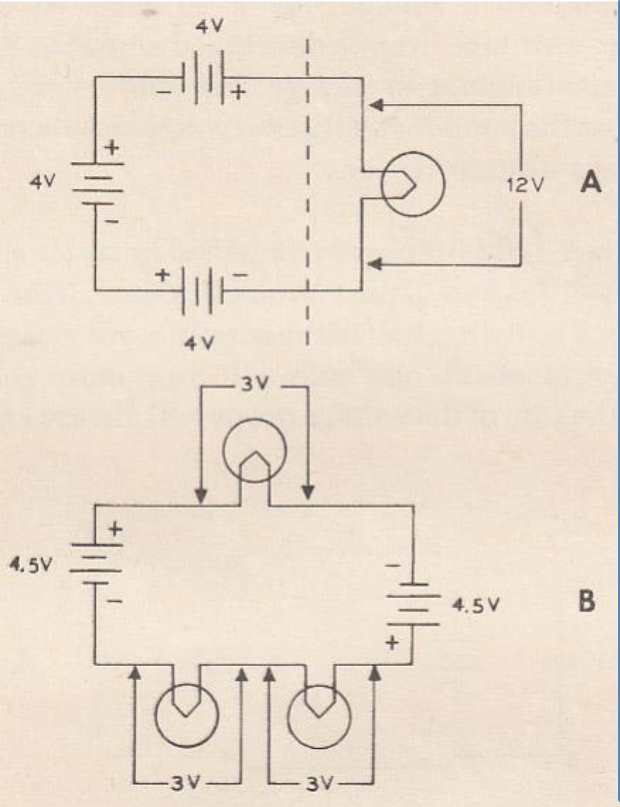


Figure HE2.21: The sum of the **voltage drops** equal the **sum** of the **voltage rises**. To be certain you have the idea, consider the example shown in **Figure HE2.21**. Here, three batteries are connected series aiding across a single lamp. The **sum** of the **voltage rises** is equal to **12V**. Hence the lamp must **drop 12 volts**. A final example is shown in **Figure HE2.21B**. Here **two 4.5v** batteries are connected in series with three identical lamps. The total **voltage rise** in the circuit is **9 volts**. Since the lamps are identical each drops one third of the applied voltage or **3v**. **NOTICE**: that once again, the **sum** of the **voltage rises** equals the **sum** of the **voltage drops**.

Searl hopes that the circuit drawings are clear enough ?

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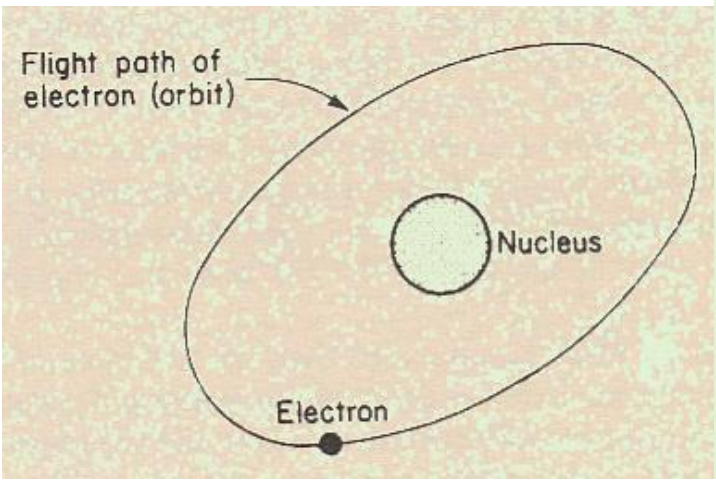

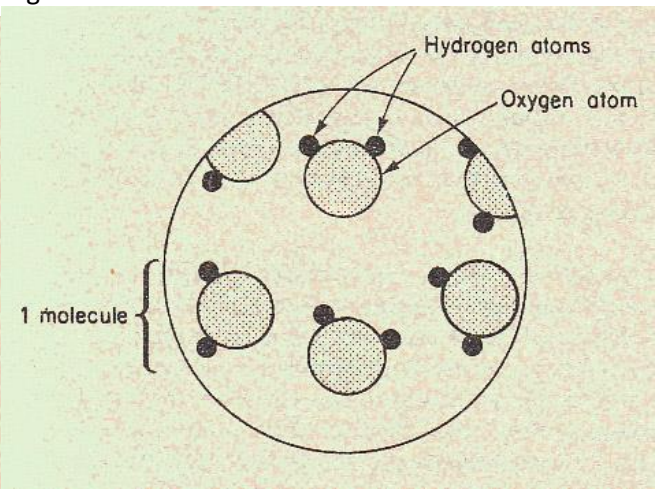

Figure EH1.2: Element Hydrogen H.1. **Figure W1.1: Molecule of water**.

Searl accepts that these two components are the basic of all our **scientific education**. Water, we should be able to identify it that exists in one of three possible states. Searl like to point out that there was a time when a ray of light set off from a distant star. It travelled through space for a **million years** at a speed which could encompass the Earth seven whole times in one second and it eventually arrive on Earth so that the star could be seen. A **FACT**, not a fairy story but needing much belief and imagination, for how can we talk of **ancient times**, a mere two thousand years ago, ever appreciates a million years, five hundred times as long. Herein lies **our first lesson** in the **fascinating study of electronics**, that just as **universe times** and **distances** are as great as to be beyond the **comprehension** of ordinary man, so equally bewildering is the habitat of the electron which, in contrast is so **utterly small** and **never seen**. Yet Searl shall find that the universe and electrons have something in common.

Percentage Tolerance	*Preferred Values*											
5	10	11	12	13	15	16	18	20	22	24	27	30
10	10		12		15		18		22		27	
20	10				15				22			

Percentage Tolerance	*Preferred Values*											
5	33	36	39	43	47	51	56	62	68	75	82	91
10	33		39		47		56		68		82	
20	33				47				68			

Table AR10.1: Preferred Values for Resistors and Capacitors: Searl says that requirement is to reduce the enormous number of values within the practical range to one which is manageable and for this purpose the preferred value system, which Searl has set up for the **Searl Global Technologies** various units can employ in their construction units, has evolved. With due regards: to tolerances and overlap.

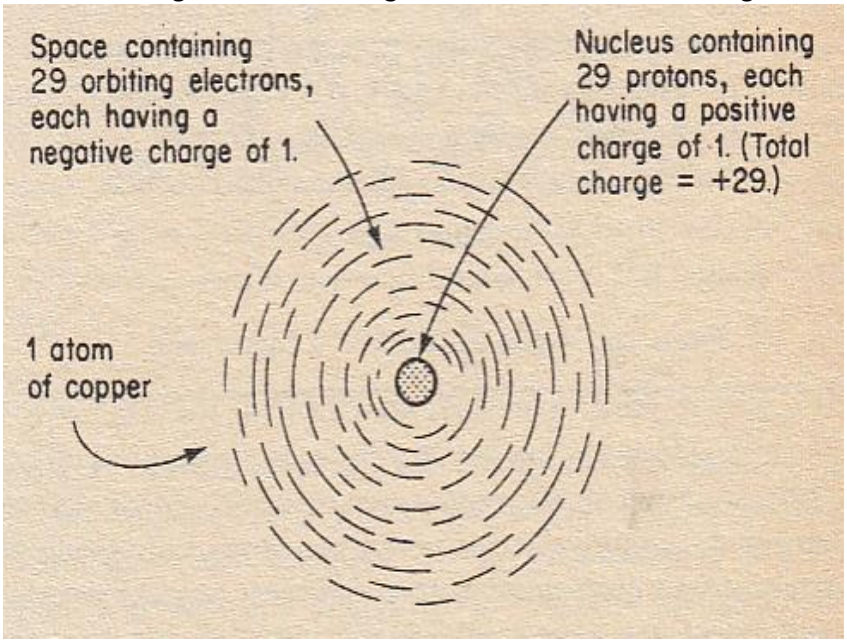



Figure A1.3: Balance of charges in copper Cu 29 atom.

CONCEPT OF GROUND:

Searl states that the one of the most important points in the study of electricity and electronics is the concept of ground. Originally ground was just what the name implies, as in my days, the Earth. In **FACT**, in some countries the name earth is used instead of ground. Earth is considered to have zero potential. Thus, ground or earth is the reference point to which voltages are most often compared. Many electrical appliances in your home are grounded. This is especially true of air conditioning units, electric clothes dryers, and washing machines. Often this is done by connecting a heavy wire directly to a cold water pipe which is buried deep in the earth (**ground**). In other cases, a third prong on the power plug connects the metal frame to ground. Searl states that the purpose of this is to protect the user in case of a short circuit develops in the appliance. It also places the metal parts of different appliances of the same potential so that you are not shocked by a difference in potential between two appliances. This type of ground is sometimes called earth ground.

Searl states however, there is a slightly different type of ground used in electronics. For example, a certain point in a small transistor radio is called ground, although the radio does not connect to earth in any way. This is the concept of ground with which Searl will be primarily concerned within an electrical circuit. In most larger pieces of electronic equipment the zero point or ground point is the metal frame or chassis on which the various circuits are constructed. All voltages are measured with respect to this chassis.

Searl points out that in your automobile, the chassis or metal body of the automobile is considered ground. If you look closely at the straps leaving the battery you will see that one wire connects directly to the metal frame of the car. This point is considered to be ground as is every other point on the metal frame.

Searl say that in electronics, ground is important because it allows us to have both **negative** and **positive voltages**. Up to now: Searl have been concerned only with **relative voltages** between **two points**. For example, a **6V battery** has an **emf** between its **two terminals** of **6 Volts**. Searl do not think of this as **+ 6 volts** or **– 6 volts** but rather simply 6 volts.

However, the concept of ground allows us to express **negative** and **positive voltages**. Remember ground is merely a reference point which is considered zero or neutral. If Searl assume that the **positive terminal** of a **6 volt battery** is **ground**, then the **negative terminal** is **6 volts negative**. Thus, **the voltage** at this **terminal** with **respect to ground** is **–6 volts**.

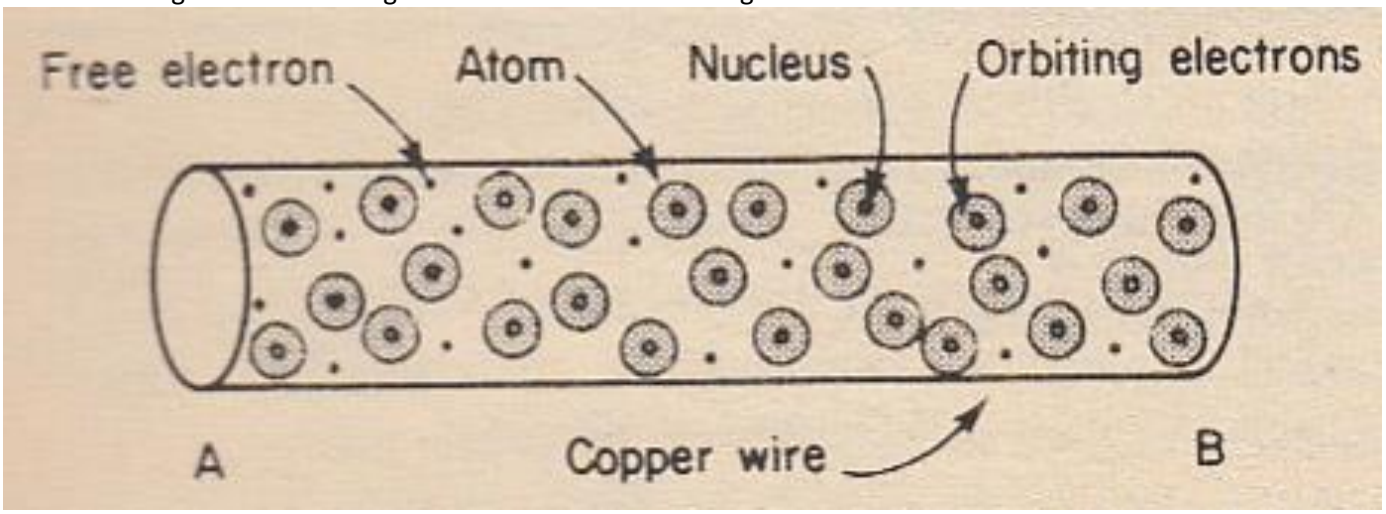

Figure EE1.4: Atoms and mobile electrons in a **copper CU. 29** wire. Sorry that I cannot colour as I did in my early books back in the **60s**. Photo shop will not allow me to.

Let me tell what I think about **Figure EE1.4** illustrates how an electrons flows in a conductor and to be to add some numbers, let Searl assume that the conductor is an ordinary piece of **copper Cu. 29** wire about **2mm** [(A6)] in diameter and some **30 cm** (**the length of a desk ruler**) long. Searl thinks that within this small piece of wire there could be as many as **one hundred thousand million, million, million, free electrons** moving at random between the atoms, which equals **= 100,000,000,000,000,000,000,000** free electrons. A number of this magnitude which in **mathematical shorthand** [(A2)] is written as 10^{23} is beyond **comprehension**, this particular number need not to be remembered, it merely serves to remind us how **diagrammatic Figure EE1.4** is in being able to show only a few atoms when in **FACT** a truly enormous number is involved.

The **S.E.G roller sets** each have **ten times more free electrons** than that small piece of wire, and **plate one** even ten times more **free electrons** then a roller has. Clearly, **plate 2** has even more free **electrons** than **plate one** has. And **plate 3** has many more times that of **plate one.**

On the other hand, if Searl assume that the **negative terminal** of the **battery** is **ground**, then the **positive terminal** with respect to **ground** is **+6V**. **NOTICE:** that the **battery** can produce **–6V** or **+6V** depending on which **terminal** Searl assign to **ground**. Searl is aware that many small electronic devices such as calculators, transistor radios, etc. do not have metal frames. Instead, all components are mounted on a printed circuit board. Here ground is nothing more than an area of **copper Cu. 29** on the board. However, as before, all **voltages** are measured with respect to this point. In this case, **ground** is simply a common reference which is a handy starting point for **measuring voltages**.

The schematic symbol for ground is shown in **Figure CE2.22A**: **Figure CE2.22B**: shows how it is used in the circuit. Point **A** is at ground or zero potential. Now, since this is a **10V** battery, point **B** is at a plus **10V** potential with respect to ground. Searl say that point **B** is ten volts above ground or that the voltage at this point with respect to ground is **+10V**.

Figure CE2.22C shows why ground is so important. Here the same battery is shown but with the positive terminal connected to ground. That is, the positive terminal is the zero volt point in the circuit. Because the negative terminal is ten more volts, the voltage at point **A** with respect to ground is **–10V**. Thus, Searl can use the battery as a **+10V** source or as a **–10V** source depending on where Searl connect ground.

Another example is shown in **Figure CE2.22D**. Here two batteries are connected in series, with the ground connection between them. Thus, the zero reference point is at **B**. Since the top battery has an emf of **10V**, the voltage at point **C** with respect to ground is **+ 10V**. The lower battery has an emf of **6V**. Because the positive terminal is connected to ground, the emf at point **A** with respect to ground is **–6V**.

Searl sometimes loosely speak of the voltage at a particular point. Actually, voltage is always the measure of the potential difference between two points. Thus, in **Figure CE2.22D**, when Searl speak of the voltage at point **A**, what Searl really mean is the voltage between point **A** and ground. Searl trust that you can understand him so far.

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RMKS	Gaussian (cgs)	Heaviside-Lorentz (cgs)	Natural (Rationalized, $c = 1$)
	(In the cgs systems, **J** is measured in esu. If **J** is measured in emu, **J** in the following equations must be multiplied by c.)		
$\nabla \cdot \mathbf{J} + \frac{\partial \rho}{\partial t} = 0$	$\nabla \cdot \mathbf{J} + \frac{\partial \rho}{\partial t} = 0$	$\nabla \cdot \mathbf{J} + \frac{\partial \rho}{\partial t} = 0$	$\nabla \cdot \mathbf{J} + \frac{\partial \rho}{\partial t} = 0$
$\mathbf{B} = \nabla \times \mathbf{A}$	$\mathbf{B} = \nabla \times \mathbf{A}$	$\mathbf{B} = \nabla \times \mathbf{A}$	$\mathbf{B} = \nabla \times \mathbf{A}$
$\mathbf{E} = -\nabla\phi - \frac{\partial \mathbf{A}}{\partial t}$	$\mathbf{E} = -\nabla\phi - \frac{1}{c}\frac{\partial \mathbf{A}}{\partial t}$	$\mathbf{E} = -\nabla\phi - \frac{1}{c}\frac{\partial \mathbf{A}}{\partial t}$	$\mathbf{E} = -\nabla\phi - \frac{\partial \mathbf{A}}{\partial t}$
$\nabla \times \mathbf{B} = \mu_0\left(\mathbf{J} + \epsilon_0 \frac{\partial \mathbf{E}}{\partial t}\right)$	$\nabla \times \mathbf{B} = \frac{4\pi}{c}\mathbf{J} + \frac{1}{c}\frac{\partial \mathbf{E}}{\partial t}$	$\nabla \times \mathbf{B} = \frac{\mathbf{J}}{c} + \frac{1}{c}\frac{\partial \mathbf{E}}{\partial t}$	$\nabla \times \mathbf{B} = \mathbf{J} + \frac{\partial \mathbf{E}}{\partial t}$
$\mathbf{F} = q(\mathbf{E} + \mathbf{V} \times \mathbf{B})$	$\mathbf{F} = q\left(\mathbf{E} + \frac{\mathbf{V} \times \mathbf{B}}{c}\right)$	$\mathbf{F} = q\left(\mathbf{E} + \frac{\mathbf{V} \times \mathbf{B}}{c}\right)$	$\mathbf{F} = q(\mathbf{E} + \mathbf{V} \times \mathbf{B})$
$\mathbf{E} = \frac{1}{4\pi\epsilon_0}\int_V \frac{\rho \mathbf{r}}{r^3} dV$	$\mathbf{E} = \int_V \frac{\rho \mathbf{r}}{r^3} dV$	$\mathbf{E} = \frac{1}{4\pi}\int_V \frac{\rho \mathbf{r}}{r^3} dV$	$\mathbf{E} = \frac{1}{4\pi}\int_V \frac{\rho \mathbf{r}}{r^3} dV$
$\mathbf{B} = \frac{\mu_0}{4\pi}\int_V \frac{\left(\mathbf{J} + \epsilon_0 \frac{\partial \mathbf{E}}{\partial t}\right) \times \mathbf{r}}{r^3} dV$	$\mathbf{B} = \frac{1}{c}\int_V \frac{\left(\mathbf{J} + \frac{1}{4\pi}\frac{\partial \mathbf{E}}{\partial t}\right) \times \mathbf{r}}{r^3} dV$	$\mathbf{B} = \frac{1}{4\pi c}\int_V \frac{\left(\mathbf{J} + \frac{\partial \mathbf{E}}{\partial t}\right) \times \mathbf{r}}{r^3} dV$	$\mathbf{B} = \frac{1}{4\pi}\int_V \frac{\left(\mathbf{J} + \frac{\partial \mathbf{E}}{\partial t}\right) \times \mathbf{r}}{r^3} dV$

Table EMT1: ELECTOMAGNETIC THEORY. This was termed: **BASIC EQUATIONS** of **ENGINEERING SCIENCE**: This was a part of **Searl higher education training in 1968** at **Mortimer, Berkshire, UK**. It refers to my early training; we have improved upon our **knowledge base, regarding electromagnetic systems**.

In fact, **2014** has shown me how our knowledge based has advanced during these years which I have been out of action. Now at last I have the freedom to catch up with that reality of man's progress in science. I wonder now, if you have already forgotten that it was a simple game called **HOPSCOTCH of 8 squares** which has created this entire problem that the **S.E.G**. cannot work or the **I.G.V**. would not fly let alone support itself **structural wise**, funny it proved them **wrong** in **both claims**. Searl says how odd that a dream can change your thinking, in my time, I was deaf, which turn out to be blessing in one way and a problem in another way. Sorry that this document is not intended to be a book as such, but a record of **facts** taken from my life and work. Thereby it is hope that the **CRAP** on the **internet** will die, so the real stuff can progress, without any more problems of **insanity**. This is my world which I hope will create a better world for planet Earth, thus, all creatures can have a better life. Except: for bad bacteria.

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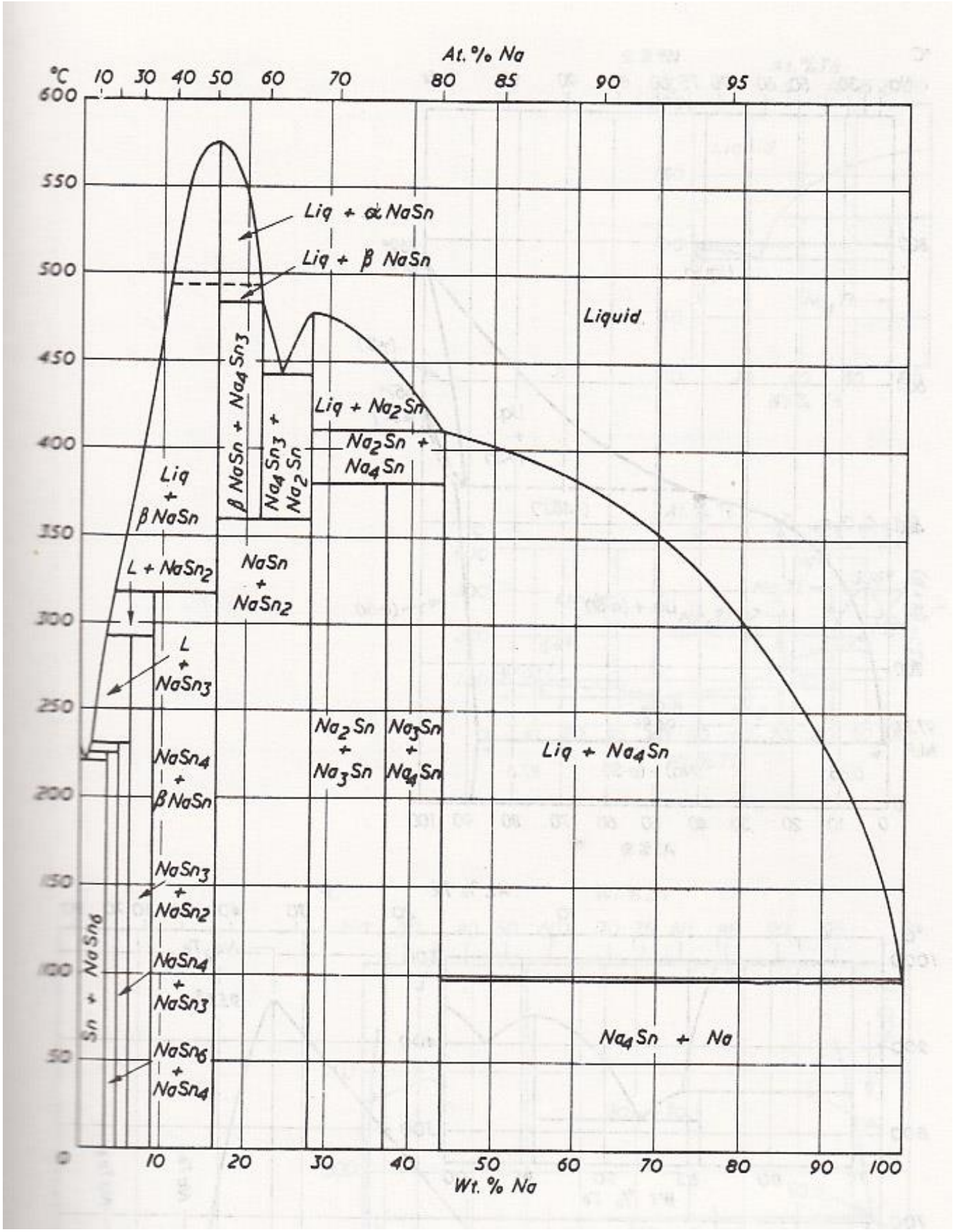
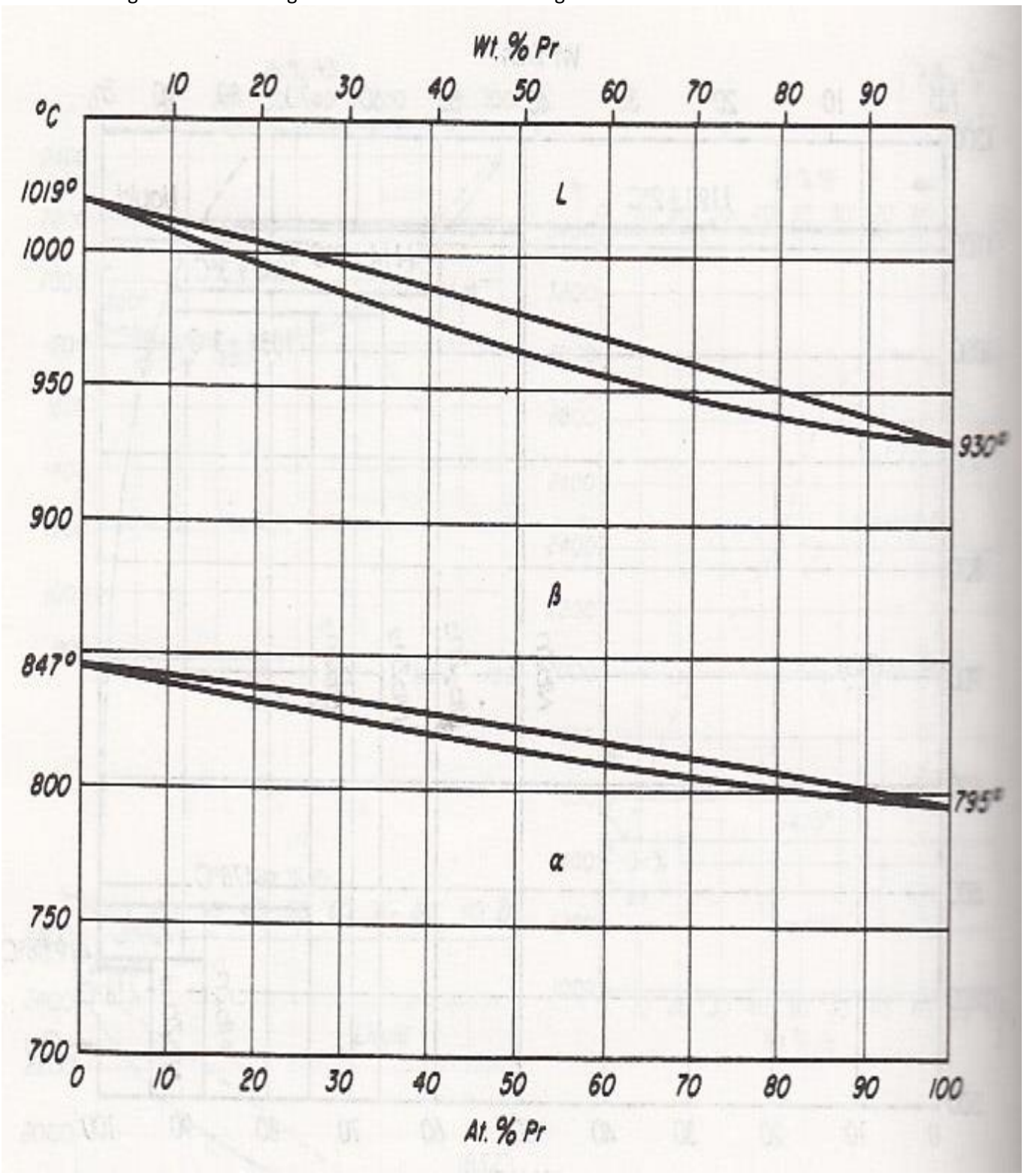


Equilibrium diagram Ne – Sn: Ne = Neon 10 and Sn = Tin 50. There is a logic reason why I have presented such diagram here. The answer is simple the **S.E.G. materials** require a controller, and this is its signal information from which I can derive a **correct solution**.

Searl knowledge: 1946-1968: Legal: SEARL NO: 013787346: Legal: SEARLE NO: 013787451.



Equilibrium diagram Nd. – Pr.: Nd = Neodymium 60 and Pr = Praseodymium 59.

Searl knowledge: 1946-1968: Legal: SEARL NO: 013787346: Legal: SEARLE NO: 013787451.

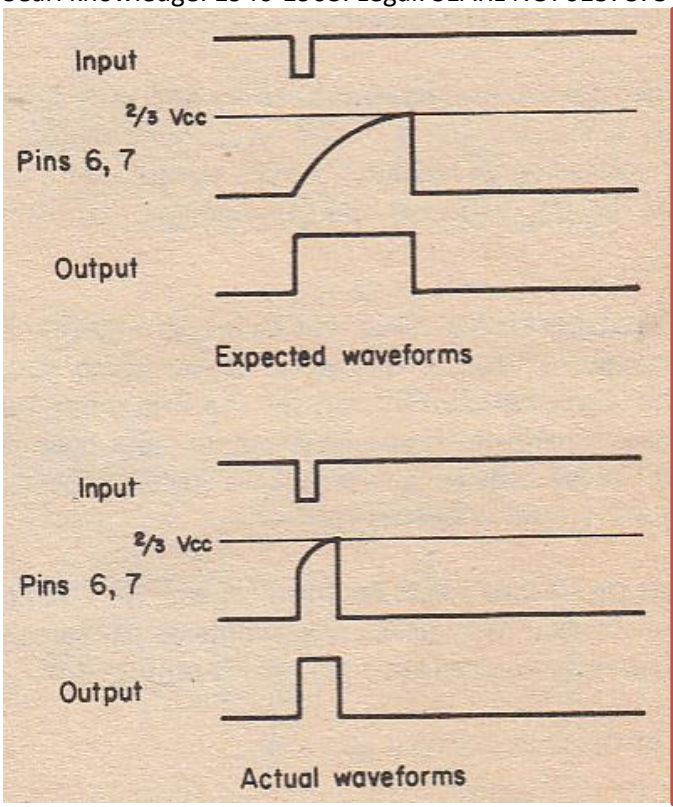
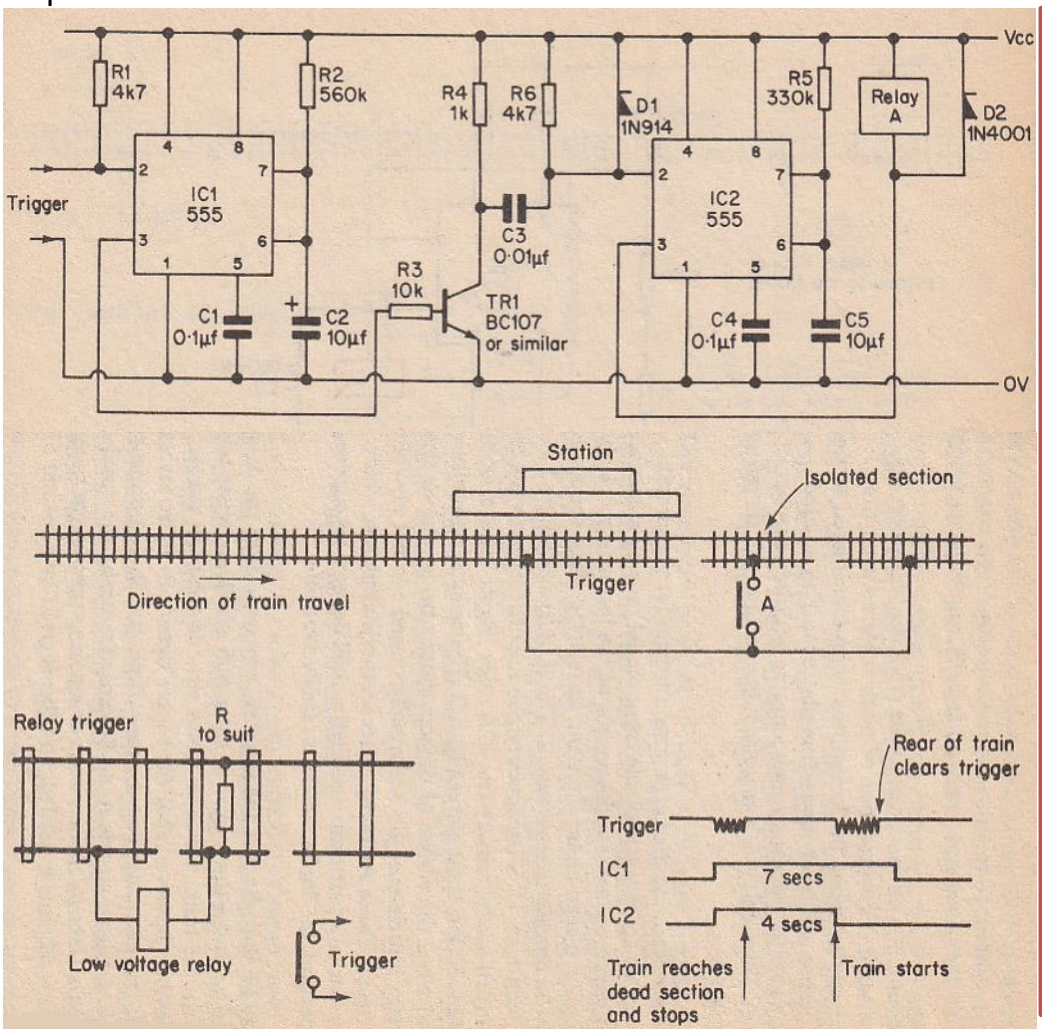


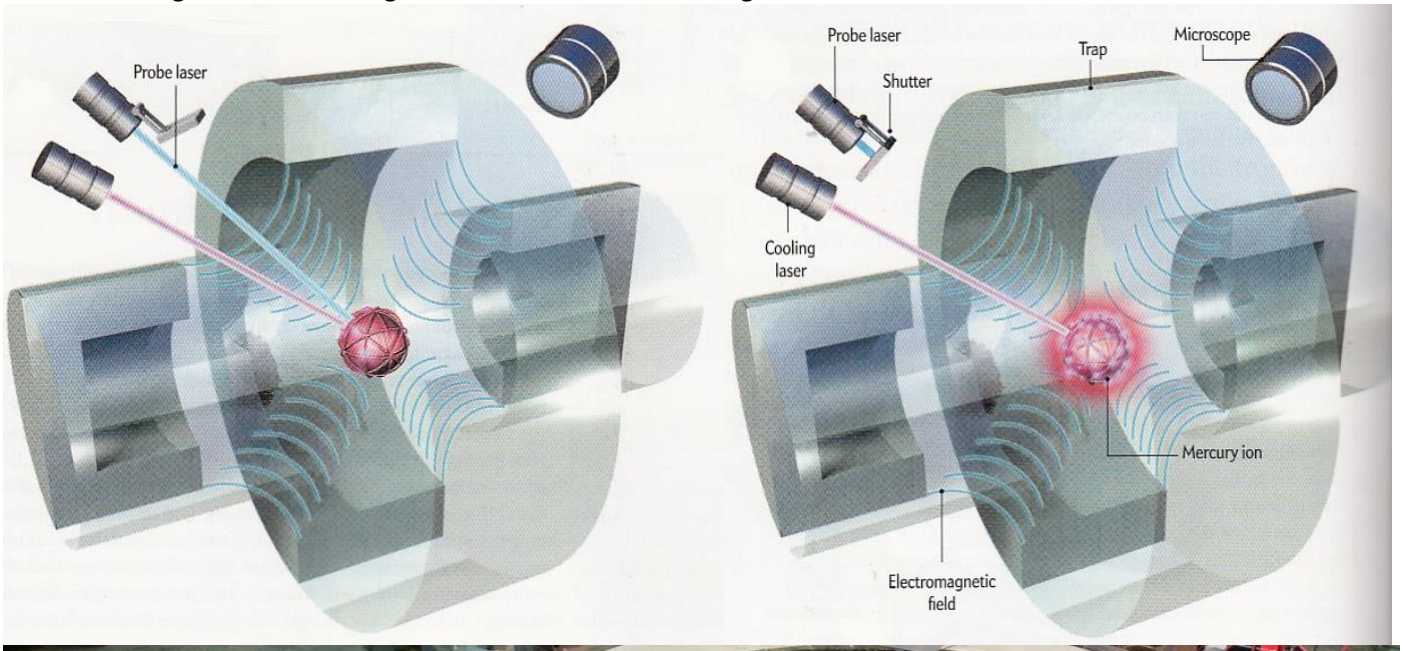
Figure E2.3: Problems with electrolytic capacitors. There are no limits of **Ct** apart from cost. **NOTE** that large value electrolytic capacitors have high leakage currents which can cause large variations away from the calculated time periods. If very large values are used, the discharge transistor may take an appreciable time to discharge **Ct**. If electrolytic capacitors are used, the voltage rating should be about the same as the supply **Vcc**. An electrolytic capacitor does not become a capacitor until about **0.1** of its voltage rating. If say, **100v** rating capacitor was used on a **15V** supply with a **555** Searl saw were waveforms similar to **Figure E2.3**. Which **means** that not always things go as planned.

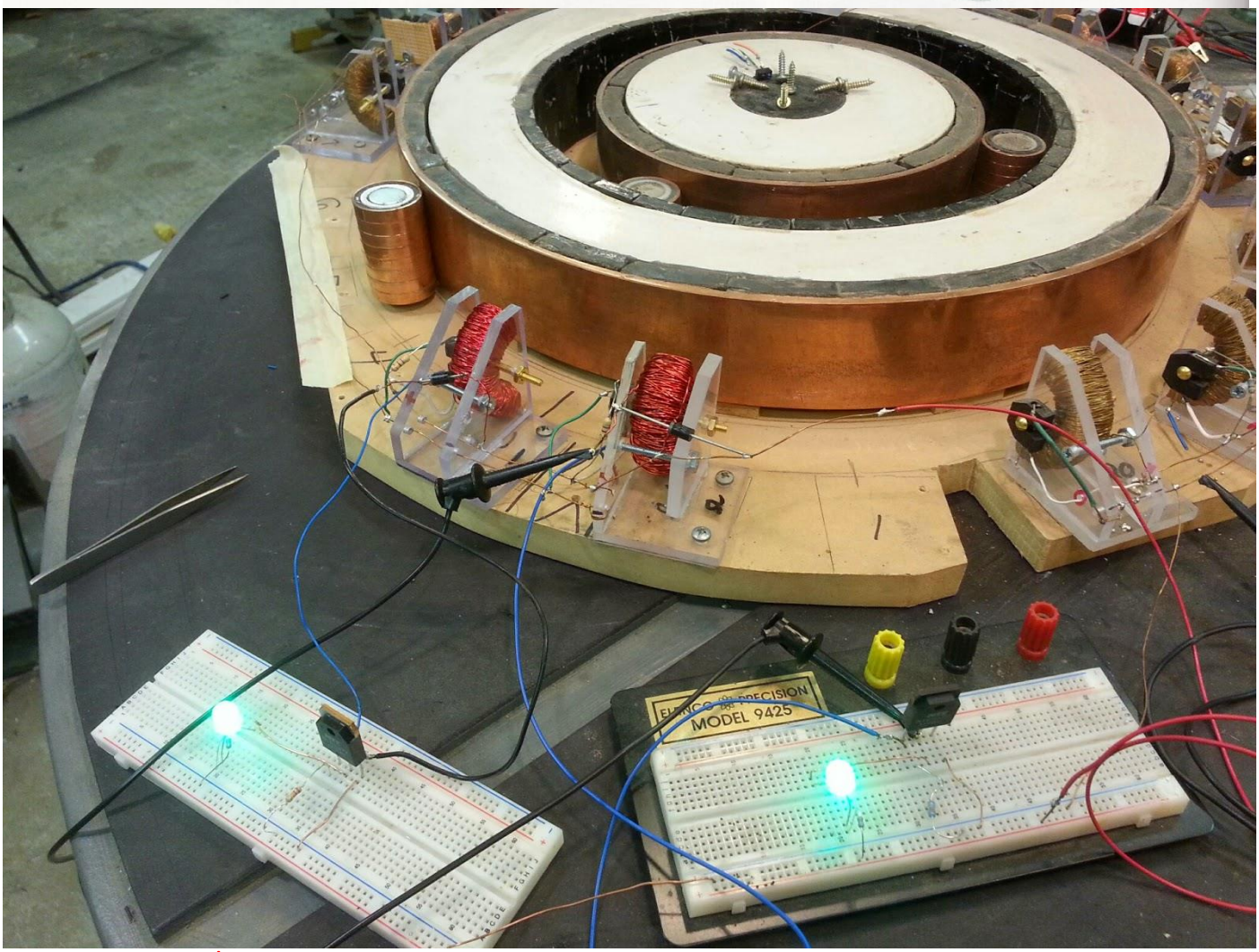
Remember I am talking about the **60s**, not had time to check the Electrolytic of today requirements.



1968: My start to create a large railway display for my lecture on **S.E.G**. power system, which ended up **100** different types of trains. Thus the public could see how different countries created different constructions to solve their operation requirements. Rail system has changed and will continue to do so, as cost is a problem

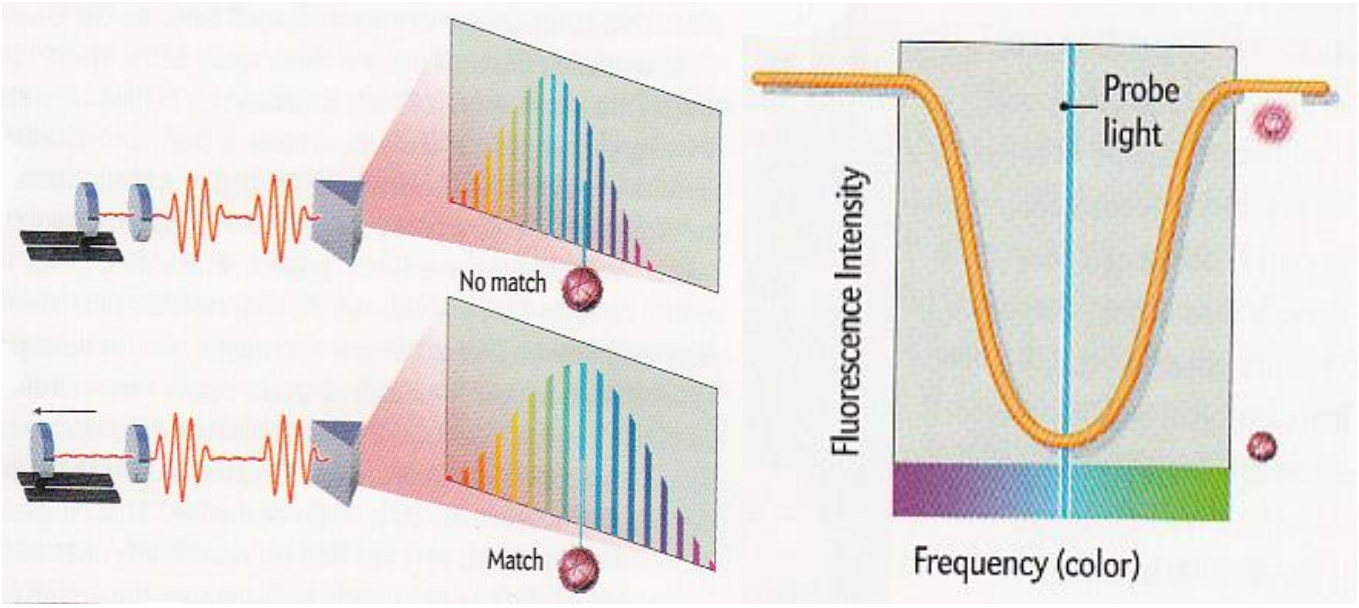
Searl knowledge: 1946-1968: Legal: SEARL NO: 013787346: Legal: SEARLE NO: 013787451.





Wednesday 10th November 2014 at 2100 hours, this photo arrived upon my desk: Do you know what this means? It means that this person is the very first person outside of Searl to make at this stage 2 ring **S.E.G**. he had a few things he had wrong to correct, and now it is running. He just has to complete the full set of rollers then he will see the real effects of the **S.E.G**. It has taken over 2 years to reach this stage. One more plate to make then he got it.

Searl knowledge: 1946-1968: Legal: SEARL NO: 013787346: Legal: SEARLE NO: 013787451.



Searl will eventually discuss these in another book, as he is busy teaching those of you who request help to understand the **S.E.G**. and the **I.G.V**. My thanks to the lady who brought these images to me knowing about the R&D we are undertaking, if it helps me in any way.

The work my companies are doing; is based upon a new window in science. We are teaching you upon that subject.

MEASURING VOLTAGE:

The device used for measuring voltage is called the voltmeter. There are many different types of voltages in used today, we have already some of them here, and I too have brought them being smaller to carry around instead of the heavy **Avos**. Searl says that most of them use a mechanical meter movement like the one shown in **Figure CE2.23A**. Here the voltage is read on a scale behind the moving pointer. Another type, called the digital voltmeter, is becoming increasingly popular. It is shown in **Figure CE2.23B**. Here the voltage is displayed as numerals. This type of meter is more accurate and is easier to read. Generally it is also more expensive. **Remember that I am talking about my time, not your time. I guess price changes have taken place over the years which I have been out of action.** Below is **Figure CE2.24**: Connecting the voltmeter:

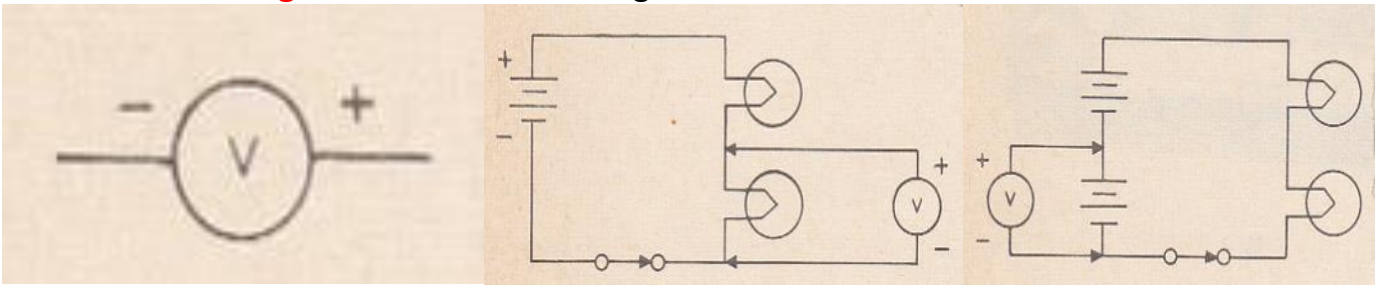


Figure CE2.24A: **Figure CE2.24B:** **Figure CE2.24C.**

Searl will continue on next page to avoid breaking up a block.

Searl states: regardless of the type of voltmeter, certain precautions must be taken to ensure accurate readings. To begin with, voltage is always measured between two points. The schematic symbol for the voltmeter is shown in **Figure CE2.24A**. **Notice:** that one of the leads is marked negative while the other is marked positive. As with the ammeter discussed earlier, polity must be observed when using the voltmeter. This means that the negative lead must go to the more negative of the two points across which the voltage is to be measured.

Searl states that fortunately, the voltmeter is much easier to use than the ammeter, with the voltmeter, the circuit under test need not be broken or disturbed in any way. To measure the voltage between two points Searl merely touch the two leads of the voltmeter to the two points. However, Searl have to observe polarity. **Figure CE2.24B** shows how the voltmeter is connected to measure the **voltage drop** across the lower lamp. **NOTICE:** that the negative lead is connected to the more negative point. **Notice:** also that the meter is connected directly across the lower bulb.

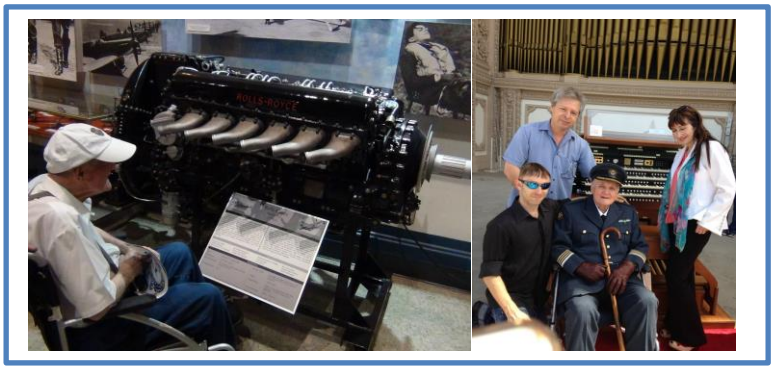
In this case, the meter is measuring a **voltage drop**. If the switch is opened so the current flows stops, the voltage drop disappears and the meter reading falls to zero.

Figure CE2.24C: shows a different circuit with the meter connected to measure the **voltage rise** in the lower battery. Once again polarity is observed and the meter is connected directly across the component. Here the meter is measuring a **voltage rise**, rather than a **voltage drop**. Therefore, the voltage remains constant when the switch is opened. **NOTICE:** that the **voltage rise does not depend on current flow**.

Searl warns that a couple of precautions should be taken when using a voltmeter. **First,** we should always make certain that the voltage we are going to measure is not higher than the meter can measure. Searl warns that if it is, the high voltage may damage the meter. Searl again warns you also, we should be certain the meter is on the proper Range. For example, we should not attempt to measure **100v** with the meter set to the **1v** range. Searl warns that this too, may damage the meter. When we are unsure of the value of voltage being measured, we should make our first measurement with the meter on a high range. This will prevent the unknown voltage from pegging the meter.

Searl gives another warning: For our own safety there are some other **precautions** which we should **observe**. For example, we may receive an **electric shock**. As we have seen, in most electronic devices, **voltages** are measured with **respect to ground**. Therefore, when working on **electronic equipment**, it is a good idea to connect one lead to ground and leave it there.

Searl says that only one hand is required to make voltage measurements. The other hand can be away from the equipment. This greatly reduces our chances of receiving an **electrical** shock since there is no complete path for **current flow** through our body.



EXPERIMENT 1 As I had to do.

MEASURING VOLTAGE:

OBJECTIVES:
To gain practice: measuring voltage.

To **familiarize**: you with the **operation** and **capabilities** of the **Electronic Design Experimenter** and your meter. That **experimenter**: that was part of the **robbery**. If I can **find the circuit** there might be a **chance to reconstruct it**.
Page 635©

Searl says that to **determine** how the **two power supplies** on the **Electronic Design Experimenter** are connector (**I cannot take any photos to show here**).

INTRODUCTION:

The voltages used to these experiments are provided by the two **DC power supplies** on the **ET-3100 Electronic Design Experimenter**. **Figure CE2.25**: shows the front panel area associated with these **two power supplies**. A **variable positive voltage** is provided between the **POS terminal** and the **GND terminal**.
Page 636©

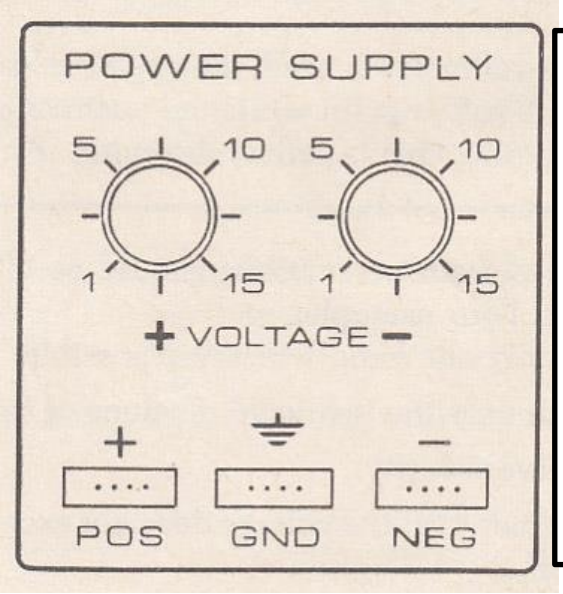


Figure CE2.25: This section of the **experimenter** provides voltages used in these experiments.

The value of voltage can be adjusted by the **+** voltage control knob. A variable negative voltage is provided between the **NEG terminal** and the GND terminal. This voltage can be adjusted by the – voltage control knob. **NOTE** that the **GND** (**ground**) terminal is common to both supplies. Generally, voltages will be measured with respect to this point.

Searl says, before you begin this experiment, read over the instructions provided with your meter. Searl points out those voltmeters vary greatly in their ranges, scales, and capabilities. However, if you know how to use your meter, you will have no problem completing the experiments in this document. Searl had to also review the operations section of the **ET-3100 manual**.



MATERIAL REQUIRED:

1 **ET 3100 Electronic Design Experimenter.**
2 **Voltmeter with test leads.**

PROCEDURE:

1 **Plug in the Experimenter and turn the ON-OFF to the ON position. Turn both voltage control knobs fully counter clockwise.**

2 **Setup your voltmeter to measure DC voltages in the vicinity of 10 volts.**

3 **Attach the positive lead of your voltmeter to the POS terminal on the Experimenter. Depending on the type of leads on your meter, it may be necessary to insert a short hock-up wire into the POS terminal in order to make contact for measuring voltage. In the same way, attach the negative lead of your voltmeter to the GND terminal.**

4 **With the + voltage control knob fully counter clockwise, measure the voltage output. Use the lowest DC voltage range that will allow you to measure the voltage without driving your meter past full scale deflection.**

The voltage is _____ volts.

5 Switch your meter to the proper range for measuring voltage in the vicinity of 5V. Set the + voltage control to the 5 position. The measured voltage is _____ volts.

6 Switch your meter to the proper range for measuring voltages to the vicinity of 10V. Set the + voltage control to the 10 position. The measured voltage is _____ volts.

7 Measure the voltage with the + knob set to the 15 position. The voltage is _____

Sorry that the next question will not fit in here.
Page 638©

8 Measure the voltage with the + knob set fully clockwise. This is the maximum voltage that this positive power supply can produce. The voltage is _____

9 Return the + knob on the experimenter to its counter clockwise position. Make sure that the – knob is also in its counter clockwise position. Remove the positive probe of the voltmeter from the POS terminal. Attach this probe to the NEG terminal on the experimenter. The meter reads _____
(**forwards/backwards**)

10 Remove the position of the two test leads. The meter reads _____
(**forwards/backwards**)



Page 639©

11 Measure the voltage between the NEG and GND terminals with the voltage control set to the following positions. Record the measured voltages in the spaces provided.



– Voltage Control set to:	Voltage Measured
1	_____V
5	_____V
10	_____V
15	_____V
maximum clockwise	_____V



I am watching you to check that you are not cheating.

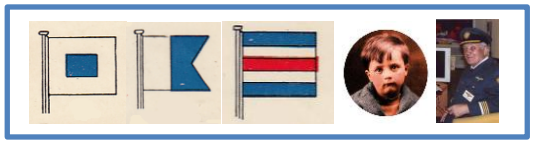
Page 640©

12 Set both voltage control knobs to minimum. Move the meter lead from the GND terminal to the POS terminal. Set the meter so that it can read voltages in the vicinity of 35V without exceeding full scale deflection.

13 Turn the – knob and the + knob to their maximum clockwise positions. The meter reads _____ volts.

14 Compare this voltage with the maximum voltage produced by each supply in steps 8 to 11. From these voltage readings, what assumption can we make about how the two supplies are connected? _____

Searl says that in this **experiment** you gained some practice using the **Experimenter** and the voltmeter. First you measured the voltages produced by the positive power supply. You saw that this voltage can be adjusted by the **+** voltage control to any value in the **+ 1V to + 15V** range. You also saw that the maximum voltage provided by this supply is just over **+ 15 volts**. Do you still think Searl in **senile**?



Page 643©

Searl reminds you that next, you measured the voltage produced by the negative power supply. This voltage can be set to any value from **–1V** to just over **–15V**. In the next step the meter deflected backwards when you attempted to measure the voltage. The reason for the backwards reading was that you were not observing polarity. As you saw, this problem is easily corrected simply by reversing the meter leads. Searl points out that some meters have a polarity reversing switch. This switch **automatically reverses the leads** at the meter so that you do not have to **reverse** the leads at the **experimenter**.

Searl reminds you that in the next two steps, you saw that the two power supplies are connected in a series aiding arrangement so that their voltages add. Because this is an important point, let's discuss it in more detail.



Page 644©

Searl remind you that a thermistor is a special type of resistor which can achieve a large change in resistance for a small change in temperature. Searl states that such devices normally have a negative temperature coefficient. Searl explains that some thermistors the resistance value can drop to one half its former values for a temperature rise of 20 degrees centigrade. Thermistors are often used in temperature sensing circuits and as protective devices in other types of circuits.



Programmed Review:

Searl says that this review is presented in a programmed instruction format. It will enhance your understanding of the material presented in this section. Searl states that you should read reach of the numbered frames carefully and fill in the missing blanks at the bottom of each frame. The correct answer will appear in this document somewhere.

1 Resistance is defined as that property of a substance which opposes current flow. All substances oppose current flow to some extent. Therefore, all substances have some _____

2 The unit of resistance is the ohm. The ohm may be defined as the resistance of a particular block of material which has a certain length and cross section area. However, a better way to define the ohm is in terms of voltage and current. If an emf of 1V causes a current of 1A, then the resistance is _____

Searl is trying to cover many FACTS, by which the web can be cleaned up; of all that **crap**.
Page 647©

Searl states that if all other things being equal, the resistance of a substance is inversely proportional to its cross-sectional area. If the cross-sectional area doubles, the resistance drops to one half of its former value. Also, if the area triples, the resistance drops to one third.



Temperature:

Searl reminds you when defining resistivity, the length and cross-sectional area are carefully defined because they affect resistance. The temperature is also carefully defined for the same reason. That is, with most materials, the resistance changes if the temperature changes. With changes in length and cross-sectional area, we know exactly how the resistance will change. Not only that, but all materials change resistance in the same way. However, with changes in temperature, this is not the case. Not all materials change resistance in the same direction or by the same amount when temperature changes,

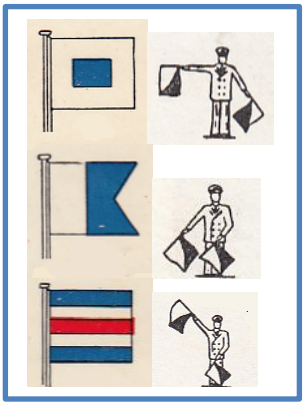
Cross-Sectional Area:

The cross-sectional area of a conductor is determined by its thickness or its diameter, Searl has shown that a good conductor have a large number of free electrons. In fact, the more free electrons per unit length, the better the conductor will be. Obviously then, a large diameter conductor has more free electrons per unit of length than a small diameter conductor of the same material. Therefore, large diameter conductors have less resistance than small diameter conductors.

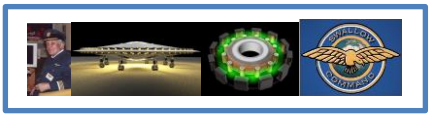
Page 652©

0.125	0.11^{r}	0.1	0.0909^{r}	0.0833^{r}
8)**1**	9)**1**	10)**1**	11)**1**	12)**1**
8)**10**(1	9)**10**(1	10)**10**(1	11)**10**(0	12)**10**(0
8	9		11)**100**(9	12)**100**(8
8)**20**(2	9)**10**(1^{r}		99	96
16			11)**10**(0	12)40(3
8)**40**(5			11)**100**(9^{r}	36
			99	12)**40**(3^{r}





Searl states that as there are **12** roller sets on the first plate; he has given you **12** samples to study in order of **1 to 12**.



Such mathematics can be used in many different subjects. In This case it's converting **Ω** to **mhos**, like resistance to conductance to **mhos**. Searl states as a fact, with any material, the greater the length, the higher the resistance will be. The reason for this is that the electrons must travel further through the resistance medium. Searl points out if the length doubles the resistance doubles: if the length triples, the resistance triples: and so forth. Searl trust that he has made this condition clear to all.

Page 653©

Searl says that he has not forgotten all of you who want help with **mathematics**. Searl like to make it clear how to convert resistance to **mhos**. First resistance is the ohm presented as this = **Ω** and its conductance is presented by this = **mho**. Therefore, a **mho = 1** is divided by the resistance. Thus,

Thus **1 mho** is divided by **1** resistance of **1 ohm = 1 mho**. In other words **1/1 = 1mho**.

1
1)**1**

0.5
2)**1**
2)**10**(5

0.333'
3)**1**
3)**10**(3
9
3)**10**(3'

0.25
4)**1**
4)**10**(2
8
4(**20**(5

0.2
5)**1**
5)**10**(2

0.166'
6)**1**
6)**10**(1
6
6)**40**(6
36
6)**40**(6'
36

0.1428571
7)**1**
7)**10**(1
7
7)**30**(4
28
7)**20**(2
14
7)**60**(8
56
7)**40**(5
35
7)**50**(7
49
7)**10**(1



If this equipment is not here; in the container from the UK, then it stolen, it will cost thousands to replace and add the cost of it being replaced to the one before, which was stolen by **Peter King**. We are talking about a very large sum of money. All of which increases the **cost of the S.E.G**.



Facts are **illusions converted** to the **world of reality**, which has been my life task. One understands that the education of the time is running well behind; so one must excuse them for they lack of education. Once I too was dumb, but **2 dreams** changed that world for me, unfortunate it put me years ahead of them instead. Upon the next page Searl will present **3** more **samples – 8 - 9** and **12** by which Searl hopes you will be able to do any kind of long divisions.

However, it is important to remember the **mho** because a key characteristic of the vacuum tube and the field-effect transistor is given in **mhos**.

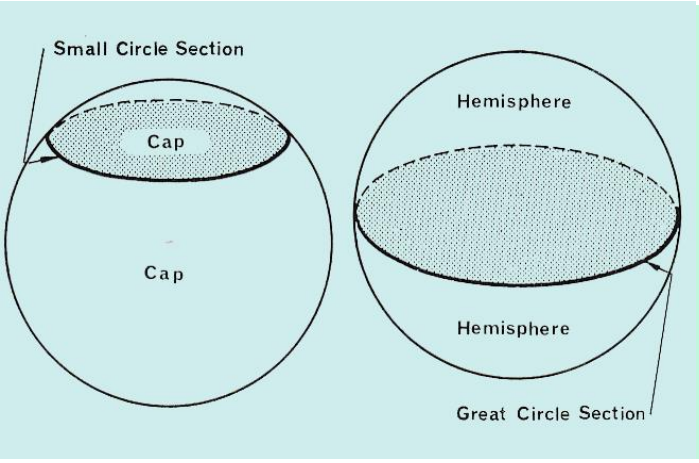
Factors Determining Resistance:

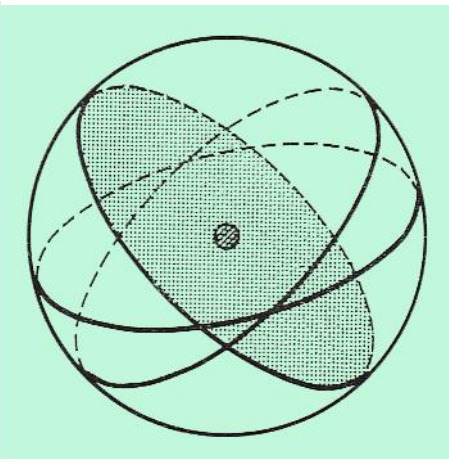


Searl says that the single most important factor in determining resistance is the resistivity of the material. However, three other factors are also important. These are the **length; the cross-sectional area and the temperature** of the material. This is the reason that these three variables had to be carefully defined in order to determine resistivity. Searl says let's discuss each of these in more detail.

Length: The insulated wire with this course, which Searl had, was a number **22 copper Cu 29 wire**. A **60-foot length** of this wire has a resistance of about **I ohm**. Searl points out a **120-foot length** of the same wire have a resistance of about **2 ohms**. Searl states that if we also double the length of the wire, we also double the resistance. In other words, the resistance of a conductor is directly proportional to its length.

Searl knowledge: 1946-1968: Legal: SEARL NO: 013787346: Legal: SEARLE NO: 013787451.







I'm watching you main members of STI. To judge your intellectual capacity a bit short supply!

Figure LS8: Spherical Caps and Hemispheres. Figure LS9:
Figure LS9: A Sphere and all its great Circles sections have the same centre.

The resistivity of several substances is shown in **Figure CE3.2**. **NOTICE** that **silver Ag 47** has the lowest resistivity while **copper Cu 29** is a close second. Near the bottom of the list are glass and rubber. **Silver Ag 47** and **copper Cu 29** are the best conductors while glass and rubber are two of the best insulators. As Searl has shown, both conductors and insulators are important, not only for the **S.E.G**. and **I.G.V**. but also for electronics. Conductors have many free electrons so they conduct current very easily. Thus, they are used to carry electricity from one place to another. Most metals are good conductors. Thus, metals such as **Aluminium Al 13**; Brass (a compound not an element): **Copper Cu 29**: **Gold Au 79**: **Iron Fe 26**: **Lead Pb 82**: **Nickel Ni 28**: **Platinum Pt 78**: **Silver Ag 47**: Steel (a compound not an element): **Tin Sn 50**: **Tungsten W 74**: and **Zinc Zn 30** is all good conductors.

Searl says; Insulators or non-conductors are substances which have few free electrons. They have very high values of resistivity. These substances are used to prevent electrical connection. Most wires are coated with an insulator so that they do not accidentally short out when used to carry electricity. Some examples of insulators are glass, rubber, plastic, mica, and dry air. Searl says that to summarize, it is the resistivity of a material which determines if the material is a conductor or an insulator. Resistivity is the resistance of a specific size and shape of the material at a specific temperature.

Conductance:



Searl points out that sometimes it is more convenient to think in terms of how well a material conducts currents rather than to think in terms of how well it opposes current. Because of this, a property called conductance is often used. Conductance is just the opposite of resistance. It is defined as the ease with which a substance passes current flow. **Mathematically**, **conductance is the reciprocal of resistance**. Searl hopes that this has helped those who wish to learn how Searl was able to conceive such a concept as the **S.E.G**.

Resistivity:



Searl says that we cannot directly compare the resistances of two substances because the resistance depends on the shape and size of the substance as well as the temperature. However, every substance has a property called specific resistance or resistivity which can be compared directly. The resistivity of a substance is defined as the resistance of a one-foot length of wire of the substance. Furthermore, the wire must be exactly **0.001 inch** (**1 mil**) in diameter and the temperature must be exactly **20^0** centigrade. These requirements standardize the shape, size, and temperature of the substance so that only the atomic structure determines the resistance. Searl is progressing slowly through the course which he hopes that you are still in circuit and understanding what he is stating, which is vital.
Page 661©

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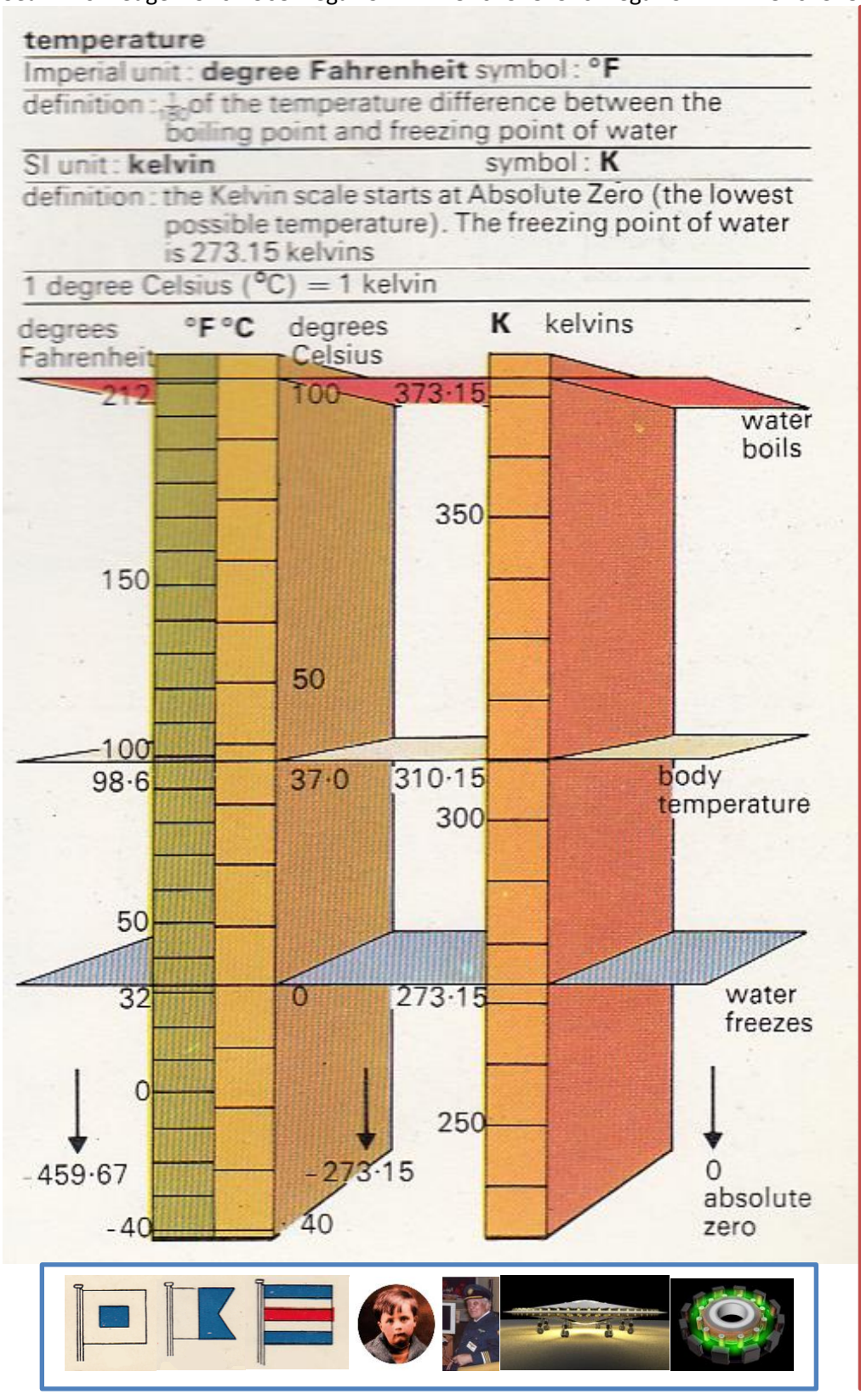


Temperature: 1946; THE ZERO OF THE Kelvin scale is the absolute zero of temperature – the lowest possible temperature. The size of the Kelvin (which was once called the degree that was my time) was chosen equal to the degree of Celsius. Scientist uses the Celsius scale as well as the Kelvin scale.



My first calculator.



Is this man the real Flowerbower? He writes Septic's mag?

13 = C – This is the only circuit which shows the meter connected directly across R_1.

14 = A – When S_1 is open, the voltage measured by the meter is equal to the voltage rise in the circuit or 6V. However, when S_1 is closed, the meter is shorted, so it reads OV.

15 = B – Since the voltmeter is placed across the circuit rather in series with it, the circuit need not to be broken. **This completes the answers.**

11 = A – The voltage drop across **R_2** increases. When **R_1** is shorted, the applied voltage must be dropped by only two resistors instead of three. Thus, the voltage dropped by each of the remaining resistors increases.

12 = C – If the two resistors are identical, each must drop half 0f the applied voltage or 3 V.
Page 668©

8 = B – To double the voltage, two cells must be connected to the series aiding arrangement. However, to triple the current capacity, three of these arrangements must be connected in parallel. Therefore, a total of six cells are required.

9 = B – A voltage drop exists only when current flows in the circuit.

10 = C – Notice that three of the batteries are connected series aiding. However, one is connected series opposing. The opposing battery cancels the voltage produced by one of the aiding batteries. Consequently, the output voltage is +3.oV.

How many did you get right so far?
Page 669©

7 = A – The six 1.5 V cells must be connected in series aiding arrangement if their voltages are to add.

1969: The first watch to be worn on the Moon was an Omega Speedmaster chronograph worn by Neil Armstrong.
Page 670©

ANSWERS: UNIT 2 EXAMINATION: VOLTAGE:

1 = D - Electromotive force, potential difference, and emf are other names for the Force: which we loosely call voltage. Current is not a correct name for this force.

2 = **A -** A potential difference does not exist between identical charges. However, it does exist between any two charges which are not identical in both polarity and magnitude.

3 = A - The unit of electromotive force or voltage is the volt. Joule is the unit of energy; ampere is the unit of current: and coulomb if the unit of charge.



4 = D – The cell or battery converts chemical energy to electrical energy.

5 = C - By definition a secondary cell is one which can be recharged,

6 = B – The lead-acid is a wet cell that produces an emf of about 2.1V.

For reason I cannot get the lines to line up correctly.
Page 671©

Searl states that the S.E.G. concept came for the Hopscotch game, which turned up all that crap on YouTube and elsewhere. They got their Newton's second law wrong in reference to the **S.E.G**. Searl does not state that Newton second law is wrong but the section the experts use is wrong in relation to the **S.E.G**. Thereby, **Sir Isaac Newton is correct** with his **second law in reference to the S.E.G**. Well done **Sir Isaac Newton** who had **no means** to prove his case.

As Searl have shown, both conductors and insulators are important in Searl undertaking. Conductors have many free electrons so they conduct current very easily. Thus, they are used to carry electricity from one place to another. Most metals are good conductors. Thus, metals such as **Silver Ag. 47**: **Copper Cu. 29**: **Gold Au. 79**: **Aluminium Al. 13**: **Tungsten 74.W**: **Zinc Zn. 30**: Brass not an element, thus, not suitable for **S.E.Gs**: **Platinum Pt. 78**: **Iron Fe. 26**: **Nickel Ni. 28**: **Tin Sn.50**: Steel is not an element, thus, no good for **S.E.Gs**: **Lead Pb. 82**: Searl says that you may think with all these options the **S.E.G**. is simple to make. That is where you are wrong. There is a correct order of **structure**; otherwise it will not perform as required, if it performs at all. As Searl undertakings are **Research** and **Development** some data becomes **confidential information** and is therefore **classified information**.

Searl states that throughout his life; he has met some **infinites** that were **bigger** than other **infinities**. The biggest are the present **EX-STI group**. But the **biggest** of all is **Flowerbowe**r without a doubt.



Page 674©

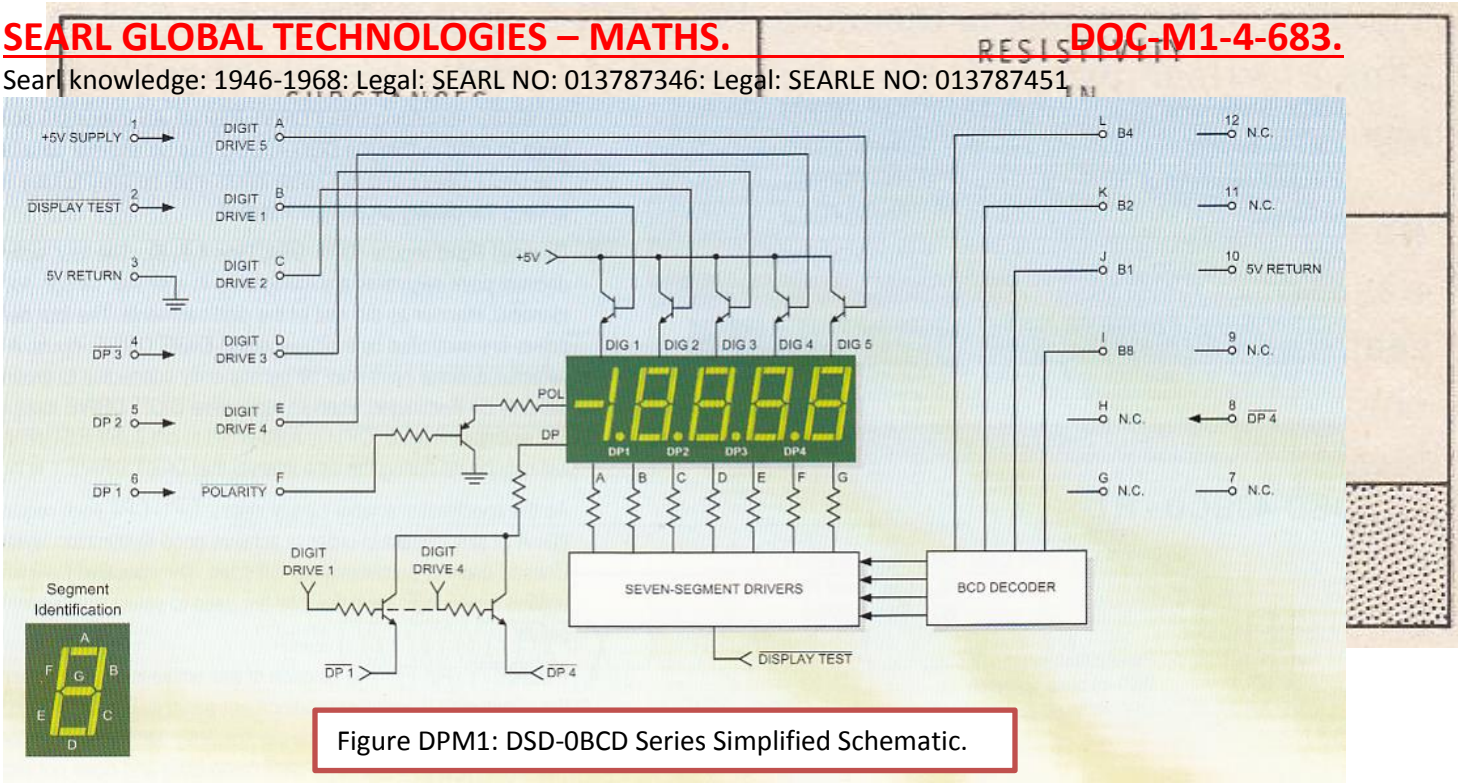


Figure DPM1: DSD-0BCD Series Simplified Schematic.

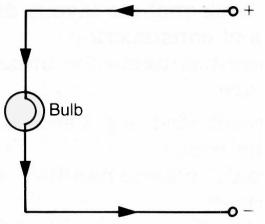
There is a class of occasions in each of which one total living whole is associated with the active surface of a planet. there will be **occasions** where the Earth will get hit by a big rock, if this should happen in a city or right on target of a super volcano would spell out big trouble as the **technology is not available**, thanks to you and others like you, who have **blocked the progress of creating such tools for such events.**

Searl states that the **most common way** to **define** the **OHM** is in terms of **voltage** and current. **One OHM** is the amount of resistance which will allow **one ampere** of current to flow in a circuit to which **one volt** of **emf** is applied. Or stated another way, if **one volt** causes **one ampere** of current in a circuit then the resistance of the circuit is **one OHM**. **Figure CE3.1 illustrates** these three ways of defining the **OHM**.

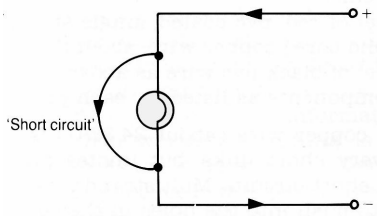
Searl says that the **Greek letter omega (Ω)** is commonly used to **represent ohms**. Thus, **1 ohm** may be written **1Ω**. Also, **one thousand ohms** may be written as **1000 Ω. 1 kilohms,** or as **1 KΩ**. Finally, **one million ohms** may be written as **1,000,000 Ω, 1 megohms,** or as **1 MΩ.** In electronics, the letter **R** is used to represent resistance. Thus, in the shorthand of electronics the statement the **resistance is ten ohms**; may be written as an equation: **R = 10 Ω**.

Searl hopes that you are understanding all this **FACTS** being presented here and what and how the world has changed because of it.

But the S.E.G. triggers were odd ones to say the lease. So far I have shown you those triggers which had to take place before anything could possible happen. And I have arrived at the centre core of events that would activate the S.E.G. technology. The Chestnuts:



1.



2,

Two circuits to explain a simple requirement of a circuit needs links and the structure component.

48: Throughout this book, like pass books I have written, I shall continue to use the convention that electricity flows from positive (+) to negative (-). I know that you know that I do not agree with that statement on the grounds that positive attracts electrons, not the negative state.

In the first drawing shows the bulb and its two wires adjoining it. In the second drawing we see a wire shorting the bulb that will conduct a much greater current, which may damage other parts of the circuit or the battery etc.

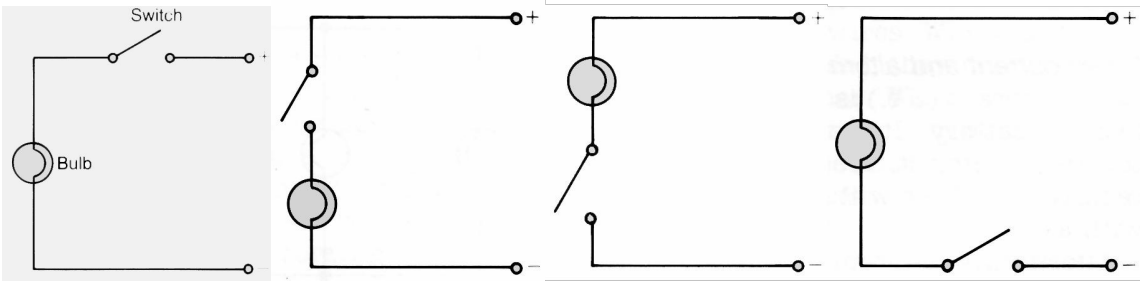
This point is vital to understand that any electrical device being invented does not have any possible shorts either by poor workmanship or faulty components – faulty components have been a big issue during my years of research. Domestic appliances have suffered badly - though the European laws have tightened up to prevent such misfortunes but my experience has shown that those experts failed in their own field to instruct companies how to test parts correctly.

49: It is true that from the tiny acorn grows the mighty oak. It is also true from this simple structure concept grows the future might energy technology. From the smallest particle unseen by the human eye brings froth you and all other creatures both great and small

50: The S.E.G. is no exception to the rules; from nothing to something is a challenge. Yet a simple seed as sown above lays the mighty foundation of future energy technology.

We now have to add another structure to this concept for control; that being a component what will give us a control over its function. We require two key functions which are the prime functions which must be equally the same but opposite in function.

Such devices are available and are obtainable in many forms and functions. I shall at this stage take the basic one for this point to realize:



A simple structure with just two functions which are on/off:

A switch may be placed in any of these positions to control the bulb.

Such a function is class as binary function there are only two states **0 or 1.** In fact that is all that nature does is to operate multimillions of switches that functions are either 1 or 0. Which will also includes you as well. That was how early computers function, even today's technology works the same but we have learnt ways to over cone this handicap.

51: At this stage of explaining or trying to: what one needs to consider in ones thinking being able to create a different approach to energy converting from one state to another which we can handle to our advantage while at the same time whose benefits to mankind are lost by its output of toxic waste; commonly refer to as pollution.

Yes, we have solar power, wind power and wave power which to my understanding carry big problems along with them, and to back that time factors of useful functions of energy converting.

We have came a long way from our early start in this field of converting one source of energy into a useful source for us to use.

But we do have a major issue on our hands and that is in many parts of the world they are becoming short of electrical

Instead of stopping: and think of the structures design that would yield the best output and its required links to be able to control the system.

No that is too much effort; we do have a nuclear power station we make ten more that will give us the power required.

Agree it might, but it also give the terrorists a useful project for their intended missions of hate.

Then we leave a major problem for our children to solve at the life end for these stations and what about its waste that one will have to cope with.

52: Now I have attempted to make a point absolute clear that the law of the squares state that there must be two prime conditions and they have to be opposite in nature.

What does that mean to me?

I need to look for input data – what input data?

How can you generate electric power – which other inventors have discovered?

There are a number of ways depend what the output requirement demands.

But for this moment in time the class of energy I wish to be associated with; is high power and at this moment in time such generation require two key parts; one which is stationary and the other which is in motion. Which the concept of my thinking: has been demonstrated as a mock up on the websites.

53: So how does the S.E.G. differ to present day systems?

The S.E.G. uses all present day knowledge and its function performs basically the same which meets the law of the squares.

The law of the squares states that one must design in such a way that its functions act similar to that of the square blocks of four individual squares. And it must function in a switching mode that the two pairs of forces vertical switched and likewise the two horizontal forces shall switch both vertical and horizontal in the same time interval at a function in relation to demand by the consumer.

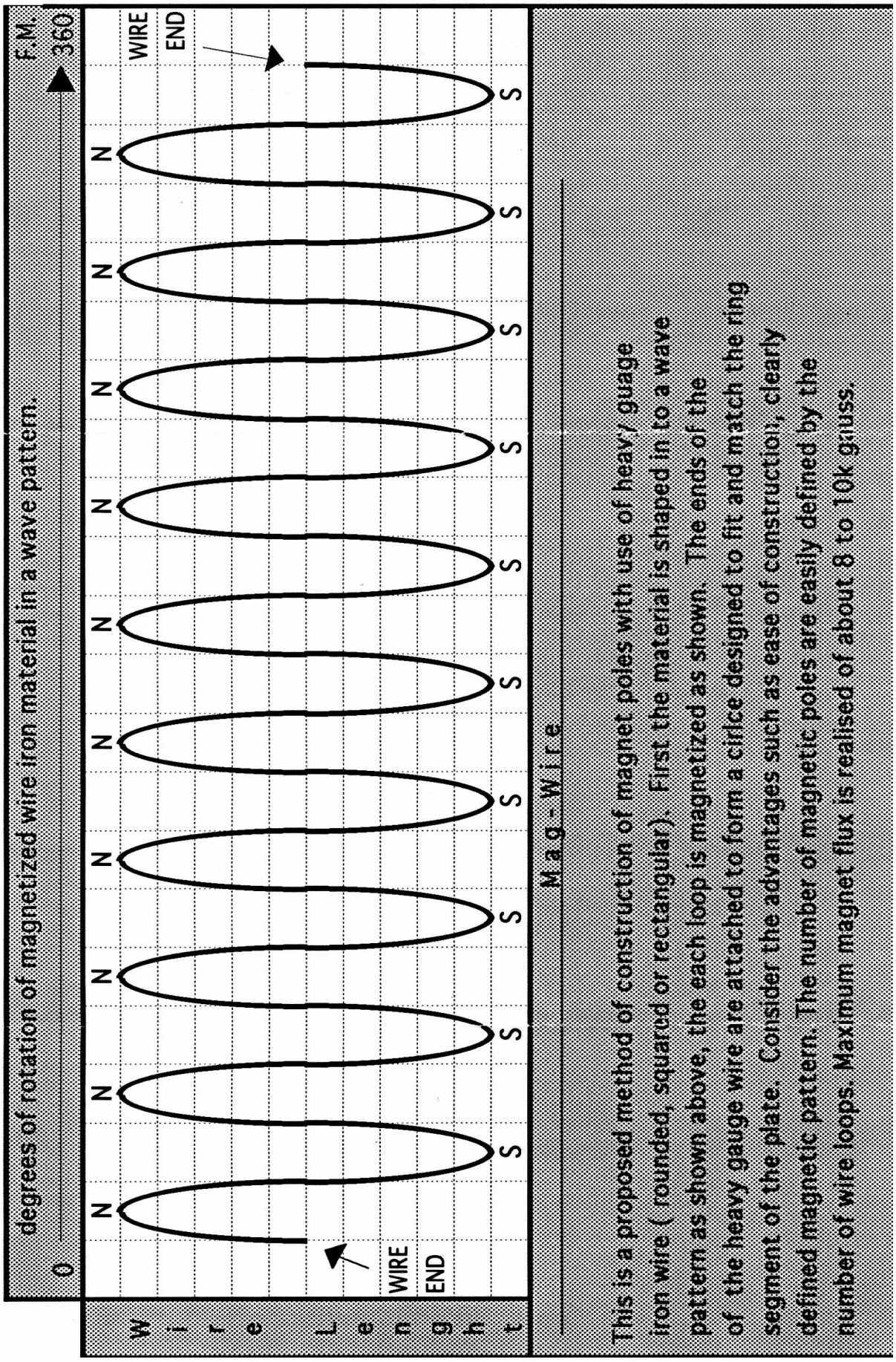
54: Impossible! Really?

I must had been fooled I understood that you all were scientists therefore should not be a problem for you to find such a solution.

Agree there did appear to my mind that there was an opportunity that such functions could be achieved; and that force was magnetism. More precise a magnetic wave could create that switching function needed.

Such a wave would start at zero climbing positive mode to peak then reverse down to zero completing one force switching but continuing going negative climbing to peak then reversing back to zero which would equal one cycle and have to be achieved in one sec interval.

Note: that in circuit diagrams it is often convenient to call the negative point ZERO VOLTS.



Here is a sample of our thinking, which I hope you will follow its flow.

55: Before leaving this part of my thinking there is some more points to clear up to try to ovoid problems later in circuit discussion.

As I stated above negative point reference in circuits are zero volts. Experts state that this helps especially when calculating the voltages throughout the circuit.

Sometimes the zero volts line is connected to “earth” (via a water pipe or copper rod driven into the earth outside)

Another name before I forget that is often used is **ground.**

I agree that you will frequently see the word “ground” used even when the equipment is not connected to “earth”.

In this case it means a common point such as the metal case of the apparatus.

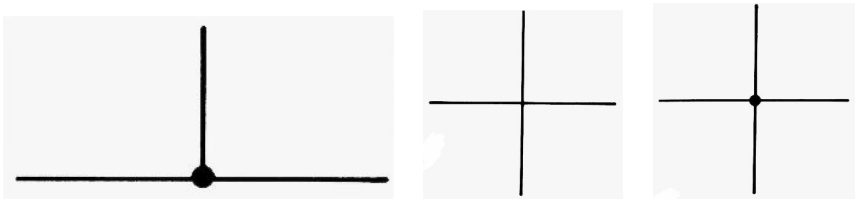
56: When electricity flows from positive to negative via a light bulb, we say that there is a complete circuit. So what does the light bulb do?

The function of the light bulb is to limit the flow of current round the circuit.

If the light bulb is by passed as shown in figure 2, page 16, electricity flows much more quickly and the battery quickly runs down.

This is called: a **short-circuit**. Clearly, short-circuits must always be avoided.

57: Just a couple of things I need to clear up:



3 common methods in wiring circuits you will come across.

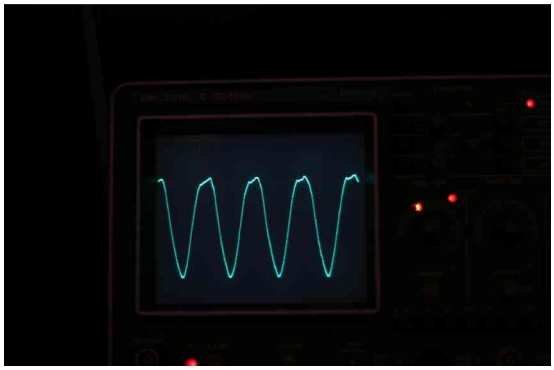
These figures shows how wires are represented in circuits diagrams when they are connected with each other and when they are just crossing each other.

The other point I wanted to clear up are the circuit showing switches. A switch is the means of creating a function of an open circuit or a closed circuit.

58: So what I am stating is that the function of roller sets switches from north to south once it is forced to move thus its motion is maintain regardless of the load that is being demanded of it. And this switching action continues until the day the field has died.

59: All information as shown within these parts are basically the learning curve to tomorrows technology the thinking that had to be studied and the reasoning which had to be employed in its concept.

The objective had to be defined as to which market domain it could become a useful tool so I could plan how to move forward; but the reaction of the media really set the domain to target for. This was clearly for all to see that it was flight. I accept the fact that it created mass interest in many which only odd one company that was prepared to act and the team let me down.

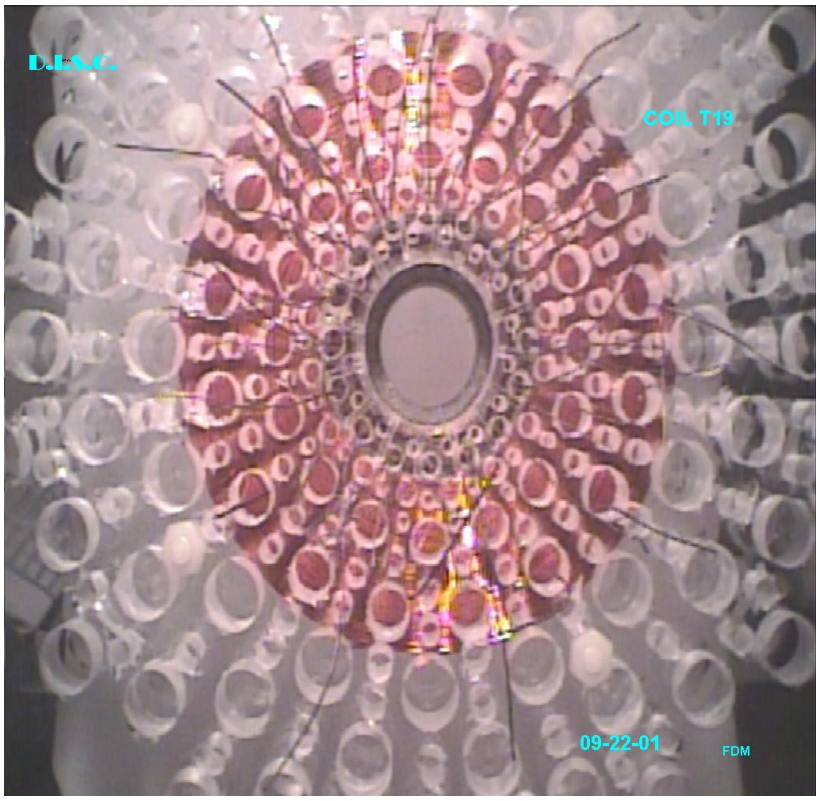


Here is a recording taken by Hollywood of the magnetic wave pattern on a magnetic layer of the S.E.G. under development by Morris in the U.S.A. Proof without questions.

PROF. John R. R. Searl: creator of tomorrow technology for energy and transportation.

83: So you think that you can buy any magnetizer for making the S.E.G.; that sure interests me as the inventor – where it is taking us a lot of time and cost to invent the correct class of magnetizer.

Just look at the problem:



That is only one problem. There are many problems to solve, and so many of you claim to me that you have made the S.E.G.

You even claim that you brought a magnetiser second hand but you forget I know from hands on experience they will not perform this work, as they need a massive modification to be done to them first. Yet you have shown no proof of what you done.

Here you see the proof of the work that Morris is undertaking in the research and re-development of the Searl Effect Technology. That represent this time interval 2007 and we are still researching for the absolute solution for mass production of the S.E.G.

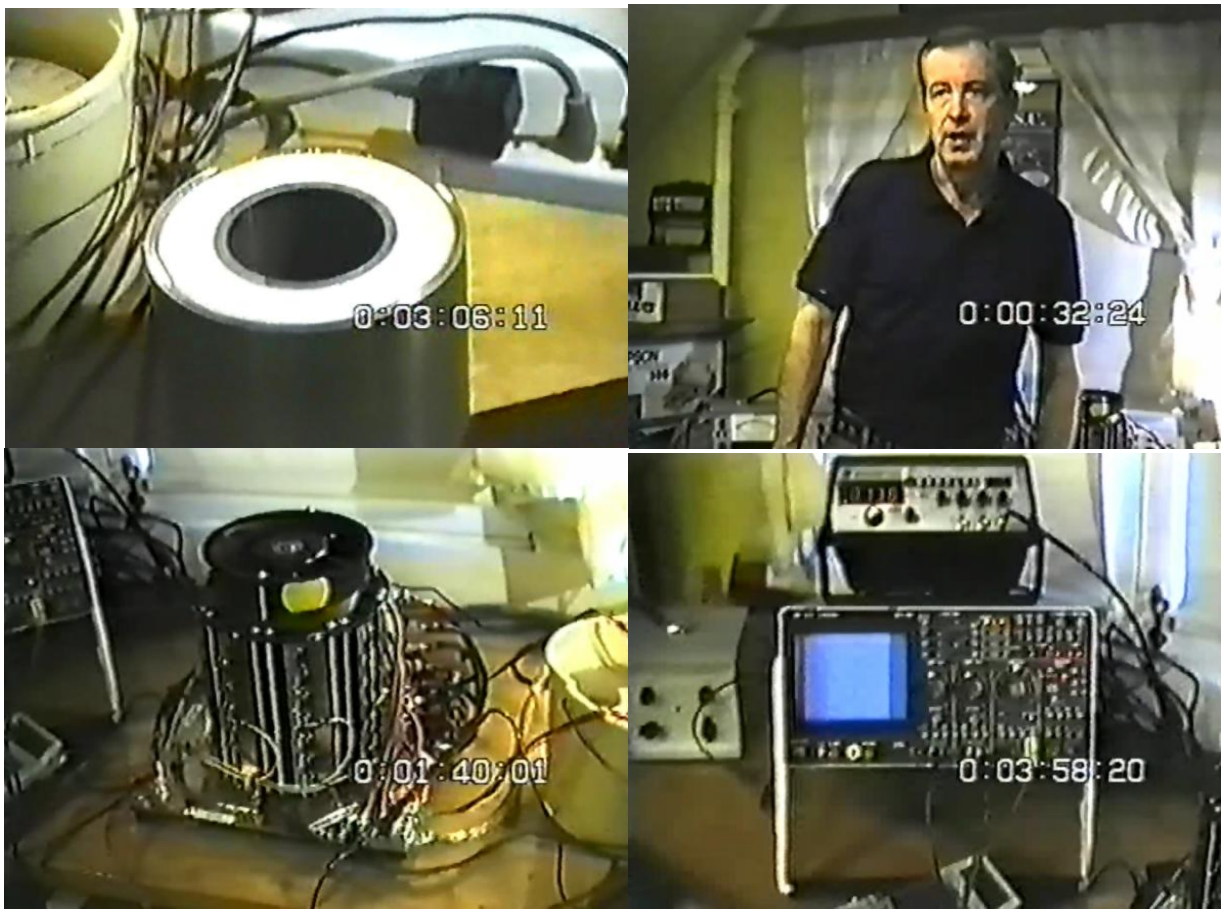
With a team like Morris; this technology will be achieved and this baby will be brought home to the marketplace sooner than later.

84: By letting you see my past will help you to understand that so much crap was put out there to hide the reality that actually existed at that time.



Here is a time interval in the land of Mortimer, Berkshire. UK 1968.

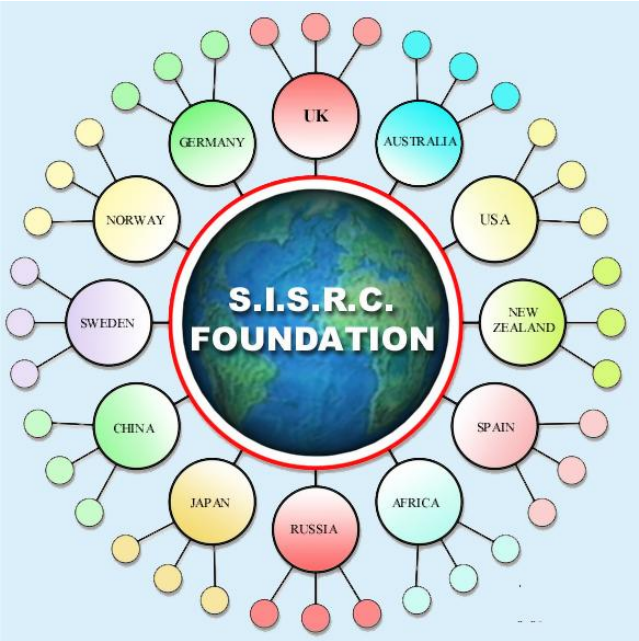
Sorry about the quality of the last two photos which was scanned from an old newspaper of that time interval. The first two photos are scanned from the original press photos of that time interval.



Here are four photos relating to John Thomas work in Rochester New York. I understand that much of the equipment was supplied by Morris when he was working directly with John Thomas. This plate shown in this shot failed to meet the needs of a plate. The magnetic layer was far too thin to be able to maintain required magnetic field. Showing how easy it is to get your sums wrong!

204:

DOC-SISRC-ETRAN-1
DATE: 12th March 1973
EDITION: First.



Searl International Space Research Consortium.
Mortimer – Reading- Berkshire – England.

LOCATION : Headquarters – England.
SECTION : Clean Energy and Transport.
SUBJECT : Maglev Transport.
AUTHOR : John Roy Robert Searl.
POSITION : Superintendent of Documents – UK.

205: This is to confirm that both Rev. George H. Nickolson and I have written independently to our prime minister in the relation to future pollution problems which research and development at this time should be undertaken; and to inform him that we are working on a power research and development term the S.E.G. which could be the answer to rail and road transportation systems.

206: The reply received stated that our communication had been passed to the transport section to deal with.

207: This report is the document wrote upon my study into the subject of urban and intercity rail transport, in which the Searl effect generator appears to be the ideal power system for such transportation systems.

208: ***MAGNETIC LEVITATION AND ITS FUTURE PROSPECTS IN TRANSPORT.***

SYNOPSIS:

From this chair as I see it; to meet the growing need to move ever-increasing numbers of people safely, efficiently and economically, a number of technically advanced, ground transport systems are being developed in several countries throughout the world.

These would have the potential of providing a faster, more efficient and environmentally acceptable transport service than is presently possible with existing conventional, wheel / rail

Modes.

209: I am fully aware of the several novel technologies, based on the principle of magnetic levitation combined with linear motor propulsion., are being investigated for the purpose of high-speed, inter-city travel, inter-urban commuter services, airport links, etc; and I have no problem creating such a mental picture of such operational functions in the world of reality.

I also appreciate the underlying principles and design details which I shall be presenting, together with a brief description of the test programs being undertaken.

The biggest problem I see is this; unless the population stops breeding for a time interval of ten years to allow the country to stabilize itself, no infrastructure in logic concept in the world can be put in place to cope regardless on how good a concept is.

London is a shear mess of structure layout design – there is not really any design about its layout – that is the critical problem for a transport system to be implemented which could meet the demand of the masses; and the situation will grows even worst as time slips by.

If central London goes under sea water, as the possibilities rather suggest it will, I guess the powers that are see no reason to worry about its transport infrastructures, leaving it to the public sector to deal with the problem.

210: Nevertheless, I shall attempt to put together what I know and understand what the position is at this date.

211: ***INTODUCTION:***

The conventional train, relying as it does on the interfacial friction between steel wheels and rails for both traction and guidance, suffers from a number of inherent disadvantages in competition with other modes of transport, not least of which is track damage and consequent high maintenance costs.

212: In the more densely populated corridors of the advanced countries, there is an increasing need for an alternative mass transport system, capable of moving large numbers of people efficiently and economically at much faster speeds than at present possible with existing modes.

213: Many now believe that an updated ground system for both inter-urban commuter and inter-city travel, providing a faster and more efficient service, is long overdue.

To that statement I agree that it is truly overdue and needs a better concept structure besides the supporting infrastructure needed to implement such a change,

214: Although very significant advances have been made to the wheel driven technologies, there appears to be a limit to their maximum speed for a number of reasons, including high maintenance costs, noise and vibration.

215: I do well understand these problems, as I had model a massive rail outlay on a fully automation rail to train talk operation, without the need of touching any function, it was fully automatic, and no malfunctions either.

One again it proved that the day will come where trains will not require staff for operation or control, they will be fully automatic.

216: 

Yes, this is the kind of concept which I am thinking about unfortunate I have never been lucky to have a ride on this baby but I have on a couple of others which will be quoted later in this document.

217: In Japan, for example, the Shinkansen wheel / rail system has been enormously successful.

Operating at a cruising speed of 210 km / h, hundreds of millions of passengers have been carried without any serious incidents.

218: In France, too, a high speed, wheel driven train, the TGV (Train Grande Vitesse), has recently been introduced between Paris and Lyon.

It has a new world speed record for trains of 380 km / h but for economic and other reasons its normal operational speed is kept to a maximum of 270 km / h.

219: Although both systems have purpose design tracks and exclusive rights of way, very much higher speeds than this do not seem possible for the reasons stated.

220: Here in Britain, on the other hand, because of its legacy of the extensive rail network, designed and constructed during the Victorian era, the decision was taken by British Rail to exploit these assets to their full potential, I. e. to build high performance, conventional trains to run on existing tracks.

To this end, the Advanced Passenger Train (APT).was designed with tilting coaches in order that the numerous curves can be negotiated at maximum speed without passenger discomfort.

It was during this early stage that I took a trip up to Derby to discuss the S.E.G. being the power source for the APT. their reply was if I built a full size train they would set aside a length of track as a test bed; if it did not interfere with the morden signal system they would back it.

Strange that was why I went there to get funds to do it – clearly I could not fund such work.

That product failed so they ought to have backed this one instead.

However, some of the technical and mechanical problems which arose during the initial trials have not as yet been completely resolved.

221: A body of opinion that has been growing during the past decade now believes that many of the inherent drawbacks of wheel / rail friction driven system can be largely overcome by non contact magnetic suspension combined with linear motor propulsion, i. e. magnetic levitation and, to this end, considerable R & D effort has been undertaken in a number of countries.

Although several major developments of the alterative Track Air Cushion Vehicle (TACV) were also carried out in the USA, France, Germany and the UK, in particular, most of these were abandoned in the early 70's when the magnetic levitation or maglev technologies began to receive increasing attention.

222: Throughout the past decade a number of variants of maglev suspension combined with linear motor (LM) propulsion systems have been investigated and some quite large scale test vehicles have been constructed and successfully tested.

Depending on the particular requirement, a surprising variety of maglev / LM technologies have been developed for transport systems, extending from relatively low speed urban and shuttle services to high speed (400 – 500 km / h) inter-city connection and city airports links.

223: Where distances between major cities are relatively large, as in America, a maglev system would appear to my mind to offer only a marginal advantage over short-haul air travel and it is not considered to be a viable alternative.

224: In Europe and Japan, on the other hand, with shorter inter-city distances and, particularly, in the crowded this inter-city corridors, the advantages of maglev over both conventional rail and short-haul air transport are potentially very significant.

That is why I have suggested that Searl International Space Research Consortium should study the possible option to include rail within its land studies.

Consequently, in Japan and West Germany especially quite large investments have been made in the development of these non-contact systems by both government and industry.

225: In the US the investment has been more modest by comparison and has been primarily for the development of relatively low speed systems.

Likewise, in the UK, a similar situation has more or less prevailed.

226: Although it is generally believed that the greatest impact of maglev technology will be on the improvement of high-speed transport between cities to supplement the existing rail services, there are also convincing arguments for its application to the intermediate and low-speed regimes, e. g. inter-urban commuter services and city / airport links.

However, in view of the increasing improvements in wheel / rail dynamics, suspensions and drive systems, the possible technical and other advantages of magnetically levitated vehicles operating at the low end of the speed range can only be resolved when large scale maglev systems have been fully tested, and this is a subject that my undertaking could meet, but shall have to wait until the S.E.G. is in production before I can restart upon such a venture.

In Mortimer I did hold day meetings where my train system was on show and won the hearts of top people – and that is a FACT!

This document has been release to the general public by authority of:






John Roy Robert Searl. Head of R&D.
Energy and Transportation systems.
Superintendent of Documents UK.

227: Today, Sunday, 11th November 2007, received my first MSN communication from my SEG engineer from his new headquarters in Thailand; arrived safely been busy buying bed room furniture – well that is a good sign that he is still kicking.

162:

DOC-SISRC-MT-2
Date: 15th March 1968.
Edition: First.

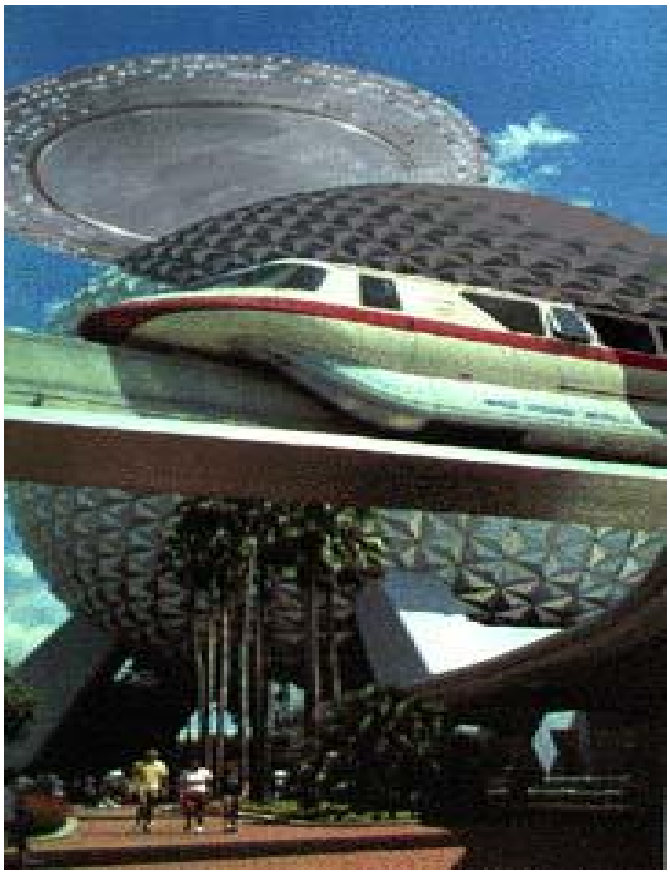


MORTIMER-BERKSHIRE-ENGLAND.

LOCATION	=	***Headquarters.***
DIVISION	=	***Research and Development.***
SECTOR	=	***Transportation.***
SUBJECT	=	***Maglev systems.***
AUTHOR:	=	***John Roy Robert Searl.***
STATUS	=	***Superintendent of Documents – UK.***

163: ***MAGLEV SYSTEMS:***

Through my life time interview, I have seen the changes in our concept of transportation, and the tomorrow's transport systems will also change in our attitude in design and function.



This is my world of tomorrow which I have been talking about since 1946.

Agree tomorrow is still a long way away, cost has been rapidly increasing since that time; and will continue to do so each year we wait to create it.

IMPOSSIBLE; No, it is possible, only man makes things impossible.

Impossible just takes a litter more time to achieve success but in the end man will succeed.

164: At this time the wide variety of competing engineering designs involving levitation, guidance and linear motor propulsion, together with various combinations of these, tend to belong to one of three basic types of maglev technology:

1) ***Permanent magnet suspensions in either the attractive or the repulsive mode.***
2) ***The electrodynamics system (EDS) which relies on the relative motion between high-field (usually superconducting) magnets on the vehicle and a normal conducting metal on the guide way to generate the repulsion levitation forces.***
3) ***The electromagnetic attraction system (EMS) which relies on feedback control to maintain the small magnet rail clearance (approximate 10mm).***

Although propeller driven or ducted air propulsion systems are possible the emphasis to my knowledge appears to be almost entirely on the linear motor to provide the required propulsion and braking forces through the electromagnetic coupling between the vehicle and the guide way.

The merits of these various competing systems and their possible disadvantages can only be realistically assessed from the commercial operating point of view when full scale testing can be undertaken.

In view of the scale of the developments of high speed systems in Japan and Germany especially, and the low speed Birmingham project now completed in the UK, which I have actually used, firm

decisions on the future of maglev as a viable transport mode, based on sound, proven technology, will soon be available.

The world of reality has to take into account all issues, unlike the mechanical, wheel / rail friction drive, the only speed limitation as I see it for a non contact suspension is the available power for the linear motor, that is, apart from the economic limitations of overcoming the magnetic drag and the aerodynamic drag forces which equally affect all ground based systems and which become dominant at the higher speeds.

165: ***PERMANENT MAGNETS:***

The application of permanent magnets in either repulsive or the attractive mode for the suspension of vehicles is an intriguing one by reason of the fact that no power source is required.

However, according to the Earnshaw theorem, a completely levitated vehicle would be unstable in at least one degree of freedom, which I can very well appreciate and agree with that statement; therefore as far as I can see the problem lateral guidance would require some form of mechanical constraint such as wheels.

I do know that a number of maglev vehicle designs have been proposed but, for a variety of reasons, both technical and economic, as well as the heavy weight penalty of the permanent magnet materials, very few developments on any significant scale have been undertaken to my knowledge; however, with the more recent advent of new, rare earth, permanent magnet materials having field strengths and coercive fields many times those of previously known materials, there has been a revival of interest in permanent magnet suspension systems, the only restriction for this application being their volume production at competitive prices.

Nevertheless, in West Germany a large scale demonstration of the so called M-Bahn system has been constructed for urban transit assessment, whereby rare earth magnets on the vehicle are attracted to the underside of iron Fe 26 tracks, the air gap being controlled, according to the loading of the car, by small guide wheels.

The same magnets also provide the D.C. field of a long stator, linear synchronous motor active winding along the tract for propulsion.

Based on theory I know it is possible from what I have seen experimentally that stable levitation is possible in a permanent magnet system if, included somewhere in the field system, a diamagnetic material having a permeability less than that of free space ($\mu<\mu_0$) is included, e.g. a superconductor.

To my accepted knowledge base this concept is being investigated in the so called mixed-mu principle, whereby a superconducting screen is interposed between a superconducting magnetic coil on the vehicle attracted to an iron Fe 26 track.

To my mind the advantage of such a system for transport purposes would be a stable suspension at all speeds from standstill.

One of the more serious drawbacks of this method as I see it, however, it appears to be that of obtaining sufficient clearance between the stabilising screen and the iron Fe 26 track under operational conditions.

166: ***ELECTRODYNAMIC SYSTEM (EDS):***

The development of the superconducting magnet has made available a lightweight source of magnet field of a strength and volume hitherto unobtainable to conventional copper-iron CuFe electro magnets.

Superconductivity or the state of zero electrical resistance which certain metals and alloys exhibit when cooled to very low temperatures, e,g liquid helium, (B.P. 4.2^{0}k, has effectively revolutionised magnet design by enabling current densities to be increased by orders of magnitude over that possible in a normal electromagnetic coil.

For example:

The possibility of nuclear fusion is entirely dependent on the availability of these high field super magnets.

Apart from the relatively small amount of refrigeration power required to maintain the low temperature environment, being resistance less, they consume no power during their operation and, not requiring a heavy iron Fe 26 core, they can be designed with a relatively light weight.

The idea of supporting a train by the repulsive forces generated by superconducting magnets on a vehicle, moving above normal conducting, passive coils or metal strips (typically aluminium Al 13) along the guide way, was to my knowledge originally suggested by Powell & Danby in America and it has since led to several significant research and development programmes in a number of countries.

The underlying principle of EDS levitation is the generation of eddy currents in the track conductors produced by the moving vehicle magnets, thus giving rise to a repulsion or lift force, strange that agrees with my claims over the years I use eddy currents for lift of roller sets when in motion to prevent noise and wear, the most significant advantage being that the levitation is inherently stable, not requiring any active control to maintain the relatively large vehicle clearances, e.g. 100 to 200 mm. see figure 16.1, on next page. Unfortunate they are old drawings now, but still can give the idea of what you have been reading.

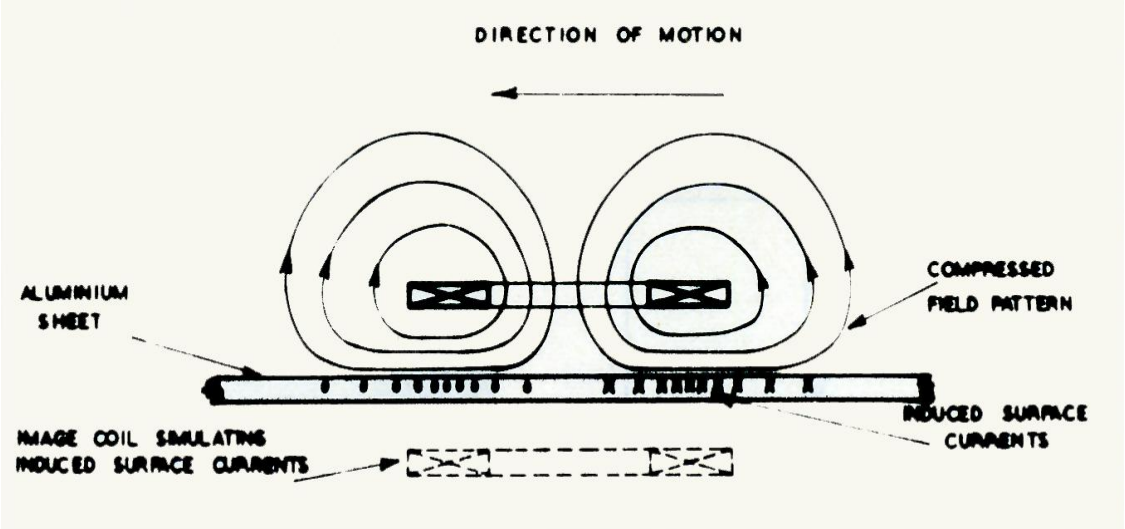


Figure 16.1.: The magnetic field and induced current distribution produced by a D.C. coil moving over a conducting sheet.

In other words, a resilient suspension analogous to a magnetic spring is produced without expenditure of energy.

A further advantage of a large gap suspension is that small guide way irregularities and misalignments, as well as minor debris, such as snow or ice, on the track, would present no serious problems as far as I can see it; in service operation.

For the lateral guidance of the vehicle by magnetic forces several schemes have been proposed.

For example:

In the null flux designs, proposed by the Canadians and the Germans, individual, closed, figure-of-eight loops would be laid along the central section of the guide way between the levitation strips, so that lateral restoring forces would be induced when the vehicle magnets become offset from their central position.

In the Japanese design on the other hand, a null flux guide way system has been ingeniously incorporated directly into the armature windings of the linear synchronous motor, e.g. the powered windings along each side of the U-shaped guide way are cross connected, so that with any lateral displacement of the vehicle a circulating current is produced which interacts with the vehicle magnets to produce a restoring force.

In a more recent Canadian design of a maglev scheme a similar null flux guidance system has been proposed.

Since relative motion between the vehicle with its array of superconducting magnets and the conducting guide way is essential for the generation of levitation and guidance forces in the EDS system, an auxiliary suspension, e.g. landing wheels, must also be provided for the vehicle at rest and up to take-off speeds of around 50 km/h.

Yes, as far as I am aware of at this present time nothing much is taking place in this field of development, but then, I cannot afford to keep up to date on world progress.

167: ***ELECTROMAGNETIC SYSTEMS (EMS):***

This is essentially an attraction magnetic system, the basic principle being illustrated in Figure 16.2a, showing an iron Fe 26 body in the field of an electromagnetic of fixed field strengths.

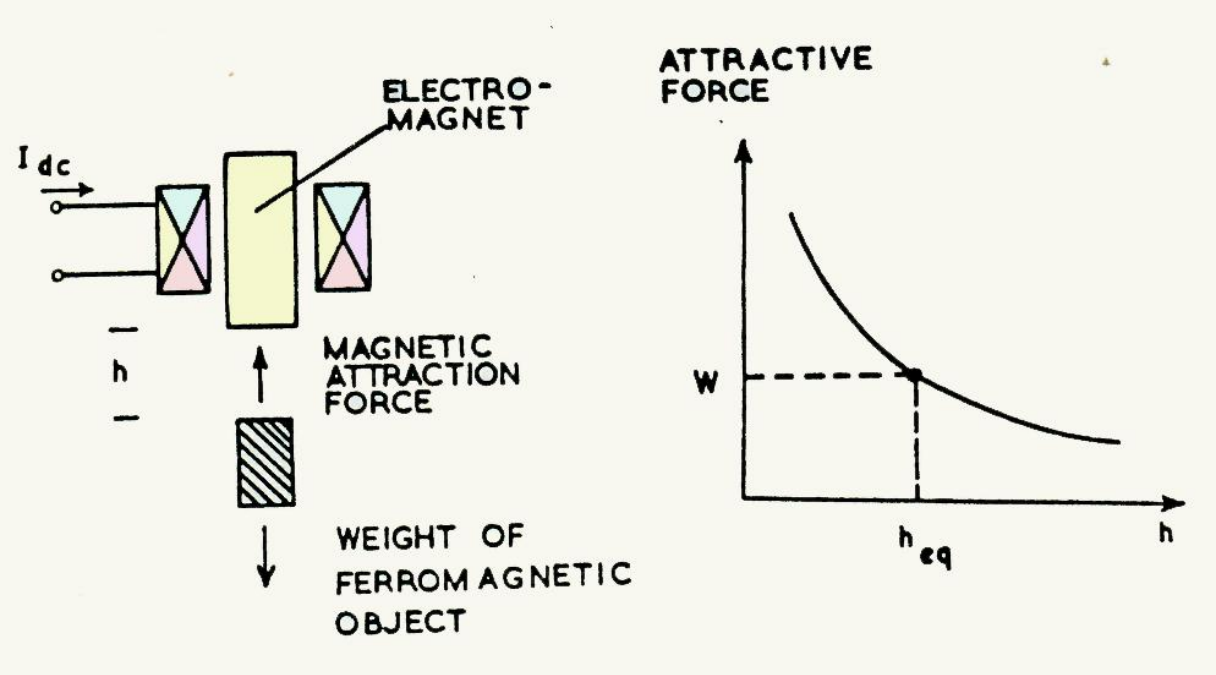


Figure 16.2a. The instability of the D.C. electromagnetic attractive suspension.

As in the case of permanent magnets the system is inherently unstable but, by actively controlling the current and hence, the field of the electromagnet, a stable position of the suspension body is possible.

In practice, a stable suspension for a vehicle can be achieved by controlling the air gap between electromagnets on the vehicle and the underside of iron Fe 26 rails along the guide way as, for example, by means of a closed loop system as shown in Figure 16.2b.

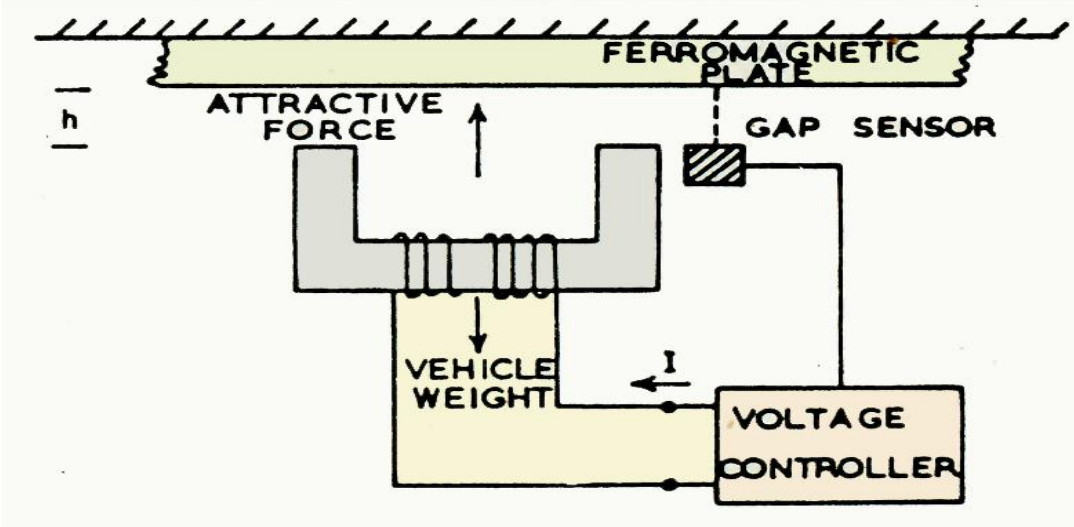


Figure 16.2b: The controlled electromagnetic suspension.

With sophisticated control technology and precision track construction, clearance gaps of the order of 10 mm can be readily maintained up to high speeds in excess of 300 km/h.

Lateral guidance forces are likewise produced by a similar series of vehicle magnets position horizontally to the track rails.

However, for high speed operation, laminations will be required for the guide way rails in order to minimise the repulsion and magnetic drag effects of the eddy current generation.

Apart from the fact that conventional engineering technology is used, the EMS system has the added advantage of providing levitation at all speeds from standstill, thus obviating the need for auxiliary wheel suspension.

The technology fits in logically with conventional iron cored, linear motors and the power consumption for levitation is relatively low.

I had suggested the Searl effect generator (S.E.G) could have supplied all the needed power for operational requirements, but they were not interested in such an idea.

A further reduction in the power requirements is possible by the use of permanent magnets having control coils wound on them to achieve the necessary stabilisation.

Although, at low speeds of less than 100 km/h, it is confidently expected that the desired ride quality can be obtained by control of the primary suspension magnets mounted directly on the vehicle, dynamic studies have shown that this is not the case for high speed operation.

The two control requirements of the levitation and guidance magnets, namely their ability to follow the curves and gradients in the guide way while, at the same time, isolating the vehicle from the high frequency irregularities of the track, are basically, mutually incompatible.

One possible solution to this problem is by the introduction of a secondary, mechanical, spring damper suspension.

In the German design for high speed operation to my knowledge, the magnet control system is decentralised with autonomous control of every individual magnet, each one with its controller being electrically suspended and forming one unit in an overall hierarchical control system.

Since these units are capable of following the curves, grades and surface irregularities of the guide way they have been termed ‘magnetic wheels’.

Tests have shown that, not only is the ride quality significantly improved, but that the dynamic requirements on the magnets are also reduced.

168: Once the Searl Effect generators are available I suggest that research into using them in maglev high speed intercity trains should be given a high priority order for research and development.

Both intercity and urban maglev systems could play an important role in mass transit operation, more so, if they are unmanned units, computer controlled operations.

But I guess that will be some time in the future, as long as electric power is still available from our present day systems; it will be continually used regardless of the harm created by it. The Homo will never change any system for another for fear of lost of work; which I appreciate the concern.

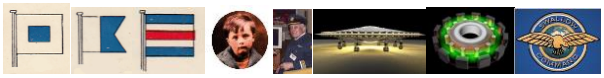
This document has been release to the general public by the authority of:






Prof. John Roy Robert Searl head of research and development.
Tomorrow's energy and transportation systems.
Superintendent of documents – UK.

Physical constants:



This simply means that conductance is equal to the number 1 divided by the resistance. Or: stated as an equation:



$$\text{Conductance} = \frac{1}{\text{Resistance}}$$



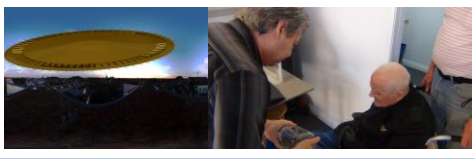
The letter **G** is used to represent conductance. Therefore, the equation can be written:

EX-STI I'm watching you committing serious crimes on YouTube, Which is ripe for a court case under consideration now!

$$G = \frac{1}{R}$$

EX-STI: are you ready to do battle with me in court, I'm ready to tear you apart and feed you to the crocodiles.

The unit of conductance is the **mho**, pronounced "**Moe**" **NOTICE** that this is **OHM** spelled backwards. The mho is the reciprocal of the ohm. Therefore:



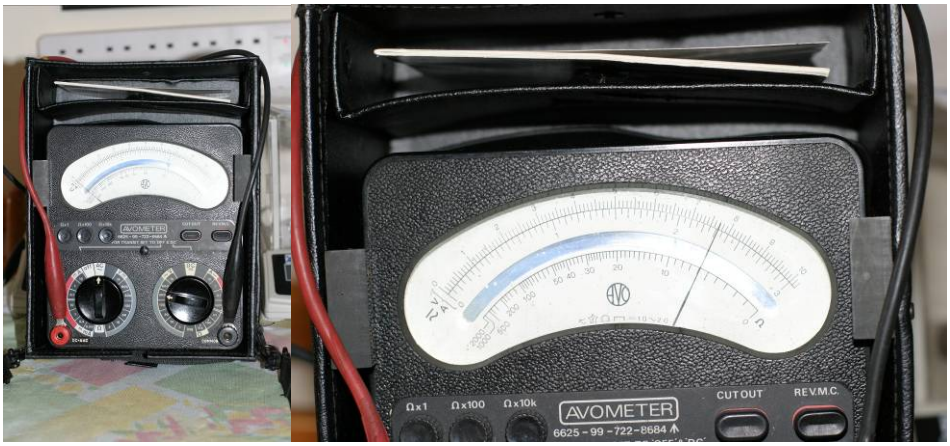
$$\text{mhos} = \frac{1}{\text{ohms}}$$



Beware of the Florida sharks on internet!

The resistance of **1 ohm** equals a conductance of **1 mho**. However, a resistance of **2 ohms** equals a conductance of **½** or **0.5 mhos**. Also, if the resistance is **1000 ohms** or **1 kilohm**, the conductance is **0.001 mhos** or **1 millimho**. Searl states that in most cases it is more convenient to think in terms of ohms (**resistance**) rather than in terms of **mhos** (**conductance**). Therefore, Seral will be primarily concerned with resistance in this section of this document. However, it is important as you will see as Searl continues.

DOC-SISRC-DC-C-1
DATE: 28TH August 1947.
EDITION: First.
ISSUE: One.



S.I.S.R.C. – Mortimer – Reading – Berkshire – England.

LOCATION	***:***	***Headquarters – Mortimer – Berkshire – England.***
DIVISION	***:***	***Tomorrow's Energy and Transportation Systems.***
DATE	***:***	***28th August 1947.***
SUBJECT	***:***	***Current.***
AUTHOR	***:***	***John Roy Robert Searl.***
STATUS	***:***	***Superintendent of documents – UK***

The fact that such an attacks of hate towards myself following the mass of publicity via TV, Radio and press came as no surprise to me; those who are failures in life will always result in hate towards those who are successful and it does appear that Flowerbower falls within that category.

I have inserted this report for the benefit of those few idiots out there who actually believe they are experts and that I agree with them on some issues but not in quite the same way as they state.

Question which has been used to try to stop this work over the years was that I had no formal education.

Now, I take it they talking about early school education, which is a strange thing to say considering that with all their education, it is clearly blowing their brains out, they have yet to be able to make the S.E.G. nor can they do the mathematics at the speed I do. They cannot even work it out, so what education have they got that makes them claim to be experts on the subject – bullshit?

These online books on the web, adds to nearly 100 other books written by me over the years plus 100 newsletters which were released. I have given the world a true insight how I was successful, where others have failed.

By re-writing this newsletter in Chapter 17 of the book on the web will help you to follow my steps of learning – that is self taught with real hands on experience.

The newsletter was released from Mortimer in bulk form in 1953, before that date others released them for me.

By releasing this information again, I am hoping it will help those real people to understand how a boy with no formal education as is commonly known was able to do it.



MONDAY JULY 9TH 1946: this boy just 14 years 2 months and 7 days old left his accommodation for the Britsh Electrical Repairs in Grays Inn Road, London W1. To start his adult hood: learning to survive by a system termed WORK. His contract: training to be an Electrical Engineer apprentice at 9 pence per hour at a 48 hours a week; amazing he survived.

Just a quick recap – Searl had two types of dreams that operated in a precise way, therefore he classed them as dream 1 then dream 2. These covered a time slot of six years, upon that last one, his dream 1 commenced without him being aware of it.

That date was the 5thof July 1944 and clearly, Searl had no idea what lay ahead of him. All that he understood is that he was going to a naval school to train for a sea life. Exciting, what child would not had been so, remember that he had no knowledge of mains electric lights, or tap running water, or flush toilet, and certainly never been stripped naked before a number of strange boys and a strange woman who would be washing him and checking his body out. This strange new world to Searl would be a great shock to the world he had just left; it was impossible to compute – they were opposite worlds.

Reality had made its first strike upon Searl's mind – that in the world of a child, adults enjoy filling their Brains with crap, in some belief that they are protecting them – where in reality they are not – they are generating serious problems for the child as Searl discovered.

At the naval school, he did well; now bear in mind that he never had any real education, but he sure is getting it now, from every angle – the real world – not dream world of Suffolk.

Then the war with Japan ended on the 2ndSeptember 1945, therefore in reality Searl training was no longer urgent. His health deteriorated to a point of concern with the doctor that it would be best to discharge him on the grounds that he was too ill to continue training as he spent more time in sick bay now with this added unknown disease which eat away the flesh.

Then on the 17thJune 1946 he departed from that naval training centre to cease just being a number and a machine; to something called a civilian; with the only sex lesson of 5 minutes – which I now was going out into the world – one day I will meet a girl and marry here and have a baby.

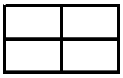
O my God: can't afford a baby so just keep away from girls – and I sure did – from that time, girls keep away from me – how strange that the law of the squares are so precise that there are always two main states and they are opposite and revisable.

So that was how I became to be arriving at this company on that day – having no idea what to expect which of cause is exciting in itself. As I recall it, I was the only boy there – when I say boy I mean all the others were old men in relation to me who welcome me into the team.

I can recall the images of those men today; they agreed teased me, which I have grown to accept as normal behavior of older men to new comers. Example; give you a document for materials to take to the stores – unknown to me that it stated for a long wait which the store man perform to the best of his capabilities.

Strange that such action actually excites old men minds – what they forgot was while waiting for a long wait I was being paid 9 pence per hour doing nothing – where in reality I should had been winding coils of wire. Well you cannot complain too much about pay to do nothing can you?

As you know on that first day of training, dream 1 contents was stirred up by the contents of a store document request being 1.5^2, that superscript was the problem. You do not see the problem – well you certainly cannot see it because you have not yet had the triggers needed to see the invisible – because you not intended to see it.

What the foreman showed me when question this: was this  my brain was saying to me that each cell must have a value – I might have been dumb at that moment in time, I can certify that is going to change.

I now actually understand that wire is important for some unseen force that you can actually feel if you are stupid enough to check that issue out.

But I had to due to the nature of this work and also understanding that there is another force present that goes by some strange term of magnetic – interesting indeed I cannot see these two forces but can understand that one is a by product of the other and related by function.

As an apprentice; I am expected to undertake some time at home to study – and you guessed it – I sure did – not only by text but by hands on experience as well. Mrs Tregoning, my landlady of that period without doubt learnt that this lodger was possessed with electricity and magnetism, lengths of wire and hot soldering irons that create a horrible smell; quite different to that smell of Searl breaking wind.

What with walkie talkers and other devices like transmitters and receivers, little was she aware that he was also an expert in improving the air ventilation of her home – which she will discover on Christmas morning.

Now that you have basic recollections of the facts of Searl's past life, we shall proceed to how he got his knowledge – it's a long story – but it answers your misinformed knowledge.

CURRENT:

INTRODUCTION:

Electrons involves that science which controls the behaviour of electrons so that some useful function is possible.

As this definition implies better wake up as I am teaching you so you can become intelligent for a change, that the electron is vitally important to electronics and well as the SEG.

In fact, the word electronics derives from the word electron.

Electricity comes to our homes and offices which now I am aware of by the movement of electrons through wires – that is amazing – a solid length of wire – you can't feel or see anything important about it – yet something termed electrons can move through it.

Actually, electric current is nothing more than the movement or displacement of electrons.

Obviously then: to understand electronics. Searl must first understand the nature of the electron.

In this document upon Searl's education, he will explain his understanding at this stage for you to see how he was able to do what you cannot do Flowerbower.

He will show you what the electron is, how it behaves, and how he can use it to perform useful jobs.

According to his understanding at that time, he will also learn how to measure the flow of electrons.

However, before Searl get involved with the details of electron theory, he had first to take a quick look at the overall field of electronics.

Guess you can understand this requirement, as that will give him a better idea of how electronics is used and why he should study this interesting field.

The detail objectives listed below state exactly what Searl was expected to learn from that study material.

Searl's unit objectives;

1) ***To define electronics and list five different fields into which the broad field of electronics is divided***

2) ***To define: DC, AC, Molecule, element, atom, electron, proton, neutron, nucleus, and ion.***

3) ***To state the electrical charge associated with each of the following: atom, electron, proton, neutron, nucleus, ion***

4) ***To draw a simple diagram of the Bohr model of the atom identifying each part.***

5) ***To state Coulomb's law and explain how like and unlike charges behave.***

6) ***To define: coulomb, ampere, conductor, insulator, valence, and current.***

7) ***To draw a schematic diagram of a simple circuit from a pictorial diagram of that circuit and indicate the direction of current flow.***

8) ***To express numbers in powers of ten, express quantities using metric prefixes, and convert from one metric unit to another.***

9) ***To demonstrate the proper method for connecting an ammeter to a circuit and measure current.***

Yes, Searl had much to learn in a very short time – if you are not educated in this domain, then rest assured that I understand that you might be wondering what all that has to do with the S.E.G – well in all honesty – EVERYTHING – that is correct!

This learning curve included component parts as well and I will attempt to present these details as received at that time. I guess that makes your eyes water to hear that Searl can actually display something here of yesterday, that belongs to a time so long ago just to confirm to idiots like Flowerbower and company that he don't talk out of his arse as he tries to impress viewers on YouTube that Searl never had such knowledge or equipment.

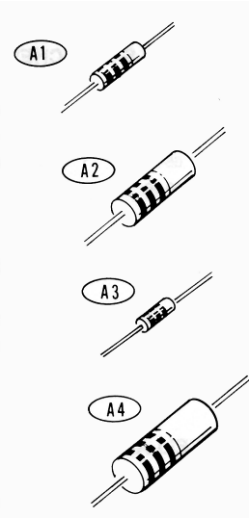
He sure did have and infact that meter shown at the heading of this article sits here and still works – some meter.

You should by understand now, that Searl had no option but to study hard for his job sake, which in turn made him experiment. An enquiring mind is quite a normal function to see happen which I agree, but that putting of holes through rooftop is not a normal practice – so one has to accept the fact that inventing is not normal and accidents will happen, due to that fact!

KEY No.	PART No.	QTY.	DESCRIPTION

RESISTORS (composition)

A1	1-2	1	68 Ω 1/2 w 10% (blue, gray, black, silver)
A1	1-3	1	100 Ω 1/2 w 10% (brown, black, brown, silver)
A1	1-6	1	470 Ω 1/2 w 10% (yellow, violet, brown, silver)
A1	1-35	1	1 MΩ 1/2 w 10% (brown, black, green, silver)
A1	1-40	1	10 MΩ 1/2 w 10% (brown, black, blue, silver)
A1	1-58	1	22 KΩ 1/2 w 5% (red, red, orange, gold)
A1	1-60	1	68 KΩ 1/2 w 10% (blue, gray, orange, silver)
A1	1-80	1	1200 Ω 1/2 w 5% (brown, red, red, gold)
A1	1-90	1	2000 Ω 1/2 w 5% (red, black, red, gold)
A1	1-105	1	10 KΩ 1/2 w 5% (brown, black, orange, gold)
A1	1-123	1	100 Ω 1/2 w 5% (brown, black, brown, gold)
A1	1-137	1	200 Ω 1/2 w 5% (red, black, brown, gold)
A1	1-172	2	1000 Ω 1/2 w 5% (brown, black, red, gold)



NOTE: The following resistors are in the envelope labelled: RESISTORS FOR EXPERIMENT 4 or R For Exp 4. Return these parts to the envelope after you have checked them.

A2	1-1-1	1	470 Ω 1 w 10% (yellow, violet, brown, silver)
A2	1-2-1	1	1000 Ω 1 w 10% (brown, black, red, silver)
A3	1-4-12	1	2200 Ω 1/4 w 10% (red, red, red, silver)
A3	1-8-12	1	4700 Ω 1/4 w 10% (yellow, violet, red, silver)
A3	1-10-12	1	15 KΩ 1/4 w 10% (brown, green, orange, silver)
A2	1-11-1	1	10 Ω 1 w 10% (brown, black, black, silver)
A4	1-13-2	1	220 Ω 2 w 10% (red, red, brown, silver)
A3	1-13-12	1	560 Ω 1/4 w 10% (green, blue, brown, silver)
A4	1-20-2	1	100 Ω 2 w 10% (brown, black, brown, silver)
A1	1-24	1	33 KΩ 1/2 w 10% (orange, orange, orange, silver)
A1	1-29	1	220 KΩ 1/2 w 10% (red, red, yellow, silver)
A1	1-43	1	4700 Ω 1/2 w 5% (yellow, violet, red, gold)
A1	1-49	1	22 Ω 1/2 w 10% (red, red, black, silver)
A1	1-54	1	15 Ω 1/2 w 5% (brown, green, black, gold)
A1	1-57	1	2200 Ω 1/2 w 5% (red, red, red, gold)
A1	1-64	1	5100 Ω 1/2 w 5% (green, brown, red, gold)
A1	1-105	1	10 KΩ 1/2 w 5% (brown, black, orange, gold)
A1	1-129	1	4.7 Ω 1/2 w 10% (yellow, violet, gold, silver)
A1	1-139	1	100 MΩ 1/2 w 20% (brown, black, violet)
A1	1-141	1	1000 MΩ 1/2 w 20% (brown, black, gray)

Parts List EE-3101

PARTS LIST

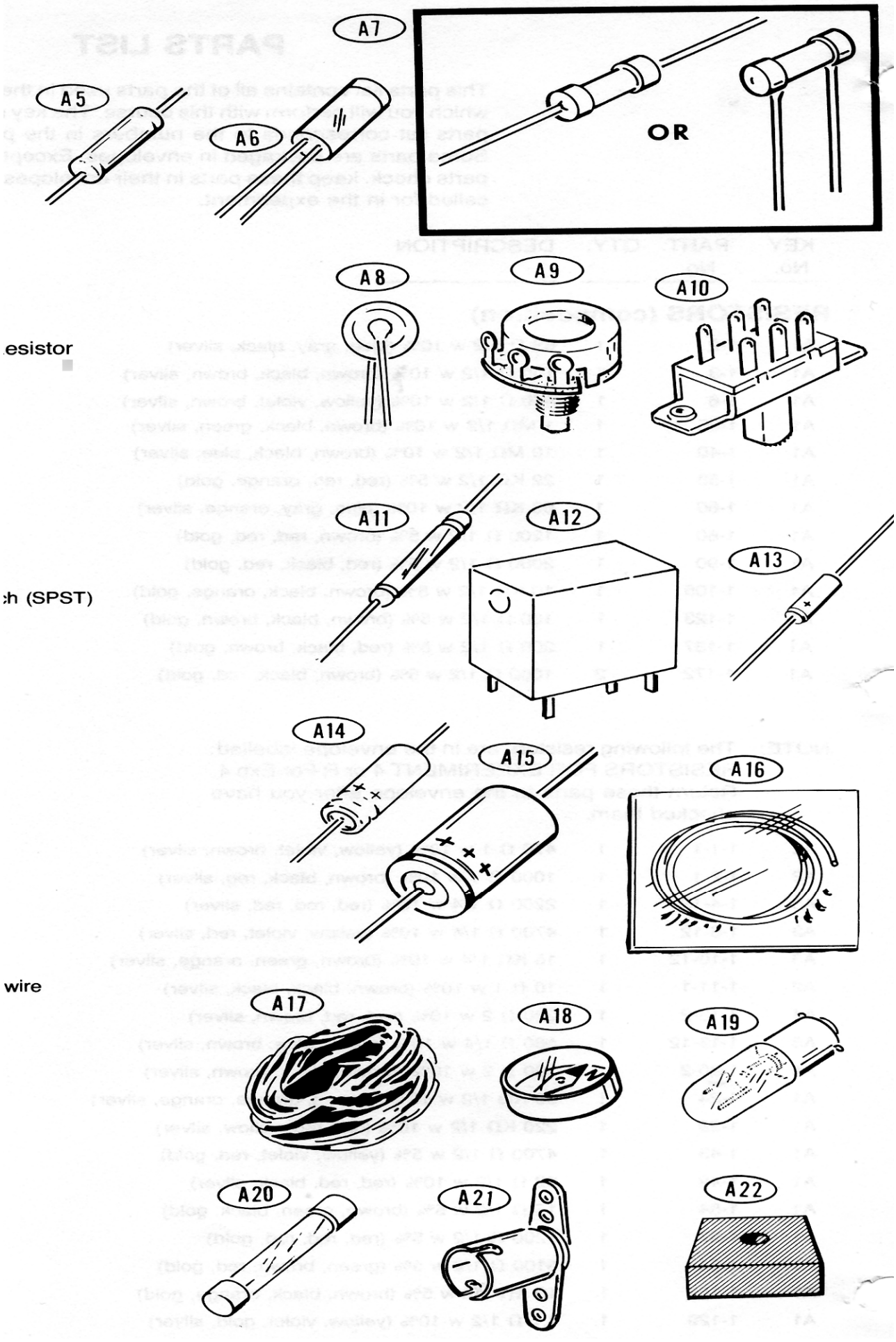
This parts list contains all the parts used in the experiments which you will perform with the course.

The key number in the parts list corresponds to the numbers in the pictorial.

Some parts are packaged in envelopes.

Except for this initial parts check, keep these parts in their envelopes until they are called for in the experiment.

KEY No.	PART No.	QTY.	DESCRIPTION
RESISTORS (precision)			
A5	2-58	1	1000 Ω 1/2 w 1%
A5	2-131	1	10 Ω 1/2 w 1%
A5	2-159	1	100 Ω 1/2 w 1%
RESISTORS (special purpose)			
A6	9-6	1	Light Dependent Resistor
A7	9-32	1	Thermistor
A8	9-34	1	Thermistor
CONTROLS-SWITCHES-RELAYS			
A9	10-237	1	200 Ω linear control
A10	60-2	1	Slide switch (DPDT)
A11	65-24	1	Magnetic Reed Switch (SPST)
A12	69-50	1	Relay
CAPACITORS (electrolytic)			
A13	25-54	1	10 μfd 15V
A14	25-98	1	50 μfd 15V
A15	25-157	1	500 μfd 15V
MISCELLANEOUS			
A16	331-7	1	Solder package
A17	344-59	1	10 feet of #22 solid wire
A18	406-4	1	Compass
A19	412-16	1	#49 light bulb
A20	421-27	1	1/16 amp fuse
A21	434-21	1	Light socket
A22	474-1	1	Permanent magnet



esistor

h (SPST)

wire

COURSE OBJECTIVES AND OUTLINE.

Course objectives:

When I have completed this course, I shall be able to do the following:

1) ***I will be able to solve basic electronic problems involving current, voltage, resistance, and power***

2) ***I will be able to discuss the relationship between electricity and magnetism.***

3) ***I shall be able to convert from one metric prefix to another and to work with powers of ten***

4) ***I will be able to explain the relationship between current, voltage, resistance, and power.***

5) ***Given a wiring diagram of a circuit containing components such as resistors, relays, switches, lamps, batteries, and capacitors, I will be able to draw an equivalent schematic diagram.***

6) ***I will be able to explain the construction, operation, and purpose of resistors, potentiometers, switches, fuses, relays, capacitors, inductors, and batteries.***

7) ***Using a schematic diagram as a guide, I will be able to construct DC circuits with components such as resistors, relays, switches, lamps, batteries, and capacitors.***

8) ***I shall be able to demonstrate basic safety procedures designed to protect myself and my test equipment.***

9) ***I will be able to use a multimeter to measure current, voltage and resistance.***

10) ***I will be able to build and experiment with basic DC circuits of my own design.***

COURSE OUTLINE;

Unit one. CURRENT:

1. *Introduction.*
2. *Unit objectives.*
3. *Unit activity guide*
4. *Composition of matter*
5.
   - *A. Elements and compounds*
   - *B. Atoms.*
   - *C. Electrons, Protons, and Neutrons.*
   - *D. Bohr model of Atom.*
   - *E. Difference between Elements.*
   - *F. The balanced atom.*

5 *Electrostatics.*

- *A The Electrical Charge.*
- *B Law of Electrical Charge.*
- *C The ion.*
- *D Action of Electrostatic Charge.*

6 *Current flow*

- *A Freeing electrons.*
- *B Conductors and Insulators.*
- *C The battery.*
- *D Random Drift and Directed Drift.*

7 *The electric circuit:*

8 *Measuring Current:*

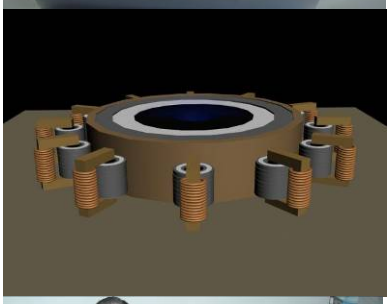
- *A The Coulomb.*
- *B powers of Ten and Scientific Notation.*
- *C The Ampere.*
- *D The Ammeter.*

9 *Summary.*

10 *Appendix – A: Scientific Notation.*

11 *Unit examination.*









You may think that I am joking here – let me make it quite clear this is only the beginning of what you will be seeing through out this book on the web.

So, the best thing for you to do is to load up on drink and food, so you can read all about it without having to take a break; that is if your eyes can stand the time.

This re-writing the past is actually good for me – just reminds me what it has taken to get to this stage – some event!

COMPOSITION OF MATTER:

Controlling the behaviour of electrons is what electronics is all about; which also includes the Searl Effect Generator.

Therefore, an understanding of the electron is vitally important to an understanding of electronic fundamentals.

Electrons are tiny particles that carry the energy to light our homes, cook our food, and do much of our work.

To understand what an electron is Searl must investigate the make-up of matter.

Searl has pointed that out so often that the Searl Effect Generator (S.E.G.) is matter in motion that does the work of controlling electrons – so let's see how Searl progressed.

To Searl; Matter is generally described as anything of weight and occupies space – fair enough.

Thus, the Earth and everything on it classified as matter.

As so often stated by Searl that the law of the squares says that matter exists in three different states;-

1) ***Solid***
2) ***Liquid***
3) ***Gas.***



Examples of solid matter are:

Gold, sand and wood.

Some liquid examples are:

Water, milk, and gasoline.

Some gas examples are:

Hydrogen, Helium, and oxygen.

These examples are forms of matter.

ELEMENTS AND COMPOUNDS:

The basic building materials from which all matter is constructed are - ***ELEMENTS***.

Hence, all matter is composed of elements – which I agree – there is one problem with that statement that many may feel that details what they have read of the Searl Effect Generator construction is not true.

I can assure you that the Searl Effect Generator (S.E.G) is constructed from elements regardless, this confusion which may exist with some readers who are not involved in its material construction. Reading that there are 3 layers using elements and one layer using a compound will now be confused at a higher level.

Some examples of elements are iron, carbon, hydrogen, and gold.

There are just over one hundred elements known to Searl presently, of these only 92 occur in nature.

Yes, you guessed it, these are called natural elements – sorry, I am getting carried away with writing that it had slipped my mind that I have already explain this part in chapter 16 the question is where on earth do I go from here – just have to think what I have already said.

I don't think that I actually showed the questions that I had to answer – so I shall represent them here first:

1 Elements:

All the compounds found in nature consist of different combinations of only 92 different elements. These basic elements can be combined in millions of different combinations to form all the ---------- known to Man, including Searl.

2 Elements:

A substance that is composed of two or more elements are compounds. Since water is composed of the elements hydrogen and oxygen, water is a ----------

3 Matter is anything that has weight and occupies space. Thus air, metal, and water are examples of ----------

4 Molecule:

A molecule consists of two or more atoms bound together. Thus, while the molecule is the smallest particle of a compound, the atom is the smallest particle of an ----------

5 Matter:

Matter may exist as a gas, liquid, or solid. All matter is composed of one or more of the elements. For example: water is composed of two ---------- called hydrogen and oxygen.

6 Compound:

Other examples of compounds are salt, steel, and sugar. All these substances are compounds because they are composed of two or more ----------.

7 Compound:

The smallest particle of a compound is called a molecule. A molecule is composed of atoms of two or more different elements. For example: a molecule of water consists of two atoms of hydrogen and one atom of oxygen. Thus the smallest particle of water which is still water is a ----------.

8 S.E.G:

The S.E.G. is constructed of matter in the form of 4 layers. How many of these layers are not elements as such ----------.

I shall give you what my answers were later in this chapter, so you got time to fill them in before you see my answers. I still have more questions to present on the next page for you to see what is involved with the S.E.G.

Question 8 is one of mine banged in to check if you have been truly studying the released information within this book. I shall now continue with the questions that I had to answer at the tender age of 14 years 4 months 13 days old.

9 Nucleus:

The nucleus of the hydrogen atom consists of a single proton. However, all other atoms have both protons and ---------- in their nucleus.

10 Element:

That is, just as a compound is made up of molecules, an element is made up of ----------.

11 Neutrons:

It is interesting to note that atoms normally have the same number of electrons and protons. Thus, a hydrogen atom has one proton and one electron. On the other hand, a uranium atom has 92 protons and ---------- electrons.

12 Atoms:

The atom is the smallest divided particle of compounds. Since there are only 92 natural elements, there are only 92 different types of ---------- found in nature.

13 92.

14 Protons, electrons, neutrons:

The protons and neutrons form the centre or nucleus of the atom. The electrons rotate around the nucleus in much the same way that planets rotate around the sun. Thus, If I compare the atom to our solar system, the sun is equivalent to the ---------- of the atom.

15 Atoms:

One type of atom differs from another type by the number of protons, electrons, and neutrons. These are the three basic building blocks of all atoms. That is, all atoms are made up of different combinations of ----------, ----------, and ----------.

I would like to add another question to that list – which is from my self – only as a matter of interest as to see if you really understand what I have written here.

16 WHY?

Why is atoms made up of combinations of only three components parts?

I have covered the first 14 questions I had to answer from the first section of the course I had to study – agree, that was simple, but remember this is a boy of 14 years with no formal education that is being referred to here and one who has no natural hearing – so he was handicapped from the start.

I have added two extra questions; which has been key subject in this book for you to answer.

ELECTROSTATICS:

Electrostatics is the branch of physics dealing with electrical charges at rest, or static electricity.

On the other hand, electronics deals largely with moving electrical charges.

However, before I can fully understand the action of electrical charges in motion, I must have some basic knowledge of their behaviour at rest.

THE ELECTRICAL CHARGE:

I have examined the structure of the atom and discussed some of the characteristics of the electron, proton, and neutron.

However, I have not yet discussed the most important characteristic of these particles.

This characteristic is their ***electrical charge.***

An electrical charge is a property associated with the electron and the proton.

In the field of electronics and electrical works, it the electrons charge that make so useful; including the Searl Effect Generator (SEG)

The electrical charge is difficult to visualise because it is not a thing like a molecule or an atom.

Rather, it is a property which electrons and protons possess that causes these particles to behave in certain predictable ways.

The Law of the squares state that there are two distinct types of electrical charges.

True to form, as the Law of the Squares state, these two types of charges have opposite characteristics; they have been by arbitration given the names positive and negative.

The electrical charge associated with the electron has been arbitrarily given the name negative; I agree that is a good choice as it is easy to remember and not difficult to spell either.

On the other hand, the electrical charge associated with the proton called positive; I accept that term as reasonable as it is also easy to remember and not too bad for spelling.

The neutron has no charge at all – how interesting as that is absolutely as the Law of the squares predicts.

The law of the squares sure was a better teacher than those who operated the schools of my time. Note, I stated my time, because time changes things and now in the year 2009 schools systems have changed and will still change over again as the system grows old just as we do, to give birth to new teachings.

Yes, the neutron is electrically neutral and therefore, plays no known role in electricity.

The Law of the squares defined: that in this universe there exist always two prime states and that they are opposite and there is always the third state of no real value in relation to these two prime states separated by these states is often a thin line. Strange, that in reality the game called hopscotch was my primary teacher and the law of the squares became my secondary teacher.

The electron revolves around the nucleus of the atom in much the same way that the Earth orbits the sun.

Let me compare this action to that of a ball which is attached to the end of a string and twirled in a circle.

If the string breaks, the ball will fly off in a straight line.

Thus, it is the restraining action of the string which holds the path of the ball to a circle.

In this case of the Earth rotating around the sun, it is the gravitational attraction of the sun which prevents the Earth from flying off into space.

The gravitational attraction of the sun exactly balances the centrifugal force of each planet.

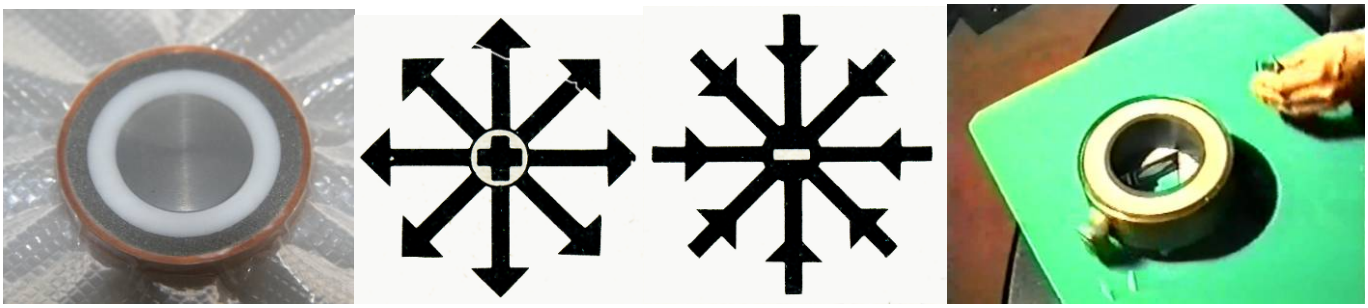
Thus, the planets travel in more or less circular paths around the sun.

The electron orbits around the nucleus at a fantastic speed.

What force keeps the electron from flying off into space?

It is not gravity because the gravitational force exerted by the nucleus is much too weak.

Instead, the force at work here is caused by the charge on the electron in orbit and the charge on the proton in the nucleus.



A Proton ***B Electron***

Fields associated with protons and electrons'

The negative charge of the electron is attracted by the positive charge of the proton.

I call this force of attraction an ***electrostatic force.***

To explain this force, science has adopted the concept of an ***electrostatic field.***

Every charged particle is assumed to be surrounded by an ***electrostatic field*** which extends for a distance outside the particle itself.

It is the interaction of these fields which causes the electron and proton to attract each other.

Would it also be true to sate that the roller sets remain attached to the plate regardless of motion by these interaction electric fields?

Figure A: shows a diagram of a proton.

The plus sign represents the positive electrical charge.

The arrows extending outward represent the lines of force make up the electrostatic field.

NOTE: Arbitrarily assumed are the lines extending away from the positive charge.

Compare this to the electron shown in figure B.

The minus sign represents the negative charge; point inward arrows represent the lines of the electric field.

Now let me see how these two fields interact with one another.

LAW OF ELECTRICAL CHARGES:

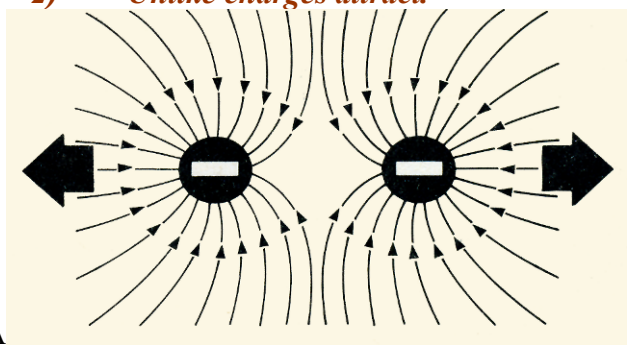
To my knowledge at that time: the following are the basic laws of nature, it describes the action of electrical charges.

It is termed Coulomb's Law after Charles A. de Coulomb 1736 – 1806 French physicist; I believe he was who discovered this relationship.

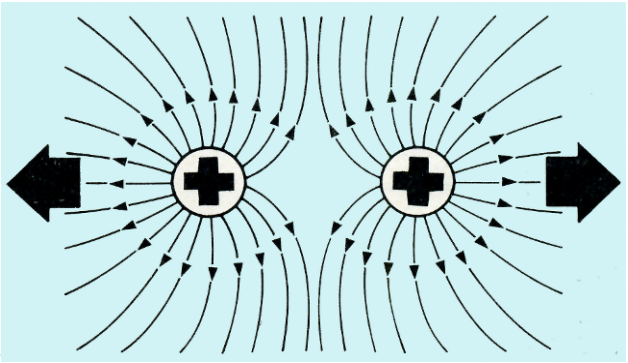
Which appears quite simply, Coulomb's Law states that:

1) ***Like charges repel.***
2) ***Unlike charges attract.***

A



B



C

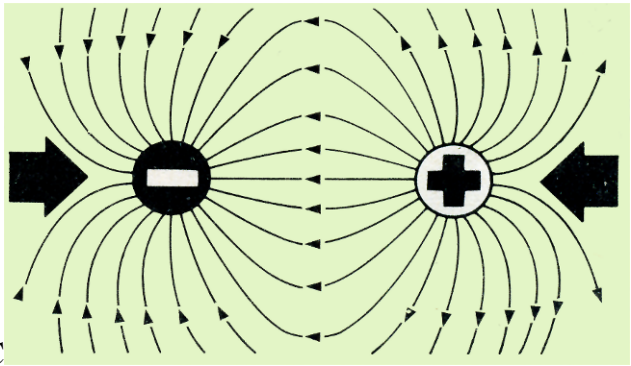


Figure A – B – C action of like and unlike charges.

A = Electrons repel.



B = Protons repel

C = Electron and Proton attract



Because: like charges repel, two electrons repel each other as do two Protons.

Figure A: illustrates how the lines of force interact between two electrons.

The directions of the lines of force are such that the two fields cannot interconnect.

The net effect is that the electrons attempt to move apart.

That is, they repel each other.

Figure B: illustrates that the same is true of two protons.

In Figure C: an electron and a proton are shown.

Here, the two fields do interconnect.

As a result, the two charges attract and tend to move together.

These examples show only individual charged particles. Whereas: the S.E.G. has many such charged particles.

However, Coulomb's Law holds true for concentrations of charges as well.

In fact, it holds true for only two charged bodies.

An important part of Coulomb's Law is an equation which allows us to determine the force of attraction or repulsion between charged bodies.

All S.E.Gs are charged bodies regardless of its application functions.

The equation states that:

$$F = \frac{q_1 \times q_2}{d^2}$$

Where
F = the force of attraction between unlike charges or the force of repulsion between like charges;
q_1 = the charge on one body.
q_2 = the charge on the second body.
d^2 = the square of the distance between the two bodies.

While I need not work actual problems to determine the force between charges, I can see some interesting relationships by examining the equation.

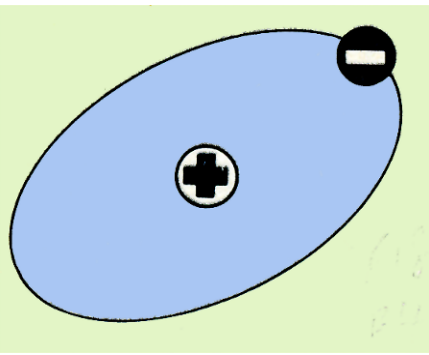
It I experiment with the equation by substituting some simple arbitrary numbers for q_1, q_2, and d^2, I can determine how the force changes as the quantities change.

For example, if the value of either charge doubles, the force also doubles.

If both charges double, then the force increases by a factor of four.

On the other hand, increasing the distance between charges decreases the force.

If the distance between charges is doubled, the force is reduced to one fourth its former value.



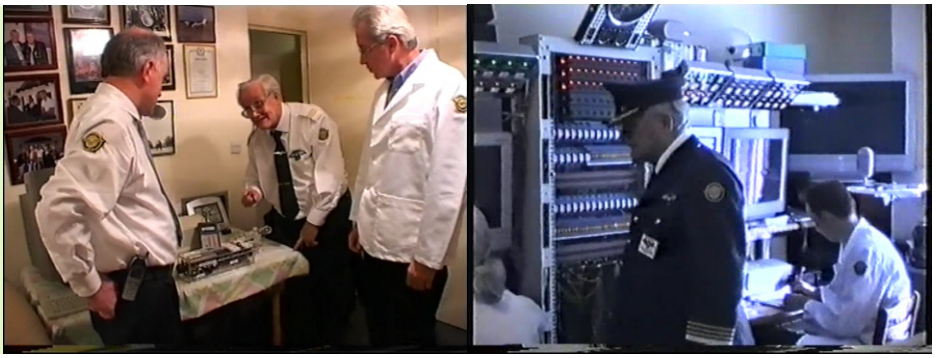


Figure D: Hydrogen atom. **The boys: who do the research and development work?**

The magnitude of the negative charge on the electron is exactly equal to the magnitude of the positive charge on the proton.

Figure D is a diagram of a hydrogen atom H.1: consisting of one electron in orbit around one proton.

NOTICE: that the negative charge of the electron is exactly offset by the positive charge of the proton.

Thus, the atom as a whole has no charge at all.

That is, overall, this atom has neither a negative nor a positive charge.

It is electrically neutral.

Atoms which are electrically neutral have no net charge.

Therefore, they neither attract nor repel each other.

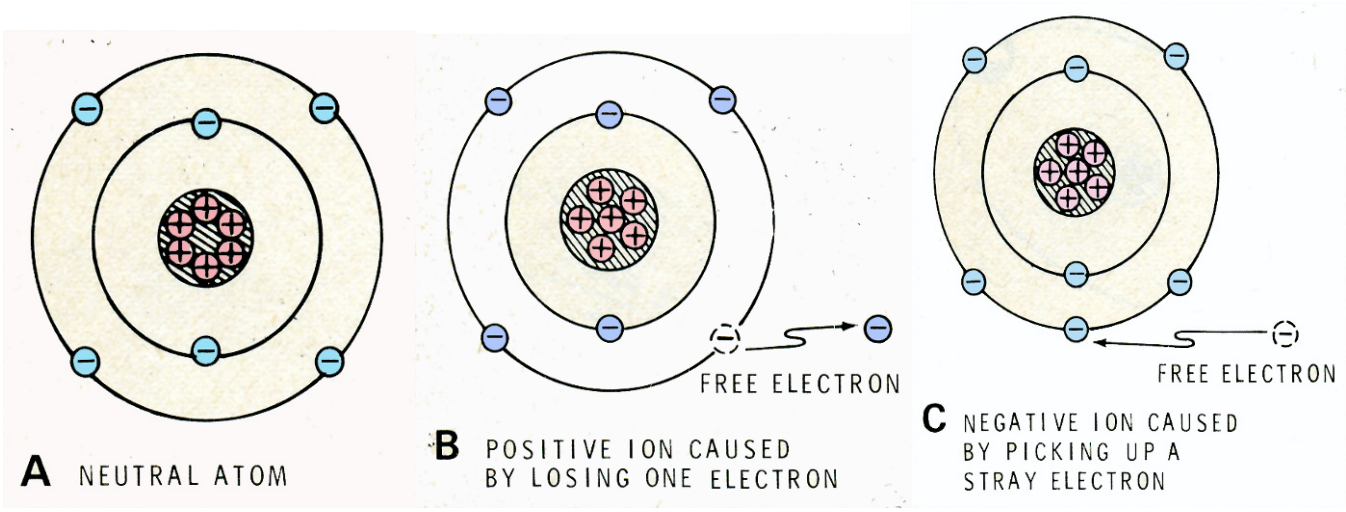
By the same token they are neither attracted nor repelled by charged particles such as electrons and protons.

I have seen that atoms normally contain the same number of electrons – negative charges – as protons – positive charges

And, since neutrons add no charge, all atoms are normally neutral as far as their electrical charges are concerned.

However, this ***normal condition*** can be easily upset by external forces.





Figures A – B - C: Carbon atom and ions.

THE ION:

Atoms are affected by many different types of outside forces such as that of heat, light, electrostatic fields, chemical reactions and magnetic fields.

The S.E.G. functions because we interfere with its electrical neutral state, through magnetic fields interaction, which in turn is further upset by the movement of electrons through the material – in plain language there is no hiding place for electrons.

Quite often, one or more of these forces upset the balanced state of the atom.

As a result, an atom can lose or gain an electron.

That is the S.E.G. game – losing and gaining at a set time rate relating to voltage pressure movement demanded by outside operations, like switching on lights etc.

When this happens, the number of positive charges no longer exactly offsets the number of negative charges.

Thus, sadly to say that the atom end up with a net charge.

An atom that is no longer in its neutral state is termed an ion.

The process of changing an atom to an ion is termed ionization.

There are both negative and positive ions.

Figure A – B – C compares a neutral atom of carbon with negative and positive ions of carbon.

Figure A: shows the balanced or neutral atom.

NOTICE: that the six negative charges (electrons) exactly offsets by the six positive charges (protons).

The neutrons ignored in this example since they contribute nothing to the electrical charge.

If you found it hard to understand – please keep reading review it until you understand.

Figure B: shows the condition which exists when the carbon atom loses an electron.

There are many forces in nature beside Prof. Searl which can dislodge an electron and cause it to wander away from the atom.

I will discuss this in more detail later.

NOTICE that the carbon atom now has one more proton than electrons.

Thus, there is one positive charge which is not cancelled by a corresponding negative charge.

Therefore, the atom has a net positive charge.

I call this a positive ion.

Figure C: shows a carbon atom which has picked up a stray electron.

In this case, there is one negative charge which is not offset by a corresponding positive charge.

Hence, the atom has a net negative charge.

This is called a negative ion.

The ion still has all the basic characteristics of carbon because the nucleus of the atom has not been disturbed.

Can I put that in another way to help you to understand what I am saying here – if I give your bare bottom a spanking: I am disturbing the blood supply – but because of that you do not cease being you – you still have all the characteristics of you – the only difference being that you now have a red bum instead of a white bum I would class that as rather a positive state.

Therefore, an atom can give up or pick up electrons without changing its basic characteristics.

Just like your bum being spanked it gives up electrons, thus turns red; but will slowly pick up again electrons from the atmosphere or clothing and thereby return to white again; but amazing you still have all the characteristics of you regardless.

Thus, changing atoms to ion is an easy thing to do and everything you see around you contains ions as well as atoms.

The material around you also contains a very large number of free or stray electrons.

Clearly, there is much energy around you that could be use to your benefit – it is our failure to be able to collect this spare energy in a manner to which it can be converted into useful energy.

Wind power, solar cells, water are just a few products; which are today actually being used to our advantage; yet the sea offers a great amount of free energy but not yet put to full use. The source that S.I.S.R.C. complex researching is magnetism; yet to be expended to more efficient mode of collecting energy to convert to useful energy that will benefit mankind.

Unfortunate, one needs to spank a dozen bottoms at the same time to generate enough energy to light a bulb. In reality, your body loses electrons every second of the day, but it picks up quite a few to replace them.

These electrons having escaped from the atom makes the atom a positive ion.

As I will show later, largely the number of free electrons and ions within the material determines the electrical characteristics of different types of material.

ACTION OF ELECTROSTATIC CHARGES:

At one time or another, I have seen or felt the effects of electrostatic charges.

A most spectacular effect sight to see is lightning.

Less spectacular examples when we remove clothes from a dryer, comb our hair, or touch a metal object after scuffing our feet on a rug.

In each of these cases, two different bodies receive opposite electrical charges.

Again, the law of the squares is upheld.

This is due to one of the bodies giving up a large number of electrons to the other.

The body that gives up the electrons is positive charged, while the body receiving the electrons becomes negatively charged.

When I comb my hair vigorously with a hard rubber comb, my hair gives up electrons to the comb; that is why I am going bald.

Thus, the comb becomes negatively charged, while my hair becomes positively charged.

That is, the comb collects a large number of free electrons from my hair.

This is an example of charging by friction.

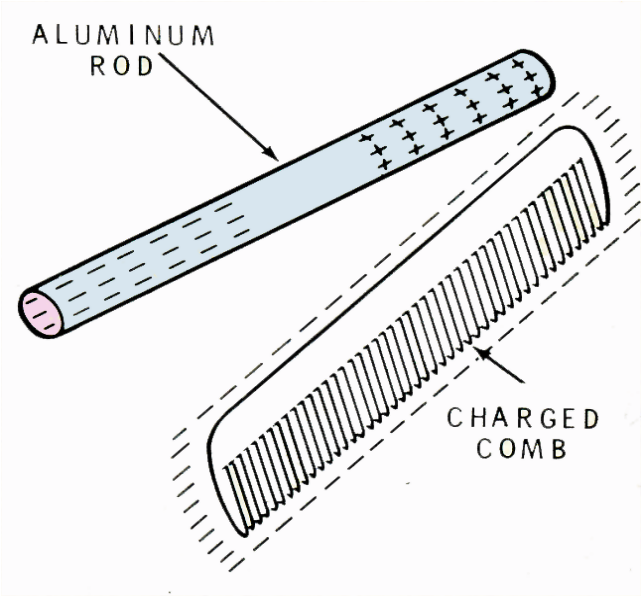




Figure 1. Charging by induction.

There are several other ways in which an object can be charged; without being spanked!

For example, the charge on the comb can be partially transferred to another body simply by touching the comb to an uncharged body.

When the charged comb comes into contact with the uncharged object, many of the excess electrons leave the comb and collect on the other object.

If I now remove the comb, the object will have a charge of its own.

This is called charging by contact.

Another method of charging is called charging by induction.

This method takes advantage of the electrostatic field which exists in the space surrounding a charged bod

This allows us to charge an object without actually touching it with a charged body.

Figure 1, shows the negatively charged comb place close to an aluminium rod.

The excess electrons in the comb repel the free electrons in the rod.

Consequently, the free electrons gather at the end of the rod away from the charged comb.

This causes that end of the rod to acquire a negative charge.

The opposite end acquires a positive charge because of the deficiency of electrons.

If I now touch the negative end of the rod with a neutral body, some of the electrons leave the rod and ente the neutral body.

This leaves the rod with a net positive charge.

Thus, I have induced a positive charge into the rod without touching it with a charged body.

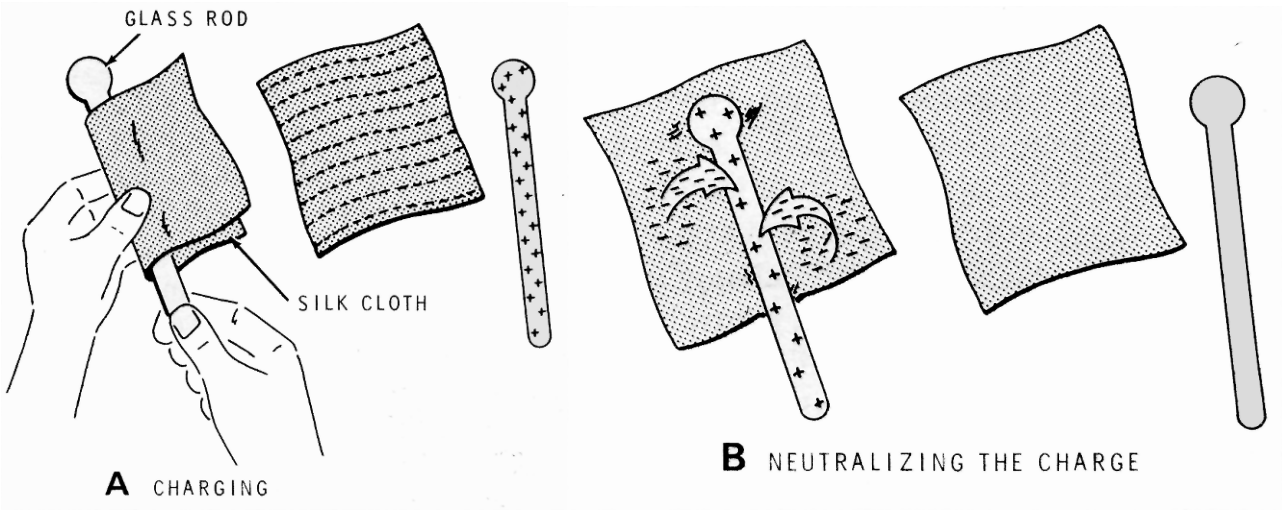


Figure 2: Charging and discharging a glass rod.

Now, let's see how electrical charges can be neutralized.

When a glass rod is rubbed with a silk cloth, the glass gives up electrons to the silk.

Therefore, the glass becomes positively charged, while the silk becomes negatively charged.

This is shown in Figure 2A.

However, if the rod is now brought back into contact with the cloth, the negative electrons in the silk are attracted by the positive charge in the glass.

The force of attraction pulls the electrons back out of the silk so that the charges of the materials neutralize as shown in Figure 2B.

Thus, if two objects having equal but opposite charges are are brought into contact, electrons flow from the negative charged object into the positively charged object.

That is how the S.E.G. functions in this domain of reality.

The flow of electrons continues until both charges have been neutralised.

That is precisely the same with the Searl Effect Generator (S.E.G.) the electrons continue to flow until the demand for them stops: upon which the S.E.G. continues loading until its fully neutralised; upon which the movement of electrons stops and the S.E.G. is said to be at ideal speed.

I guess that it is time to check how well you have been really studying this report; so let's have a programmed review.

17) Electricity is a property that electrons and protons have which causes them to behave in certain predictable ways.

Each has a tiny electrical charge.

However, the electron's charge is opposite to that of the proton.

The proton is said to have a positive charge, while the electron has a ---------- charge.

18) ELECTRON:

While the electron and proton have electrical charges, the third particle found in the atom does not.

That is, the ---------- has no electrical charge.

19) REPEL:

According to Coulomb's Law, and not Searl's Law, two electrons should ---------- each other.

20) NEGATIVE:

Although the two charges are opposite, they have exactly the same magnitude.

Thus, the positive charge on the proton has the same strength as the negative charge on the ----------.

Due to lack of space here to complete the next question, I had to answer and will leave it to the next page.

Keep in mind this was for a boy of 14 years who experts claim had no formal education.

21) PROTONS:

A law which describes how charged particles behave is called Coulomb's Law.

The action described in this law which states that unlike charges ----------.

22) REPEL:

However, a negatively charged body should be attracted by a ---------- charged body.

23) NEUTRON:

The negatively charged electrons are held in orbit around the nucleus by the attraction of the positively charged ---------- in the nucleus of the atom.

24) REPEL:

Also, any two positively charged bodies should ----------.

25) ATTRACT:

This law goes on to say that like charges behave in the opposite manner.

It states that like charges ----------.

26) NEGATIVE:

On the one hand, an atom which loses an electron becomes a ---------- ion.

27) POSITIVELY:

Normally an atom contains the same number of electrons as protons.

Thus, the positive charges in the nucleus are exactly offset by the negative charges in orbit around the nucleus.

An atom has no net charge when it has the same number of protons as ---------.

28) POSITIVE:

This is called charging by contact.

Objects can also be charged by induction without actually touching: as in the S.E.G. the roller sets do not touch the ----------.

29) POSITIVELY:

Simultaneously, the silk cloth becomes ---------- charged.

The few questions left out will appear on the next page.

Here, we are still discussing a 14-year-old boy with no education, according to those expert's statements. This book is produce by this boy to show what he had to be able to answer for the job he was to train. So lets us continue to see what he actually did.

30) ELECTRONS:

An atom which has a net electrical charge is called an ion.

Ions are formed when an atom loses one or more electrons or picks up one or more extra electrons.

Since electrons have negative charges, an atom which picks up an extra electron becomes a --- ---------- Ion.

31) NEGATIVELY:

Once the glass rod is positively charged, this charge can be partially transferred to a neutral body by touching the two objects together.

When the two objects touch, electrons are drawn from the neutral body by the positive charge on the rod.

Thus, the charge on the rod is partially neutralized.

However, because the neutral body gave up electrons, it now has a ---------- charge.

32) POSITIVE:

One way to produce free electrons and positive ions is to rub a glass rod with a silk cloth.

The glass rod gives up many electrons to the silk cloth.

Thus, the glass rod becomes ---------- charged.

Yes, these questions are easy to answer and I did it without any problems whatsoever; then I never had much choice did I, if I wanted a job.

The bulk of Searl's education arrives from the Law of the Squares, and still that presently applies.

The game of hopscotch held an arrow that pointed him to the course to take to win. He followed or maybe more precisely was pushed to follow a set course from which in the end created the Searl Effect Technology; and boy what technology it is. It has upset those who believed that they were experts; but I fail to understand in what subject other than sarcastic bullshit.

CURRENT FLOW:

In electronics, current is defined to my knowledge as the flow of electric charge from one point to another; which to me makes sense.

I have already seen some samples of this.

I was successful in converting my pocketknife into a hacksaw blade in a flash – powerful stuff this electric!

I saw that when a negatively charged body is touched to a positively charged body, electrons flow from negative object to the positive object.

Since electrons carry a negative charge, this is an example of electrical charges flowing.

Before an electron can flow from one point to another, it must first free itself from the atom.

Therefore, let us take a closer look at the mechanism by which electrons dislodged from the atom.

FREEING ELECTRONS:

I have seen that electrons revolve around the nucleus at very high speeds.

Two forces hold the electron in a precarious balance.

The centrifugal force of the electron offset exactly by the attraction of the nucleus.

This balance condition can be upset very easily, so that the electron dislodges.

Not all electrons so easily freed from the atom with the same ease.

Some are dislodge more easily than others do.

To see why, I must discuss the concept of orbital shells.

It currently believed that electron orbits in an atom fall in a certain pattern.

For example, in all atoms of two or more electrons, two of the electrons orbit relatively close to the nucleus.

The area in which these electrons rotate is termed a shell.

The shell closest to the nucleus contains two electrons.

This area can support only two electrons and all other electrons must orbit in shells further from the nucleus.

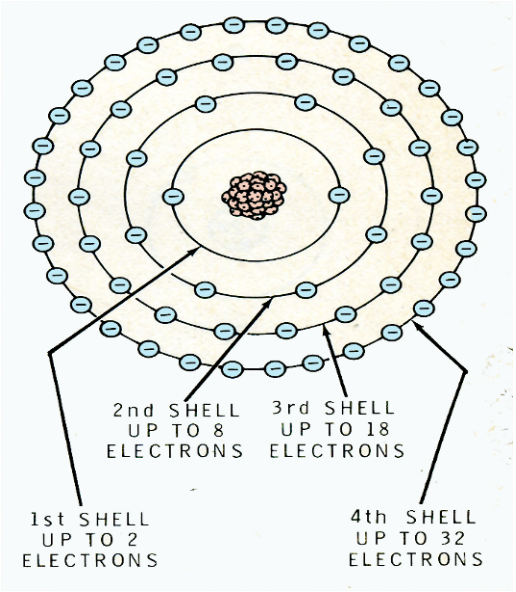


Figure 3: Arrangement of orbital shells in Atom.

A second shell somewhat further from the nucleus can support up to eight electrons.

There is a third shell of which can contain up to 18 electrons.

The fourth shell can hold up to 32 electrons.

The first four shells shows illustrated by Figure 3.

Although not shown, there are also additional shells in the heavier atoms.

Of particular importance to electronics is the outer electron shell of the atom.

Hydrogen and Helium atoms have one and two electrons respectively.

In this case, the outer shell is the first – and only – shell.

With atoms having three to ten electrons, the outer shell is the second shell.

Regardless of which shell it happens to be, the outer shell is termed the ***valence shell***.

Electrons in this shell are termed ***valence electrons***.

Electrons are arranged in such a way that the ***valences shell*** never have more than eight electrons.

This may be confusing since I have seen that the third shell can contain up to 18 electrons.

But my dream one makes it clear that the outer shell can only hold 8 electrons as a valence shell.

An example shows why both statements are true – therefore Dream one is also absolute correct.

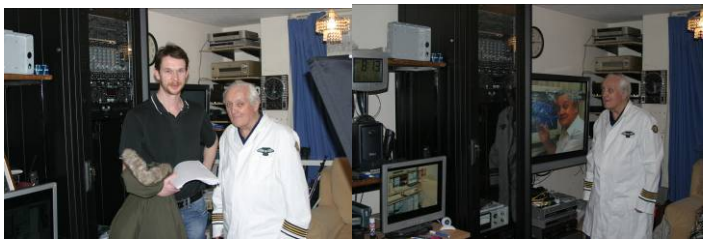
That is strange that a boy from age of 5 to 11 years should have been given such information that schools failed to give him and so precise in content.

An atom of argon – vital to store Nd in – contains 18 electrons, and it is a gas;

2 in the first shell.

8 in the second shell.

8 in the third shell.



It might seem that the next heavier element, potassium, would have nine electrons in its third shell.

However, this would violate the ***valence rule*** stated above.

Actually, what happens is that extra electron is placed in a fourth shell.

Thus, the 19 electrons distribute in this manner:

2 in the first shell.

8 in the second shell.

8 in the third shell.

1 in the fourth shell.



NOTICE the valence shell contains only one electron.

On the next page, I shall point out why that is important issue in the design of the Searl Effect Generator.

NOTICE that the outer or valence shell becomes the fourth shell rather than the third.

Once the fourth shell established as the valence shell, the third shell can fill to its full capacity of 18 electrons.

That is precisely what dream one is saying, therefore, I had to accept that these dreams are workable dreams and not normal dreams as such.

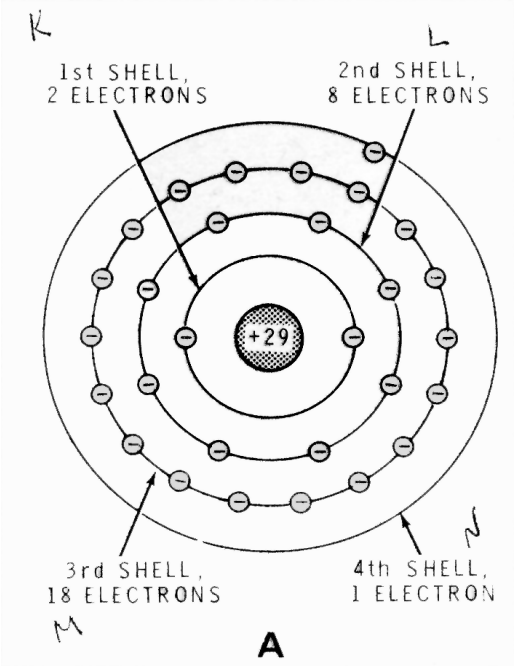


Figure 4A. Copper Cu 29

Clearly, the valence electrons are extremely important in electronics, as dream one is stating.

These easily freed electrons can perform useful functions.

To see why valence electrons freed easily, let us consider the structure of an atom of copper Cu 29, which I use in the S.E.G. structure.

Figure 4.A. shows how are the electrons distributed in the various shells.

In this case, the valence shell contains only one electron.

This electron is further away from the nucleus than inner shell of electrons.

From Coulomb's Law we know that the force of attraction between charged particles decreases as the distance increases.

Therefore, the valence electrons experience less attraction from the nucleus.

For this reason, I know dream 1 is implying that these electrons can be easily dislodged from the atom.

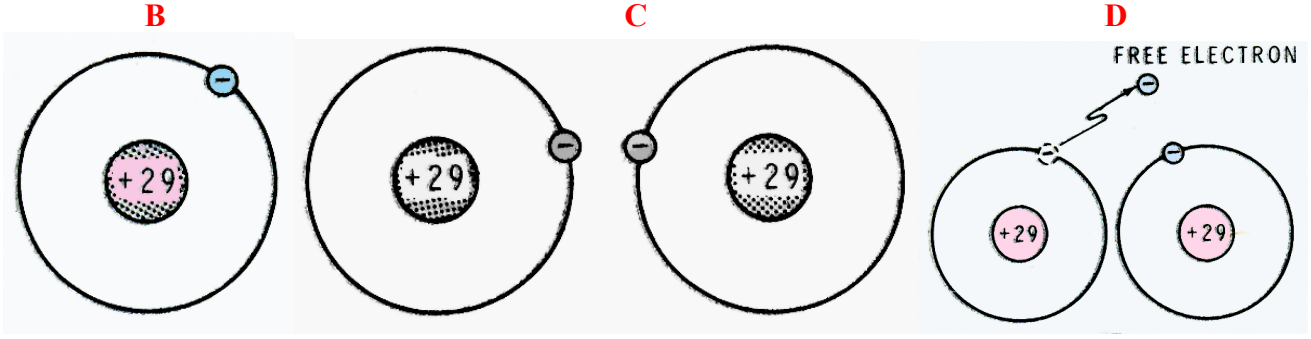


FIGURE 4A. Freeing an electron from a Copper Cu 29 atom.

At this moment in time, I am concerned primarily with the valence electrons and I need not show the inner electrons.

Instead, shown is the atom in the simplified form shown Figure 4A (B-C-D) above.

Figure 4-B, Figure 4-C and Figure 4-D use this simplified forms to illustrate one way to free electrons.

There are two Copper Cu 29 atoms shown as they might appear within copper wire.

Each valence electron held in orbit by the attraction of the nucleus.

However, the force of attraction is quite weak because the orbits are so far from the nucleus.

As I see it; if these two atoms are close together, the valence shells may be closer together than either electron is to its nucleus.

At certain points in their orbits, the two electrons may come very close together.

As I see it, when this happens the force of repulsion between the two electrons is stronger than the force of attraction exerted by the nucleus.

Thus, one or both of the electrons maybe forced out of orbit and wander out as a free electron.

NOTICE that when the electron leaves, the atom becomes a positive ion.

As a free electron wanders around through the atomic structure, a positive ion can captured it.

It may also come close enough to other valence electrons to force them from orbit.

This is the kind of action required within the Searl effect generator (S.E.G).

The point is that events like these occur frequently in many types of material.

Thus, it is that the Searl Effect Generator (S.E.G) has options of choice of materials to construct and not limited by one set of materials.

Thus, in a piece of Copper Cu 29 wire containing billions and billions of atoms, there are bound to be billions of free electrons. Flowerbower - please kindly take note that I am educating you; so you do not look like an imbecile on YouTube.

CONDUCTORS AND INSULATORS:

The role of valence electrons cannot be over emphasized, for it is an important part of the Searl Effect Generator (S.E.G) and the Inverse-Gravity-Vehicle (I.G.V).

Both the electrical and the chemical characteristic of the elements depend on the action of the valence electrons; clearly, that is what dreams one is stating.

An element's electrical and chemical stability are determined largely electrons within the valence shell.

I have seen that the valence shell can contain up to eight electrons, precisely what dream 1 state's with that hopscotch game, each square of that game represents an electron.

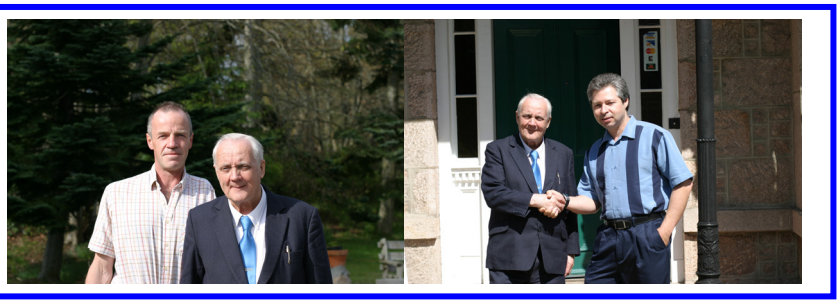
Yes – you can smile, as you know now that a self-taught boy knew in this manner and I am giving these so call experts a real spanking in public for saying otherwise.

17.102

Those elements with valence shells that are filled or nearly filled tend to be stable.

For example, the elements:

1) Neon Ne 10:
2) Argon Ar 18:
3) Krypton Kr 36:
4) Xenon Xe 54:
5) Radon Rn 86



Have eight electrons in their valence shell.

Clearly, they are completely filled valence shells. That is correct Flowerbower, just to save your brain from exploding trying to find ways to say that I don't know what I am talking about on YouTube.

As a result, these elements are so stable that they resist any sort of chemical activity.

They will not even combine with other elements to form compounds; at least so far to date no one has been lucky to achieve such success to my knowledge – but I cannot be absolutely certain that given time someone somewhere will achieve some success with these elements.

Unfortunate, I can only deal with known facts here.

These atoms are very reluctant to give up electrons. I can understand that from my own experience how reluctant I was about dropping my pants for the teacher to spank me; so she helped me by dropping them for me – so I would not be too surprised if one will help to drop an electron from one of these elements.

It appears to me that there is nothing impossible; except that the state of your mind makes it so: clearly, that is what my teacher proved to me.

All these elements have similar characteristics in that they are all inert gases.

Stable elements tend to have their valence shells almost filled, although they are not as stable as filled shells.

I know that these elements will strive to fill their valence shell by capturing free electrons.

Consequently, elements of this type have very few free electrons wandering around through the atomic structure.

Flowerbower, materials with few free electrons are termed: ***insulators.***

In addition to certain elements act as insulators, there are many compounds with few free electrons.

Thus, they act as insulators also.

By opposing the production of free electrons, these substances resist certain electrical actions.

Insulators are important in electrical and electronics work for this reason.

17.103

The plastic material on electrical wires is an insulator that protects us from electric shock.

All such issues must be address in designing any generator – let alone the S.E.G.

Elements in which the valence shell is almost empty have the opposite characteristics.

Those with only one or two electrons tend to give up these electrons very easily.

For example:

1)	***Copper***	***Cu 29:***
2)	***Silver***	***Ag 47:***
3)	***Gold***	***Au 79.***



Each has one valence electron.

In these elements, the valence electrons dislodge very easily.

Consequently, a bar of any one of these elements will have a very large number of free electrons.

Substances that have a large numbers of free electrons are termed conductors.

In addition to Silver Ag 47, Copper Cu 29, and Gold Au 79, some other good conductors are Iron Fe 26, Nickel Ni 28 and Aluminium Al 13.

NOTICE that all of these elements are metals.

Most metals are good conductors.

Conductors are important because they carry electrical current from one place to another.



John Thomas Jr – he who expected to re-make the S.E.G. I know he did not accept my word that it costs a lot of something that is a GOD to most people and it is called MONEY – but give him credit. He set up DISC INC and saw to it that I had a computer, scanner and printer, so I could get started in re-writing newsletters and books including the software needed to make them which whom we all ought to be grateful.

His son Jason set up the first website upon this technology, which for that time was a great achievement because he had never experience what was involved within this technology.

I am glad to report that Dad and Son are both doing well.

Hi dad: you will soon see another happy birthday, which means that you are surely catching me up on orbits.

Some elements have halfway filled valence shells.

That is, there are four valence electrons.

Two examples of elements of this type are Silicon Si 14 and Germanium Ge 32.

I will call these elements ***semiconductors*** because they are neither good conductors nor good insulators.

I will admit here that I have been thinking that they both might play a good part in an S.E.G. concept, but yet to be tested.

Semiconductors are important in electronics because transistors and integrated circuits are composed of these elements. (Added insert to original copy)

However, in this report, I will be concerned primarily with conductors and insulators.

THE BATTERY:

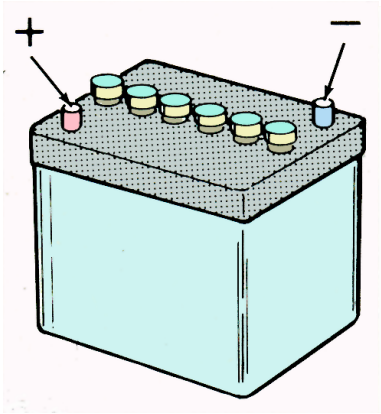


Figure A: Wet Cell,

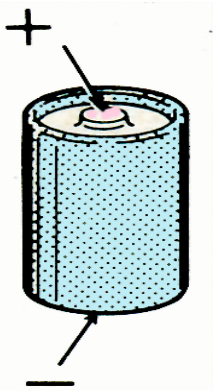


Figure B Dry Cell.

Figure A relates to a car battery; something which I would not experience seeing for another 2 years.

Figure B: This type of dry cell will also still be 12 months away; before having the experience of seeing one of these types of battery.

Today's generation will find that hard to understand as they see them everywhere now.

Current flow is the movement of free electrons from one place to another – which being no different to that of the Searl Effect generator (S.E.G).

Thus, to have current flow I must first have free electrons; Flowerbower, please kindly take note.

I have seen how valence electrons can be dislodged from atoms to form free electrons and positive ions.

This can be done by very simple means such as combing my hair or rubbing a glass rod (no I never tested that idea of what you are thinking of – nevertheless it's an interesting thought) with a silk cloth.

However, to perform a useful function, I must free very large numbers of electrons and concentrate them in one area.

This requires some much more sophisticated techniques.

My device does that but at this moment of time, it is the ordinary battery will do.

There are many different types of batteries, and I am not kidding upon that issue.

I will next how two familiar examples.

17.105

Figure B: shows a dry cell (today a common flashlight battery) unfortunate in my time we had carbon lamps; we had not even heard it in Thorndon, Suffolk, such devices had not reach that standard of battery requirements.

Yes indeed, I knew of dry cells, had to use one of those heavy ones with an output of 144 volts. I think it was then a 9-volt negative battery – so my radio had 3 different types of batteries. Being a right old sod took them apart and poking my nose in to see what they contained; thus it was that unexploded German bombs were not the only things I was taking apart to make fireworks out of their contents and they never failed to work, bless them.

Figure A shows the wet cell (being an automobile battery, which was unknown to me then), agree I knew of wet cells and I used one in my radio set that was 2 volts. It was termed an accumulator that had to be charge up at a shop in Ipswich 20 miles away once a week; that was the limit of my experience then, but all this will be explained at a later date.

I understand that these two types of batteries are of quite different construction, they do have several points in common.

In plain talk, it is no different to man and women, whom we all understand I hope, that there are lots of differences in construction, but we do have several points in common.

Both have two terminals or poles for connecting, to complete an electrical circuit.

Both employ a chemical reaction producing an excess of electrons at one terminal and a deficiency of electrons at the other.

The terminal at which the electrons congregate is termed the negative terminal; which to my mind makes sense.

Shown in Figures A and B indicates it by a minus sign,
The other terminal is goes by a plus sign and has a deficiency of electrons.

Next, we will see how the battery affects the free electrons in a conductor.

RANDOM DRIFT AND DIRECTED DRIFT:

I cannot help to wonder if you really are taking note of how the law of the squares holds true even in this document and how the law of the squares agrees with it.

Just to make you aware, the title above show 2 states of opposite functions; the law thus confirmed positively.

A conductor is a substance with large number of free electrons.

In a conductor, the free electrons do not stand still, rather are very active indeed.
Instead, they drift about in a random motion.

I hope to be able to explain this action in a drawing on the next page, but I am not an artist and cannot be everything. Nevertheless, will have a go at it and try my best for I am not no longer 14 years old but just on 77 years old. I am not young but a rather seriously handicap old man, but my love is science, flying and above all protecting my home, the planet earth. For there is no other home for us to date and to my mind its madness the way we are killing and destroying our home when there is no other to have.

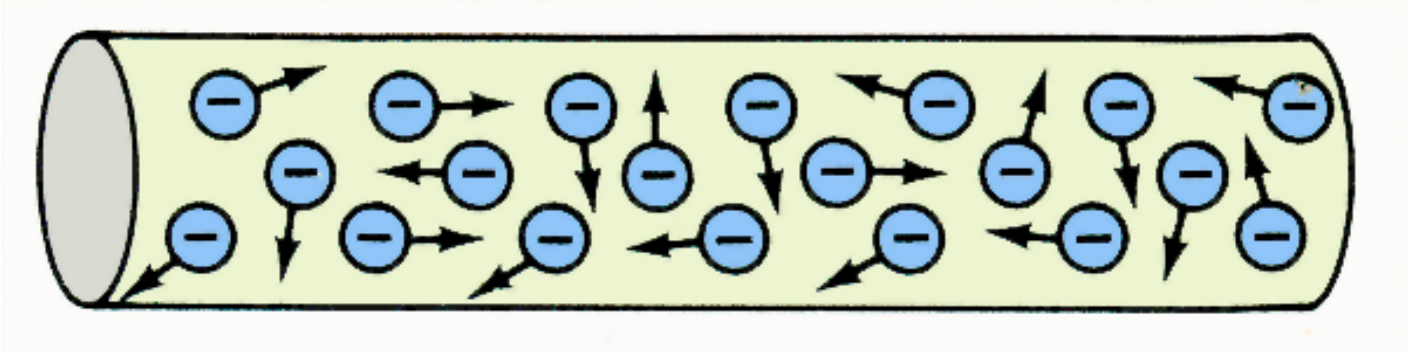


FIGURE RM1A.

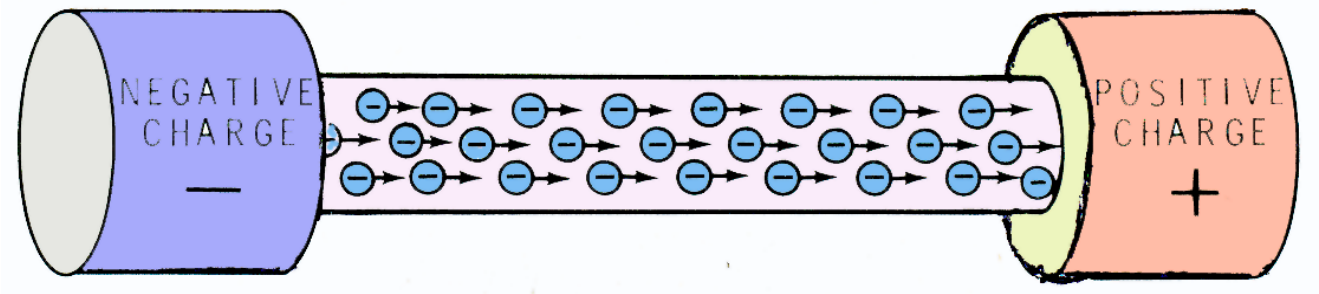


FIGURE RM1B.
Comparison of random and directed drift.

Figure RM1A represents a small section of a conductor containing many free electrons.

At any instant, the free electrons are drifting at random in all directions.

This motion is termed ***random drift;*** which makes sense to me.

This type of drift occurs in all conductors but it has little practical use.

To do useful work, the free electrons must drift in the same direction rather than random motion.

I can influence the drift of electrons so that all or most electrons move in the same direction through the conductor.

This is movement takes place by displacing electrical charges at opposite ends of the conductor.

Figure RM1B shows a negative charge placed at one end of the conductor while a positive charge at the other.

The negative charge repels the free electrons while the positive charge attracts them.

As a result all of the free electrons move or drift in the same general direction.

The direction is from the negative charge to the positive charge.

Here, the application of the electrical charges at the ends of the conductor has changed random drift to directed drift.

This directed drift of free electrons is termed ***current flow.***

We can say now, ***electrical current is flowing*** through the conductor.

If the electrical charges shown in Figure RM1B are isolated from one another, the flow of electrons will quickly cancel both charges and only a momentary current will flow – likewise within the Searl effect generator (S.E.G).

However, if potential differences caused battery, then the chemical action of the battery can maintain the two charges for some time.

That does not apply to the Searl Effect Generator (S.E.G), unless a force applied to stop it, it will continue regardless of line demand or loads. If such an instant arrived that there is no demand upon the S.E.G, then the unit will just cruise at slow RPM and the free electrons will go a wandering again, until demand again appears.

Therefore, a battery can maintain a continuous current through a conductor for a long period.

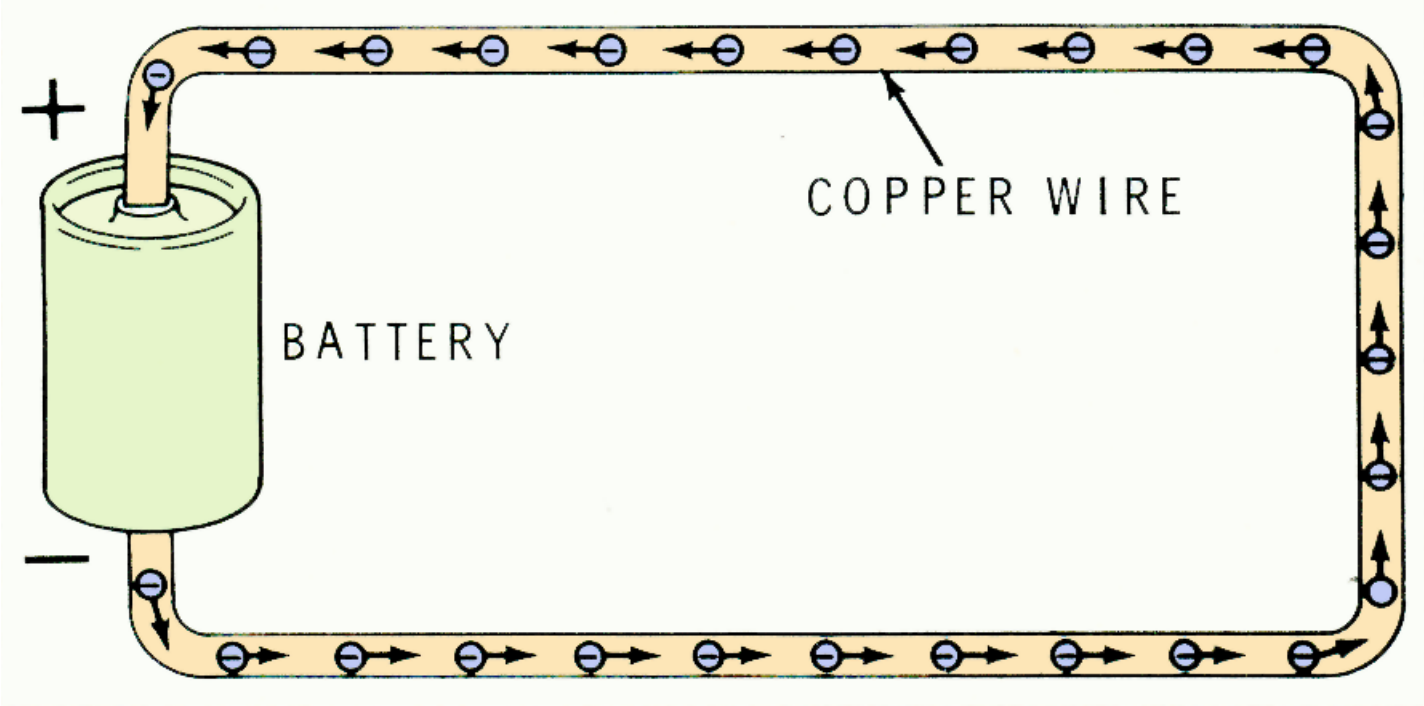


FIGURE 17.1: Current flows from the negative terminal to the positive terminal of the battery.

A Copper Cu 29 wire is a good example of a conductor.

Figure 17.1 shows a length of Copper Cu 29 wire connected from one terminal to the other of a battery.

A heavy current will flow from the negative terminal of the battery to the positive terminal.

Recall that the negative terminal is a source of free electrons.

An electron repels by the negative charges and attract to positive charges at the opposite terminal.

Thus, the electrons flow through the wire as shown. What is this again -

When they enter the positive terminal of the battery, the positive ions capture them.

The chemical reaction of the battery is constantly releasing new free electrons and positive ions to make up for the ones lost by recombination.

I should pointed out that I have not nor is it recommended connecting a conductor directly across the terminals of the battery as shown in Figure 17.1

The heavy current would quickly exhaust the batter to say the least.

This is an example of a "short circuit", normally avoided at all cost Flowerbower.

<u>This example is shown here merely to illustrate the concept of current flow.</u>

I think that it is time for another programmed review of the question I had to answer – being a boy of 14 years studying to become an electrical engineer ought to interest you – I wonder how many of you can honestly answer them in reality?

33) ***Valence:***

These are the electrons which can be most easily freed from the atom.

However, the valences electrons in some elements are very difficult to dislodge while other elements they are freed easily.

The difference stems from the number of electrons in the ---------- shell.

34) ***Current is the flow of electric charges from one point to another.***

Since electrons carry electrical charges, current can also be defined as the flow of ----------.

35) ***Number:***

A conductor is defined as a substance which has a large number of free electrons.

Thus, elements which have only one or two electrons in their valence shell normally are good ----------.

36) ***Electrons:***

Before electrons can participate in current flow, they must first be freed from the atom.

Clearly, my next question will not fit in here without a break up in a line statement, which clearly will happen here if I continue; so I will continue this on the next page.

To continue from last page question 36:

When an electron is dislodged from the atom, the atom becomes a positive ---------

37) Ion:

Electrons are distributed around the atom in shells.

This shell is called the valence shell.

Also, the electrons in this shell are called ---------- electrons.

38) Positive:

Electrons which leave the negative terminal of the battery are replaced by other electrons which are released by the chemical reaction within the battery.

Thus, a battery can maintain a continuous flow of electrons through a conductor for a long period of time.

This flow of electrons is called current.

Electrons flow from a ---------- charge to a ---------- charge.

39) Conductors:

Elements such as gold Au 79, silver Ag 47, and copper Cu 29 have only one valence electron.

Therefore, these elements are very good ----------.

40) Positive:

If one end of a conductor is connected to the negative terminal and the other end is connected to the positive terminal, Electrons will flow through the conductor.

In the conductor, electrons will always flow from the negative terminal to the ---------- terminal.

41) Conductors:

On the other hand, an insulator is defined as a substance which has very few free electrons.

This situation occurs in elements which have their valence shells nearly full.

For example, elements with 6 and 7 valence electrons make good ----------.

42) The free electrons within a conductor drift around at random.

To do useful work these electrons must be forced to drift in a desired direction.

I can influence the drift of electrons by connecting the conductor across a battery.

A battery is a device which has an excess of electrons at one terminal and a deficiency of electrons at the other.

The terminal with an excess of electrons is called the negative terminal.

The terminal with the deficiency of electrons is called the ---------- terminal.

THE ELECTRIC CIRCUIT:

In its simplest form, an electric circuit consists of a power source, a load, and conductors for connecting the power source to the load Flowerbower please take note; who knows one day you might appear intelligent.

Often the power source is a battery . The purpose of the power source is to provide the force necessary to direct the flow of electrons.

As I intend to show you in the next unit, this force is called ***VOLTAGE.*** Power sources produce voltage by creating a positive charge at one terminal and a negative charge at the other.

In Joy's own words WHY do they do that? That is an interesting point; ***WHY?***

The ***load*** is generally some kind of electrical device which performs a useful function;

To my mind at least it might be a lamp which is useful to produce light, a motor which produces physical motion besides that vibrator, a horn which produces sound, or a heating element which produces heat to heat up the bed; before you get in it; can sure be useful to prevent you wetting the bed from the sudden cold attack.

Regardless of the type of load used, the load performs its useful function only when electric current flows through it

I must not forget the third part of the circuit is the conductors, which are vital which allows me to connect the power source to the load.

They provide a path for current flow

the Law of the Squares statements it

– how true!

The conductor may be length of Copper Cu 29 wire, a strip of Aluminium Al 13, the metal frame of an automobile, etc.

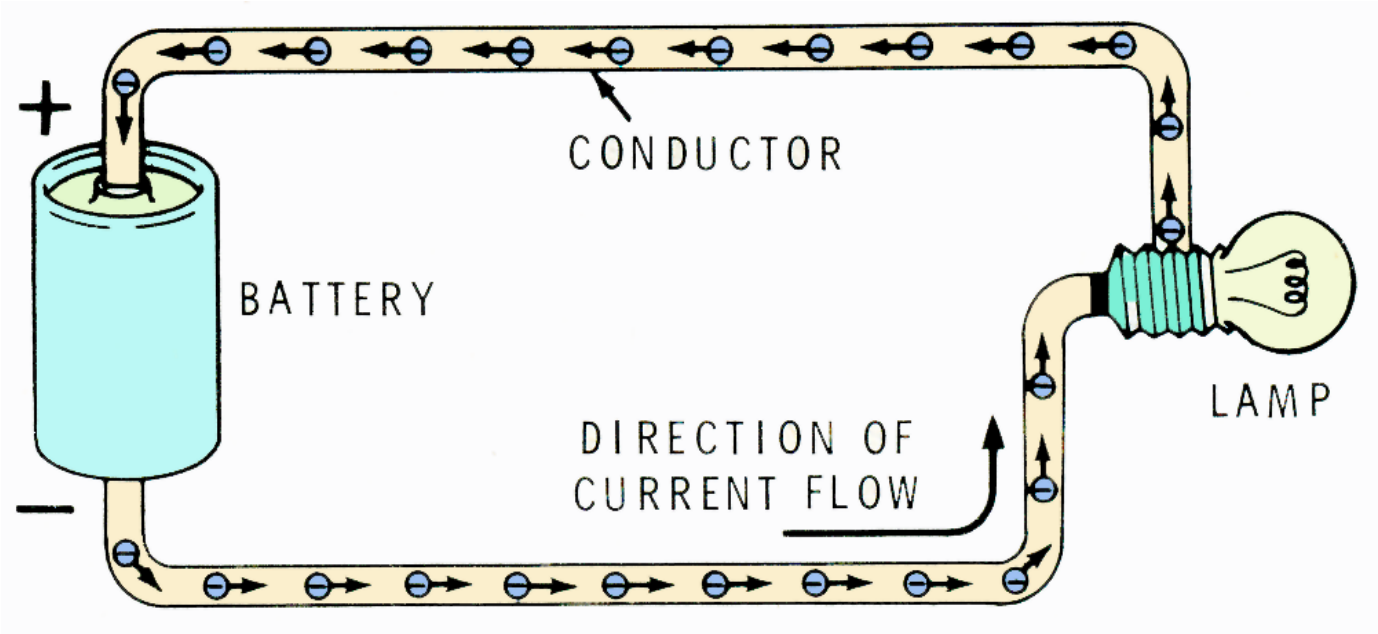


Figure 17.16. Simple electric circuit.

Flowerbower – I expect that this circuit is far too technical for your brain based on your petty sarcasm; it does indicate a lack of understanding of the subjects and too bad your thesaurus will not help you there.

Figure 17.16 shows a pictorial representation of an electric circuit consisting of a battery, a lamp, and connecting Copper Cu29 wires.

The battery produces the force (***voltage***) necessary to cause the directed flow of electrons.

The force developed by the battery causes the free electrons in the conductor to flow through the lamp in the direction shown.

The free electrons repel by the negative charge and attracted by the positive charge.

Thus, the electrons flow from negative to positive to which I have no augment with; as I seen the proof at a cinema projection room: carbon rods gave me all the right answers; even if the projectionist believe otherwise.

The negative and positive charges in the battery constantly replenished by chemical action of the battery: I have no augment with that.

Therefore, the battery can maintain a current flow for a long time.

As the electrons flow through the lamp, they heat up the wire within the lamp. As the wire becomes hotter, the lamp emits light. The lamp will maintain a glow as long as a the currents are strong enough.

By the end of August 1946, I had accepted a fact that Dream 1 related to energy and that energy source would be electricity. That a great amount of weight and pressure would be involved to produce it.
For that required, conductors and magnetism would involve elements but that was just for starters, much more had to found.

We know experiences with flashlights that a battery cannot maintain a constant current flow forever.

As the battery is used, the chemical reaction within the battery slows down; like me, I guess.

Over a period of time, the force provided by the battery becomes weaker and less current is provided.

As a result, the lamp emits less light.

It becomes dimmer and dimmer and eventually no light at all.

At this time the battery is said to be dead, burned out, or run down.

In this condition the battery like us, cannot produce the force necessary to push enough electrons through the lamp to cause the lamp to light.

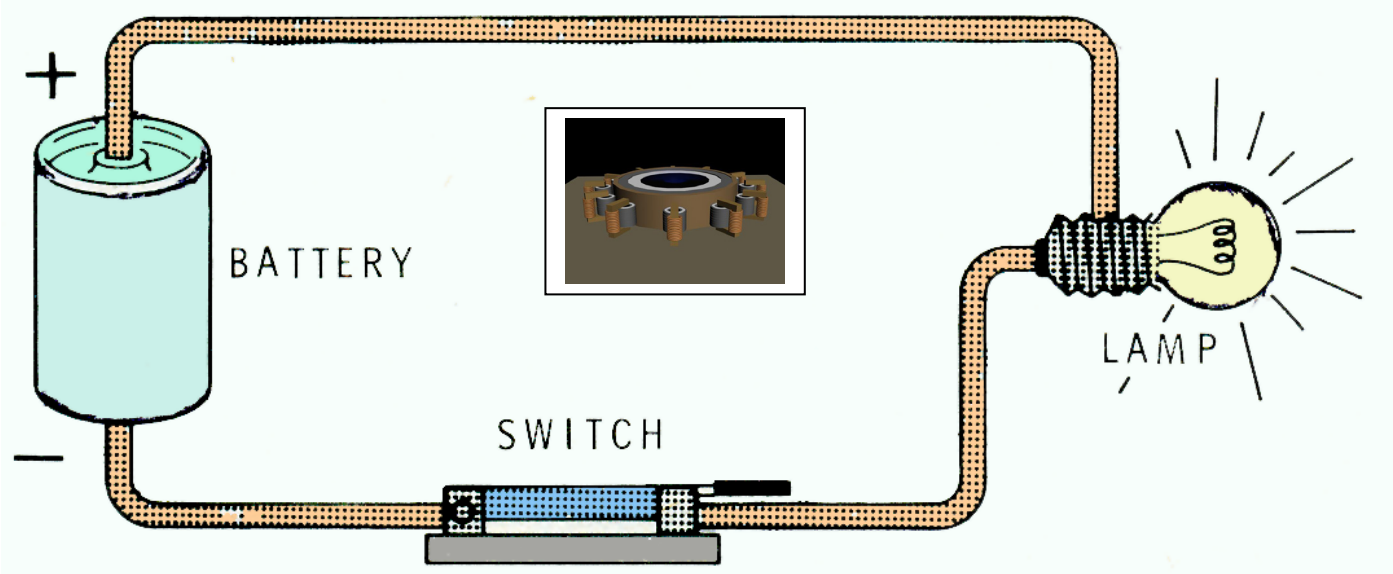


Figure 17.17a Circuit with switch closed.

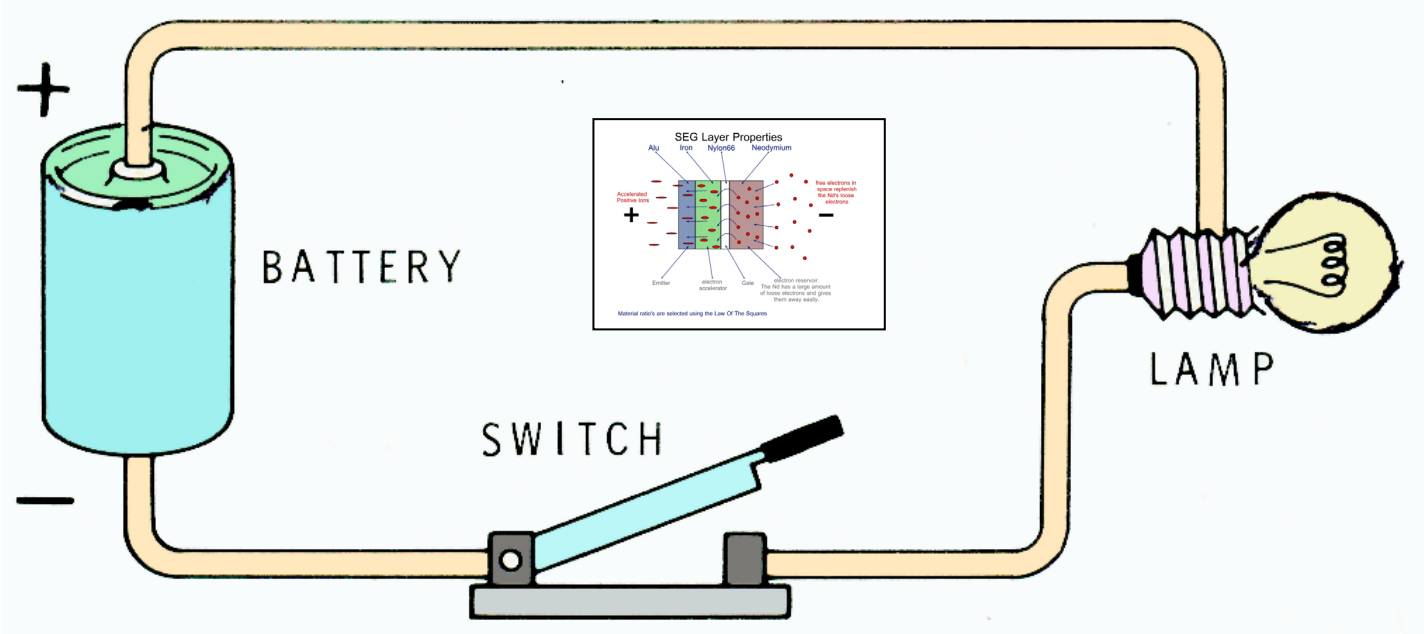


Figure 17.17b Circuit with switch open.

The circuit in Figure 17.16 is much more practical by adding one additional component.

This component is a switch, providing a simple method of turning the lamp on and off.

In Figure 17.17, shows the circuit with and added switch.

For simplicity, a knife switch is shown but there are many types that are available that could be used.

It consists of two metal contacts to which conductors may be connected, a metal arm opened and closed on a base. I can certify as correct as I have used many of this type class of switch over time in my home research work and with great success.

Current cannot flow through the base of the switch because an insulator material is used.

Current can flow only through the arm and then only if the arm is closed.

In Figure 17.17a, the switch is shown closed.

With the switch closed, there is a path for current flow fro the negative terminal of the battery through the switch and lamp to the positive terminal.

Now you can say let there be light; and behold the lamp lights up because current flows through it.

When the switch is opened, as shown in 17.17b, the path for current flow is broken.

Thus, it's useless to say let there be light, because the lamp does not glow, simple because it's not happy due to the fact that there is no current flowing through it.

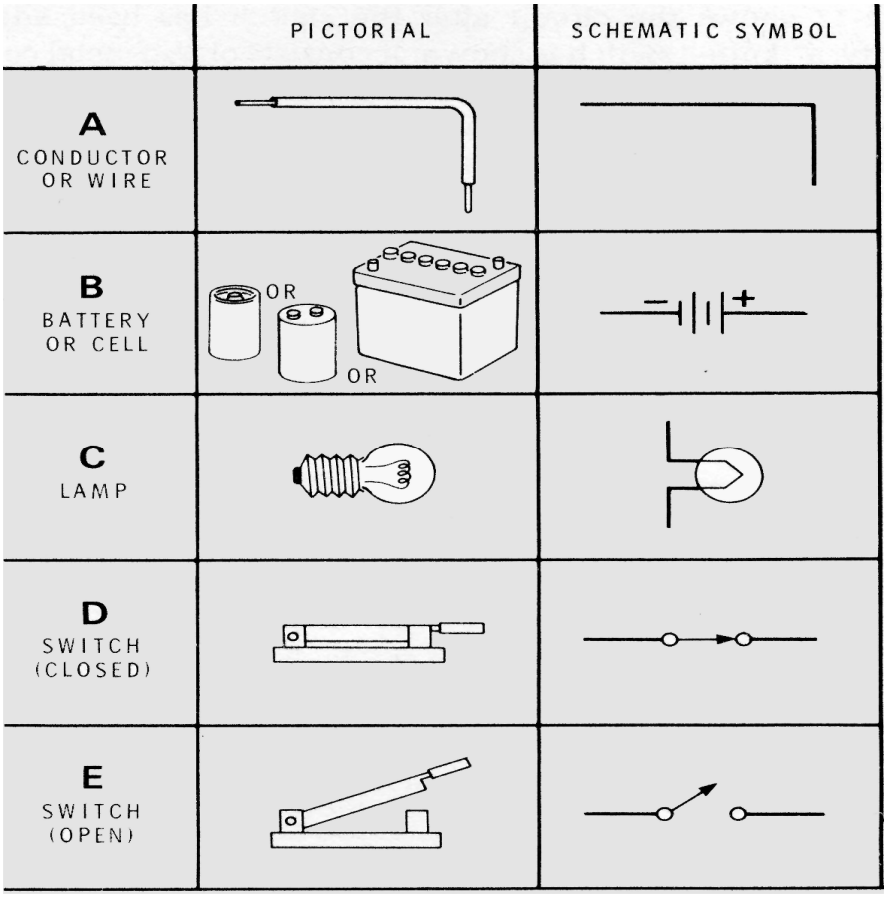


FIGURE 17.18.

Pictorial representations compared with the schematic symbols.

Well Flowerbower I wonder if you can understand these details –if you do that is sure proof that God moves in mysterious ways. Strange, that I do not believe in god, just far too many facts to support my views.

So, you cannot expect me to believe that you are capable of understanding what's written within this book.

While simple circuits can be drawn as shown in Figures 17.17 and 17.18, it would be very difficult to draw complex circuits in this manner.

For this reason, the ***schematic diagram*** was developed.

A schematic diagram is a drawing in which symbols are used to represent circuit components.

Thus, the first step to understanding the schematic diagram is to learn the symbols for the various components used – of course that was easy in my days – now so long ago – today, I agree it is a different world of symbols – which has vastly increased in numbers – very difficult for me to be able to keep abreast of them – I understand that you think that being 77 years that I am past it – sorry that is not true; I am not past it – it's the shear cost to keep up to date with change that is my problem, one needs to be a millionaire to keep paste with today's changing world.

I would loved to keep up to date upon all subjects regardless what: for my interest in this planet and you is beyond that of most people interest; that from this book should be clearly seen by any one with intelligence.

Figure 1718 compares the schematic symbol with the pictorial representation of the circuit components I have so far used up to this point.

The conductor is represented by a single line in the schematic.

Also, the picture of the battery is replaced by a series of long and short lines.

The long line represents the positive terminal while the short one represents the negative terminal.

The same symbol can be used regardless of the type of battery.

The symbols for the lamp and switch are also shown.

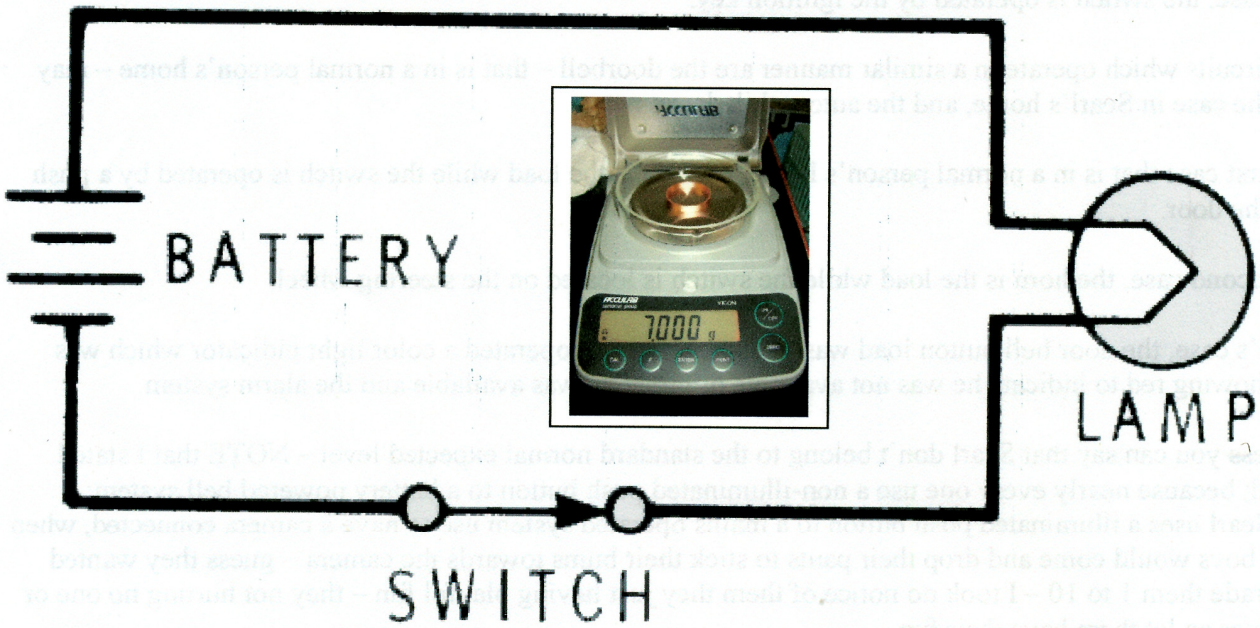


Figure 17.19A ***CLOSED.***

Figure 17.19A is the schematic diagram for the pictorial drawing shown earlier in Figure17.17A.

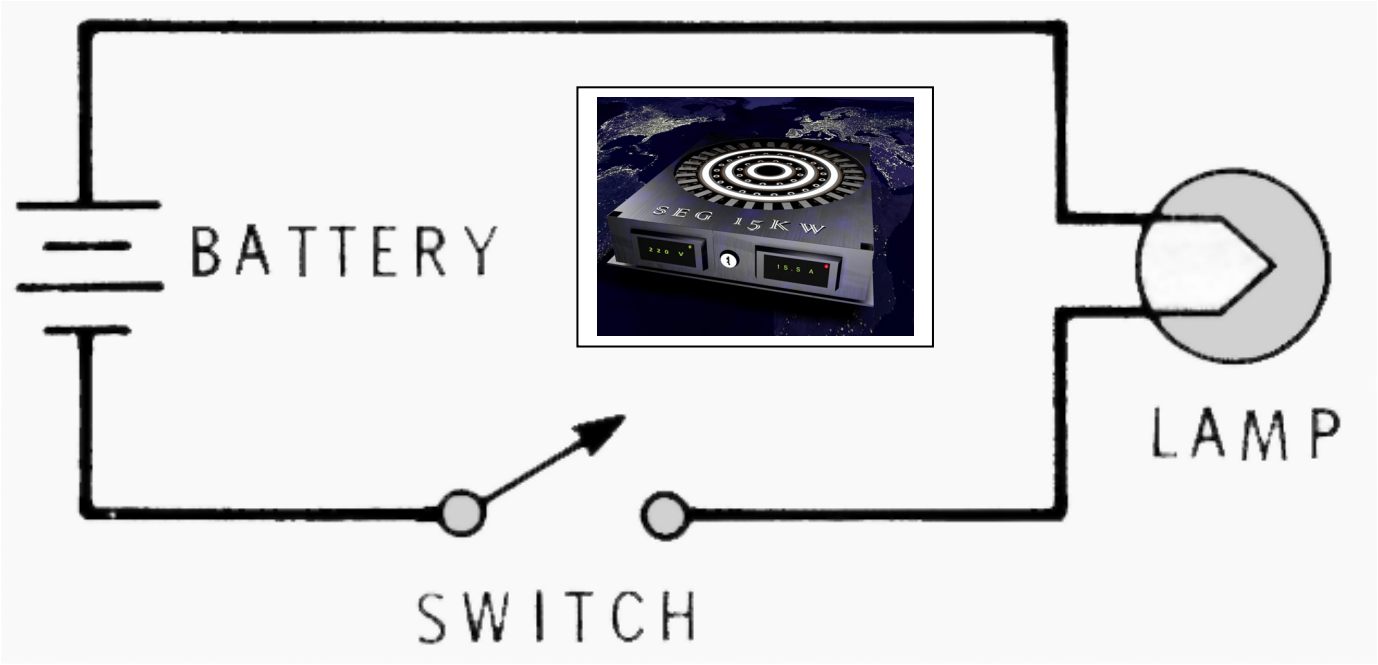


Figure 17.19B. OPEN.

Figure 17.19B is a schematic diagram of the pictorial shown in Figure 17.17B.

The circuit shown in 17.19 is the schematic diagram of a flashlight.

It is also the diagram for the headlight system in an automobile.

In fact, it can present any system which contains a battery, a lamp, and a switch.

If the lamp replaced with a motor, the circuit becomes that of the starter system of a car.

In this case, the switch is operated by the ignition key.

Other circuits that operate in a similar manner is the doorbell at a normal person's home – maybe not the case in Searl's home since tend to be an automobile horn.

In the first case that is in a normal person's home, the bell is the load while the switch operated by a push button the door.

In the second case, the horn is the load while the switch is located on the steering wheel.

In Searl's case, the doorbell button relays the load that operated a color light indicator that was either showing red to indicate he was not available or green.

So I guess you can say that Searl don't belong to the standard normal expected level – NOTE that I stated standard; because nearly every one use a non-illuminated push button to a battery powered bell system. Searl uses a illuminated push button to a mains operated system a camera connected. When its dark boys would come and drop their pants to stick their bums towards the camera – guess they wanted me to grade them 1 to 10. I took no notice of them they just having playful fun – they not hurting no one or themselves so let them have their fun.

Better then children keep pressing your doorbell and running off; I have to live in the world of reality!

Reality is all about being natural – every young animal must have time to play, fun with their parents or other members of the group to develop into a healthy adult.

We earthlings are no different – we are animals and nature expects us to accept the same behaviour pattern to create a perfect adult, as all other species.

But clearly this is not the case for our young, as adults we force them into a unnatural child pattern that often back fires when they are adults because you have create a earthling mutant: not a natural one that is why today there is so much killing going on.

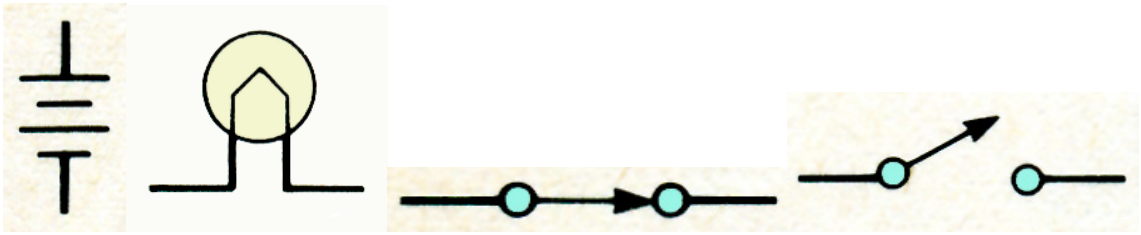
Adults must change back to normal behaviour to bring peace to the world, cut out all this crap that exists that I am better then you, I am stronger then you, I am more intelligent then you. Just being a human being for that is just what I am, I am not stronger, I am not better then you and I am not more intelligent then you. Nevertheless, by unfortunate action of two adults, I am not here by choice or desire, but will to try to improve this planet status, so all can live in a better world as one.

One man cannot create a paradise alone, it takes the power of us all to achieve that status and it can done, but you have to change to make it happen.

Sorry; boys bums looking at you; took me off the subject I was dealing with – nevertheless they were enjoying themselves that is the key issue, they are many women you will do the same mainly because they are bored and need to stir their life up a bit which is only natural. The youngest have fun, for life is short, soon you too will have the worry to exist as an adult and I would not change your young world for anything because that is your right.

Now is the hour to return to the issue of using that grey matter which has been termed a brain by arbitration.

Programmed review:

44) 

A. ***B.*** ***C.*** ***D.***

Shown above are the schematic symbols for four different components.

Identify each one.

A, ----------.
B. ----------.
C. ----------.
D. ----------.

45) Figure 17.19 shows a complete electrical circuit.

When the switch is closed, electrons flow from the ---------- terminal of the battery through the lamp to the ---------- terminal.

I will continue the review on the next page.

Do not forget this is 1946 being discussed here, as it relates to a 14 year old boy who "experts" claim had no formal education.

46) An electric circuit consists of a power source connected to a load.

The power source provides the force which causes electrons to flow.

This force is called voltage.

In a flashlight the power source is a ----------.

47) The symbol for the battery has a short line at one end and a long line at the other.

The short line represents the ---------- terminal.

48) The load performs its function when current flows through it.

Most loads do not perform continuously.

Instead the current is turned on and off by some kind of ----------.

49) The load is a device which performs some useful function.

The loads may be to produce light, sound or motion.

Thus, lamps, horns, vibrators, and motors are examples of ----------.

50) Schematic diagrams are used as a shorthand method of drawing electric circuits, which I can promise you will be coming your way soon.

The schematic diagram differs from a pictorial presentation in that the components are drawn as ----------.

Now I done a review Flowerbower, just to make certain that I have done all that is possible in the effort of educating you about my life in 1946 which no doubt you were still using nappies then for your happy events. Looking at your crap on YouTube, you must had been well loaded – good for you!

MEASURING CURRENT:

Current is the flow of electrons from negative to a positive charge.

To measure current flow, we must measure the number of electrons flowing past a point in a specific length of time.

Before I discuss how current is measured, I must first define the unit of electrical charge and the unit of current, otherwise I cannot move forward in this domain; as there is now a demand for an input from me being some value which is by arbitration that will be used to define these values.

THE COULOMB:

I have seen that charge on an object is determined by the number of electrons the object loses or gains.

If the object loses electrons, the charge is positive Flowerbower.

However, an object which gains electrons has a negative charge Flowerbower.

The unit of electrical charge I accept is called the ***coulomb.***

The coulomb is equal to the charge of 6.25×10^{18} electrons –
that is?

For those who are like Flowerbower, not used to expressing numbers in this way, I understand your position that you would like to understand and that is why I write this book to help those who are sincere to learn simply because I never had that option as a child myself.

For all of you who are sincere I will give that value here:

6,250,000,000,000,000,000

An object which has gained $6{,}25 \times 10^{18}$ (***6,250,000,000,000,000,000***) electrons has a negative charge of one coulomb.

I can well understand one wondering how that figure has been arrived at, to that you are not alone.

What puzzles me is how many coulombs we lose in day to those we gain in a day?

Could be the answer to why I have lost height and weight.

On the other hand, an object which has given up 6.25×10^{18} (***6,250,000,000,000,000.000***) electrons has a positive charge of one coulomb.

POWERS OF TEN AND SCIENTIFIC NOTATION:

A word about powers of ten and scientific notation may be helpful at this point.

The number 6,250,000,000,000,000,000 can be expressed as 6.25×10^{18}.

This number is read "***six point two five times ten to the eighteenth power***" ***WOW!***

The expression "ten to the eighteenth power" means that the decimal place in 6.25 ***should be moved 18 places to the right in order to convert to the proper number.*** A number of communications have requested me to explain in more details what I mean, as they have not had the education in mathematics.

The theory is that it is easier to write and remember 6.25×10^{18} than it is to write and remember 6,250,000,000,000,000,000.

This shorthand method of expressing numbers is known as powers of ten or scientific notation.

I guess that is true, just like that old saying that some mothers do have them – how true – Flowerbower is a perfect example of that.

It is often used in electronics to express very large and very small numbers; therefore you must expect to see them used within this book I am writing to this site.

Very small numbers are expressed by using negative powers of ten; there goes the law of the squares again – did you notice – a product that has two faces, one positive and the other is negative – which are precisely opposite to each other.

For example, 4.2×10^{-8} is scientific notation for the number 0.000000042.

Here, "ten to the minus eighth power move "the decimal place in 4.2 eight places to the left"

To be sure you have the idea, let me present some examples of both positive and negative powers of ten:

POSITIVE POWERS OF TEN:

7.9×10^{4} = 79,000
9.1×10^{8} = 910,000,000
1.0×10^{12} = 1,000,000,000,000
1.0×10^{21} = 1,000,000,000,000,000,000,000

NEGATIVE POWERS OF TEN:

7.9×10^{-4} = 0.000,79
9.1×10^{-8} = 0.000,000,091
1.0×10^{-12} = 0.000,000,000,001
1.0×10^{-21} = 0.000,000,000,000,000,000,001

study these examples until you get the idea of this system of writing numbers.

To all of you intelligent people; I will supply later in this book additional explanation to help you to understand me.

And it is programmed instructions sequence designed to teach powers of ten and scientific notation in much greater details – well that is what I am hoping it will achieve – but nothing is guarantee except taxes and death, thus, I can only hope that it will help viewers to this site to follow what is stated.

The Ampere:

The unit of current is the ***ampere.***

The ampere is the rate at which electrons move past a given point.

As I have mentioned above, 1 coulomb is equal to 6.25 x 10^{18} (6.250,000,000,000,000,000) electrons.

An ampere is equal to 1 coulomb per second.

That means Flowerbower my dear: that if 1 coulomb (6.25 x 10^{18} (6.250,000,000,000,000,000) electrons flows past a given point in 1 second then the current is equal to 1 ampere.

Coulombs indicate numbers of electrons; amperes indicate the rate of electron flow or coulombs per second.

When 6.25 x 10^{18} (6.250,000,000,000,000,000) electrons flow through a wire each second, the current flow is 1 ampere.

If twice this number of electrons flows each second, the current is 2 amperes.

This relationship is expressed by the equation:

$$\text{amperes} = \frac{\text{Coulombs}}{\text{seconds}}$$

If 10 coulombs flow past point in two seconds, then the current flow is 5 amperes.

Now that was easy for you all, , but I do appreciate the fact that all this could become a problem for some readers. We entered into different domains of presentation of this relationship and for them, I will try to present how they might through this book come across other statements which they cannot understand exactly; don't worry about that I know the feeling far too well from experience.

The name ampere is often shortened to ***amp*** and is abbreviated ***A.***

Many times the ampere is too large a unit.

In these cases metric prefixes are used to denote smaller units.

The ***milliampere (mA)*** is one thousandth ***(0.001)*** of an ampere.

The ***microampere (μA)*** is one millionth ***(0.000001)*** of an ampere.

In other words there are 1000 milliamperes or 1,000,000 microamperes in an ampere.

I change from amperes to milliamperes by multiplying by 10^3.

Thus, 2.8 amperes is equal to 2.8 x 10^3 milliamperes.

I am still dealing with this boy of 14 years in the year 1946 relating to the question that he was not educated enough to create the SEG concept. This document is filed to show what he knew at that time and how he got that information from which he built up his concept.

I change from amperes to microamperes by multiplying by 10^6.

Therefore, 2.8 amperes is equal to 2.8 x 10^6 microamperes.

As I have already stated that for those who need it, a more detailed explanation of metric prefixes will give later on.

THE AMMETER:

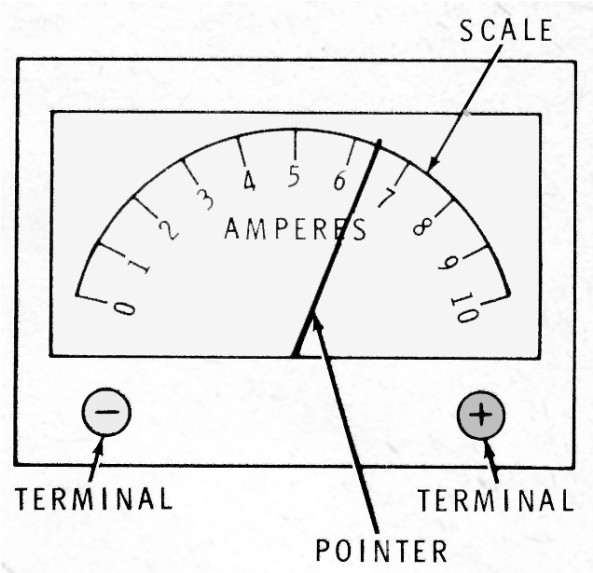


Figure 17.21 Ammeter.

A device for measuring current flow is the ammeter.

The name ammeter is a shortened form of the name ampere meter.

Figure 17.21 shows a diagram of an ammeter.

It has a pointer which moves in front of a calibrated scale.

In this figure, the scale is calibrated from 0 to 10 amperes.

The movement of the pointer is proportional to the amount of current flowing through the meter.

Therefore an accurate indication of the amount of current flowing in a circuit is obtained by reading the pointer against the scale.

This meter is presently displaying a reading of just over 6 amperes.

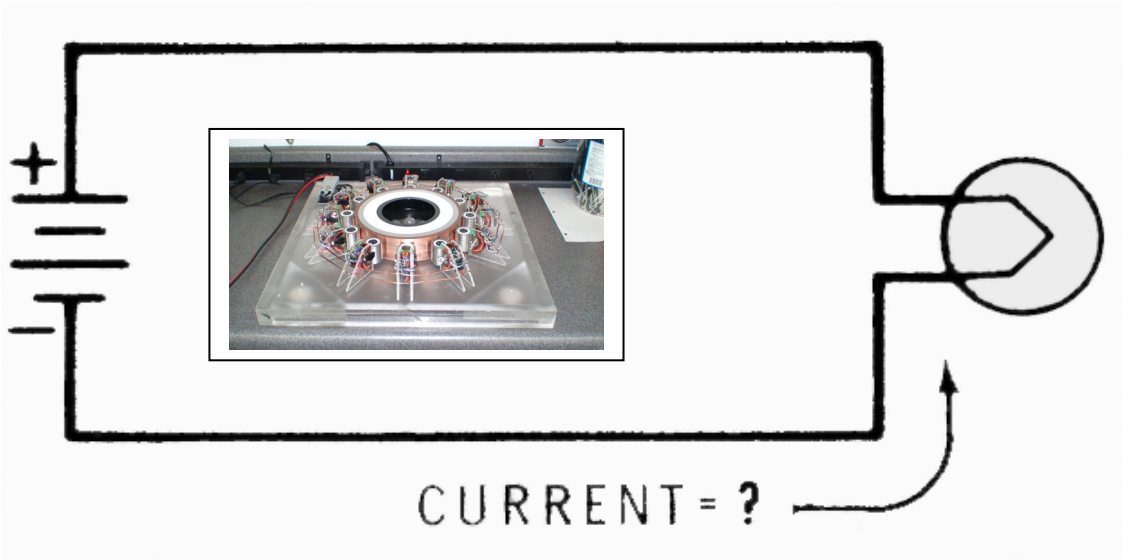


Figure 17.22A Measuring current.

take note now, that this boy of 14 years is really struggling to keep his job and do you know why?

Because he wants to survive in this mad world, so not only is he only learning from on-the-job experience at his place of employment, he is also learning fast in his digs, not only reading but creating and experimenting.

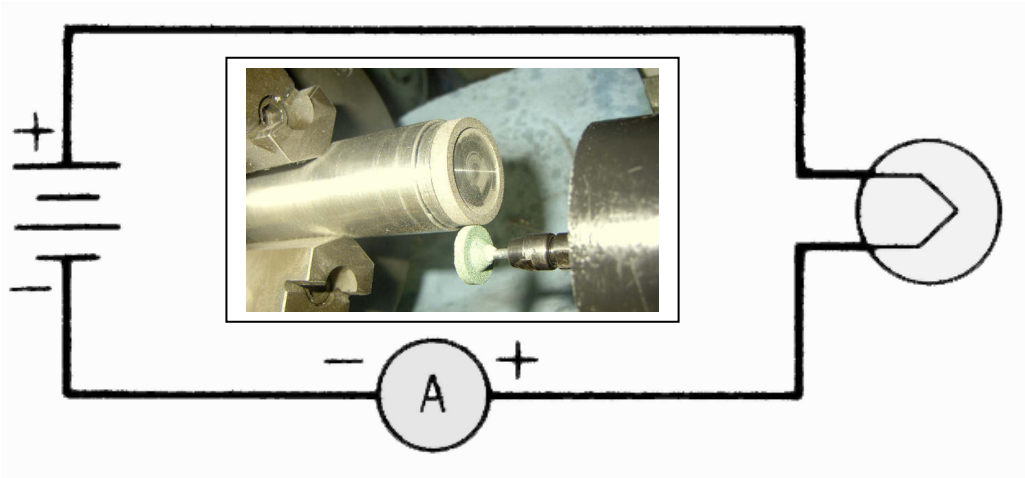


Figure 17.22B ***Measuring current.***

Figure 17.22A shows a circuit in which an unknown amount of current is flowing.

I can measure this current by inserting an ammeter into the circuit as shown in Figure 17.22B; Flowerbower it was not a question if I can, but a question of having to do it or look for another job.

NOTICE that the schematic symbol for the ammeter is a circle with the letter **A.**

Before the ammeter can measure current, it must be in the circuit in such a way that the current I wish to measure actually flows through the meter.

I say that the ammeter is connected in series with the circuit elements; well I never...that Law of the squares has just popped in again,

Incidentally, a circuit like the one shown in Figure 17,22B is termed a ***series circuit.***

A series circuit is one in which the same current flows through all the elements in one continuous loop.

The current maximum of an ammeter is indicated by the numbers on the scale.

The highest current that the ammeter in Figure 17.21 can safely measure is 10 amperes.

This is termed a full-scale reading. Many current meters are much more sensitive.

Some I am aware of have a full-scale reading of 1 milliampere.

Others provide a full-scale reading with only 50 microamperes flowing through them.

also take note that ammeters are delicate instruments and can be destroyed if the current applied greatly exceeds the full-scale reading of the meter.

For this reason, I must exercise certain precautions when using the ammeter.

To protect myself and the meter, a definite procedures must be followed when using an ammeter.

The first step is to insure that the ammeter I am using is heavy duty enough for the job.

As I have mentioned above, if the current rating is exceeded, the meter may be damaged.

The second step is to remove power from the circuit to be tested.

If is battery powered circuits, this can be done by disconnecting one of the battery leads.

The purpose of this step is to protect me from electric shock as I connect the ammeter.

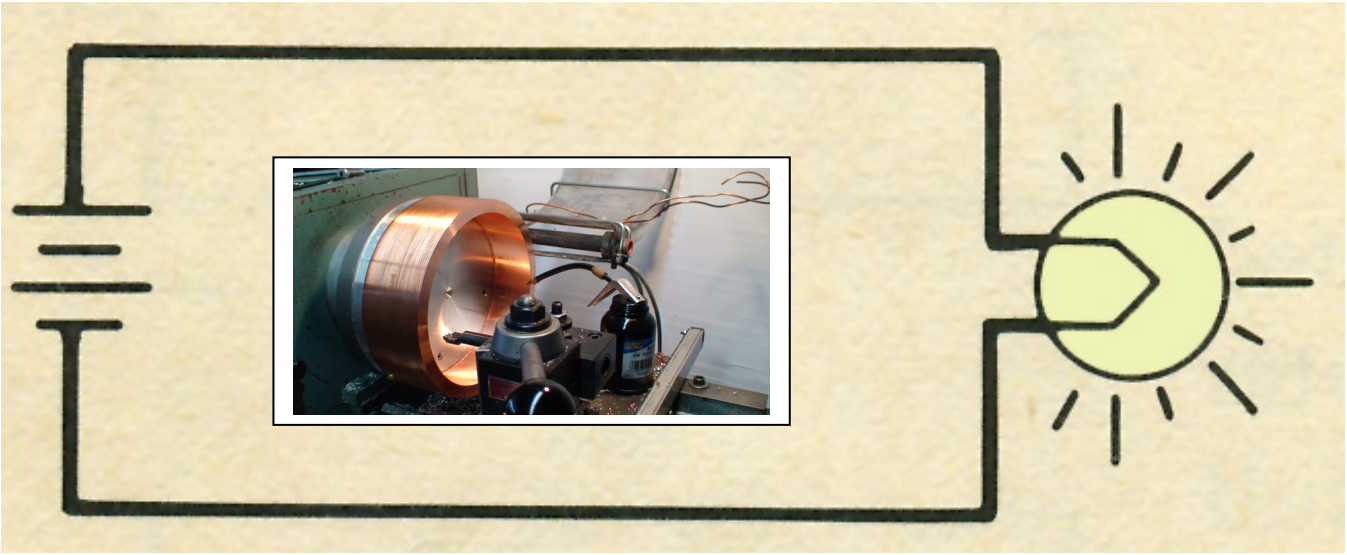


Figure 17.23A: Circuit in which current is to be measured.



Figure 17.23B: Remove power by disconnecting one side of battery.

The third step is to break the circuit open at the point of current measurement.

The circuit must be broken op3n because the ammeter must be placed in series with the circuit.



Figure 17.23C: Break circuit at point where current is to be measured.

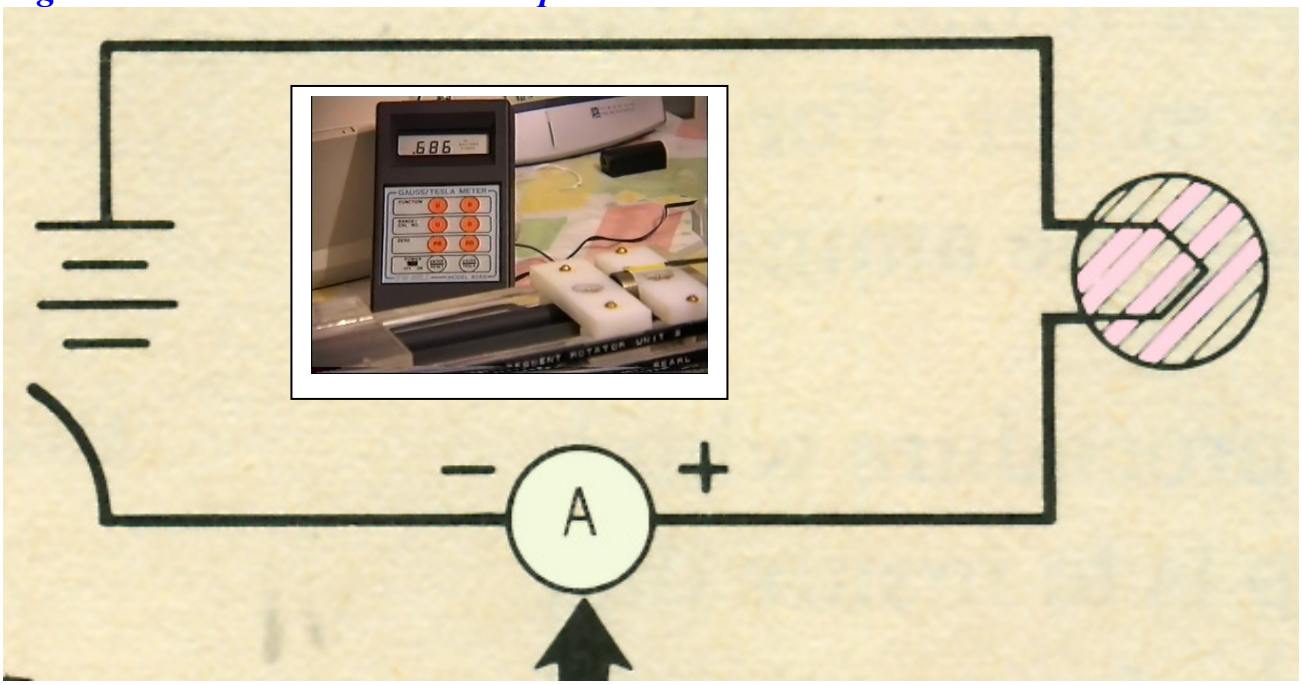


Figure 17.23D: Connect meter and observe the polarity.

Fourth, the connect ammeter to the circuit while observing polarity.

The ammeter has two terminals labelled negative and positive.

Current must flow through the ammeter from the negative terminal to the positive terminal.

Thus, the wire from the negative terminal of the battery must lead to the negative terminal of the ammeter.

If the ammeter connects backwards, the pointer will attempt to deflect backwards and may end up bent or broken.

Observing polarity simply means that the negative terminal of the ammeter goes to the wire that leads to the negative terminal of the battery – if a battery is the source of the power.

Naturally, the positive terminal of the ammeter is connected to the wire that leads to the positive side of the battery.

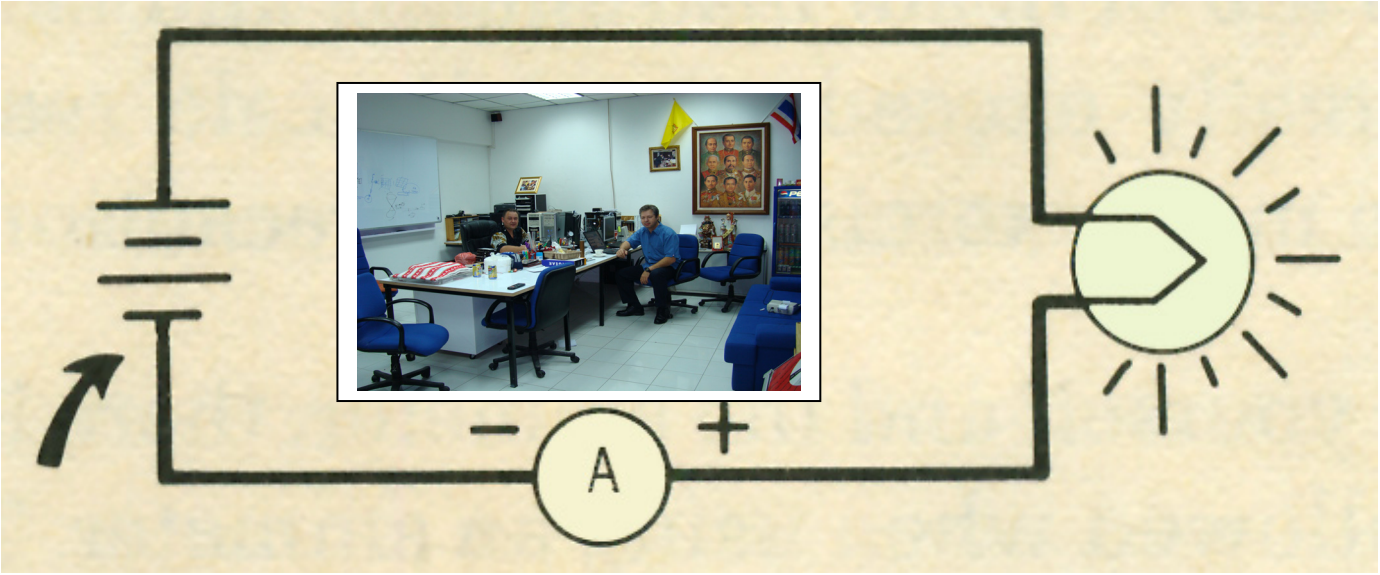


Figure 17.23E: Restore power and read current.

You have been looking at the procedure expected of young searl to perform with meter measuring and readings of current during 1946.

Finally, apply power to the circuit and read the current from the amp-meter.

Something that you never do is to use your finger to see if current is flowing, if you do your eyes will light up, hair will stand up – and your balls with hit the floor with a thump – so take heed before its late – always apply an ammeter to check, never a volt meter to read current.

Before proceeding forward; its time for a programmed review:

51) In addition, I must observe polarity when connecting the ammeter in a circuit.

This means that the negative lead of the ammeter connects to the wire leads to the negative side of the battery.

Also, the positive lead must be connected to the wire that leads to the ---------- side of the battery.

52) The unit of current is the ampere.

The ampere is a measure of the rate at which electrons pass a point at a specific length of time.

The ampere is one coulomb per second.

If one coulomb per second flows through a wire, the current in the wire is one ----------.

This document covers Searl work period of 1946 and expected of him to be able to do.

53) The unit of electrical charge is the Coulomb.

The coulomb is equal to the charge of 6.25 x 10^{18} electrons.

Thus, if an object has an excess of 6.25 x 10^{18} electrons, it has a negative charge of one ---------.

54) A device for measuring current is the ammeter.

The ammeter must be placed in the circuit so that the current to be measured flows through it.

That is, the ---------- must be connected in series with the circuit.

55) On the other hand, an object which has given up 6.25 x 10^{18} electrons has a ---------- charge of one coulomb.

56) The abbreviation for ampere is A.

Smaller units of current are the milliampere (mA) and the microampere (μA).

The milliampere is equal to 10^{-3} or 0.001 amperes while the microampere is equal to 10^{-6} or 0.000001 ampere.

Stated another way the milliampere is one-thousandth of an ampere while the microampere is one - ---------- of an ampere.

The following is a summary of the important points young Searl had to achieve during the year 1946 in this document.

If you have a question on any point presented here, reread that portion of the text covering the point.

1) Electronics is that science which controls the behaviour of electrons so that some useful functions is performed – this we know Searl is telling the truth from where he work and the amount of equipment the homes had to move after he increased the ventilation of his accommodation.

2) Matter is anything with weight and occupies space.

3) All matter is composed of one or more of the elements.

4) A compound is a substance composed of two or more elements.

5) The smallest particle of a compound is a molecule.

6) A molecule consists of two or more atoms bond together.

Continue summary upon what Searl had to know for his job during 1946.

7) The atom is the smallest particle into which an element can be divided.

8) There are 92 different types of atoms occurring in nature.

9) Another dozen or more have been artificially made by man.

10) Atoms are composed of electrons, protons, and neutrons.

11) The nucleus contains protons and neutrons.

12) Electrons orbit the nucleus.

13) The type of atom is determined by the number of electrons, protons, and neutrons.

14) Electricity is a property that electrons and protons have which cause them to behave in certain predictable ways.

15) The electron has a negative electrical charge.

16) The proton has a positive electrical charge.

17) An electrostatic field surrounds every charged particle.

18) Coulomb's Law describes the action of charged particles. It states that like charges repel, while unlike charges attract.

19) An atom has a neutral charge when it contains the same number of electrons and protons.

20) An atom which has a net electrical charge is called an ion.

21) Electrical charges can be produced with certain materials by friction.

22) An electrical charge can be partially transferred from a charged object to an uncharged object by touching the two objects together.

23) An electrical charge can be induced into a neutral object by bringing a charged object near it.

24) In electronics, current is defined as the flow of electrical charge from one point to another.

25) Before an electron can participate in current flow, but it must be freed go leave the atom.

26) The centrifugal force of the orbiting electron is exactly offset by the attraction of the positive charge in the nucleus.

27) Electrons are distributed in shells.

28) The outer shell is called the valence shell.

29) Valence electrons are the ones important in electronics because they are the ones free to contribute to current flow.

Continue summary upon what Searl had to know for his job during 1946.

30) The number of valence electrons determines if an element is a conductor or an insulator.

31) A conductor is a substance which has a large number of free electrons.

32) An insulator is a substance which has very few free electrons.

33) Most metals are good conductors.

34) A battery is a two-terminal device which produces an excess of electrons at one terminal and a deficiency of electrons at the other.

35) Free electrons normally drift around in a random pattern. However, they can be forced to flow in a desired direction.

36) Current flow is the directed drift of free electrons.

37) Electrons flow from negative to positive charges.

38) A schematic diagram uses symbols to represent electronic components.

39) The unit of electrical charge is the coulomb.

40) The coulomb is equal to 6.25 x 10^{18} electrons.

41) Current is the rate at which electrons flow past a point.

42) The ampere is the unit of current.

43) The ampere is equal to one coulomb per second.

44) A milliampere is one thousandth of an ampere.

45) A microampere is one millionth of an ampere.

46) A device for measuring current is the ammeter.

47) The ammeter must be connected in series with the circuit under test.

48) Polarity must be observed when connecting an ammeter to a circuit.

That is the summary of Searl's knowledge late 1946; and no doubt some of you might wonder how he could learn so much in such a short time.

The answer is simple – the bulk of this he already knew from dream1, over the six years of dreams to add what he learnt at the naval school; all his learning up to then had been pictorial. All he had to do was to learn about the schematic side which will become important to him and what terms to use for what component and how it functioned; certainly not a big deal after all. He learned by experimenting the names of components and how each function. By the end of September, he was well versed in the subject of electricity and magnetism. He had achieved this at an age most boys of 14 years have never achieved.

This concludes the summary of Searl's knowledge during 1946.

When you are certain that you understand all these points, you can check questions that he was given to answer. Don't forget this is a boy of 14 years with no formal education if you accept the expert's claims.

SCIENTIFIC NOTATION:

In electrons Searl quickly learnt, it is common to deal with both very large and very small numbers.

An example of a very large number is the speed at which electricity travels.

It travels at the speed of light which is approximately 1,000,000,000 feet per second or about 300,000,000 meters per second – ***WOW*** Flowerbower what about that my god that means it would be up your arse and out of the top of your head before you can break wind on youtube!

As for very small numbers, consider the size and weight of an electron.

It is believed that the electron has a diameter of approximately 0.000,000,000,002,2 inch and a weight of about 0.000,000,000,000,000,000,000,000,9 gram; that is amazing because that fits the law of the squares group one class perfect Flowerbower; what about that?

Sometimes, I perform arithmetic with numbers such as these; more precisely that was the only way that I could do it until I started my first job at BR Ltd.

Therefore, there is no argument that Searl had to learn to simplify his arithmetic, to a shorthand method which had been developed to express such numbers.

Searl had no option but to learn this shorthand method which is called ***scientific notation.***

The following programmed instruction sequence will serve to show you how Searl learnt by the question put to him in a test.

1) ***5 to the third power are the same as saying 5 x 5 x 5 = ----------.***

2) ***Scientific notation is a shorthand method of expressing numbers.***

   While any number can be expressed in scientific notation, this technique is particularly helpful in expressing very large and very ---------- numbers.

3) ***In mathematics, a number is raised to a power by multiplying the number times itself one or more times.***

   Thus, I raise 5 to the second power by multiplying 5 times itself.

   That is, 5 to the second power are 5 x 5 = ----------.

Sorry to say that this PC does not like the word IS it is determined to replace it with ARE – to me the term IS should be the correct word used here – the expert in this program say ARE is the correct word – so I leave it up to you to which is the correct term for these statements above – and bless you all for your effort to solve this puzzle of software grammar; I normally accept the expert terms but some of you don't agree – strange that your verdict is the same that I wanted to use. Another issue is that USA English spelling is different to UK English spelling that is a major problem in writing, thus, it's impossible for me to please everyone.

4) Scientific notation based on a concept called powers of ten.

Thus, in order to understand scientific notation I should first learn what is meant by powers of ----------.

5) The power to which the number is raised is called the exponent.

If 6 are raised to the third power, then the exponent is 3.

In the same way, if 5 is raised to the sixth power, then 5 is the base while 6 is the ----------.

6) Thus, 5 can be raised to any power simply by multiplying it times itself the required number of times.

For example: 5 x 5 x 5 x 5 = 625.

Consequently, 5 raised to the ---------- power is equal to 625.

7) This above example use power of five.

However, any number can be raised to a power by the technique of multiplying it times the required number of times.

Thus, the powers of two would look like this:

2 to the second power equal 2 x 2 = 4

2 to the third power equal 2 x 2 x 2 = 8

2 to the fourth power equal 2 x 2 x 2 x 2 = 16

2 to the fifth power equal 2 x 2 x 2 x 2 x 2 = 32

2 to the sixth power equal 2 x 2 x 2 x 2 x 2 x 2 = ----------.

8) There is a shorthand method for writing "2 raised to the sixth power."

It is:

$$2^6$$

NOTICE that the exponent is written as a small number at the top right of the base.



The number 2 is the base while the number 6 is the exponent.

Therefore in the example 3^4, 3 is the ---------- while 4 is the ----------.

Continue with the questions which Searl had to answer in 1946.

First let me recap upon a point here, you remember that it was an exponent on a docket for the stores which triggered the dream one into action. Such a simple thing created an unexpected result called "the Law of the Squares" which in turn generated the S.E.G. concept. It involved a child's game called hopscotch, but only through an eye of child could that hidden knowledge viewed and only that child could possibly bring it out into the open for all to see; regardless of what experts claim to the opposite.

9) In mathematics, the number raised to a power is termed the base.

If 5 is raised to the third power, 5 is considered the ----------.

10) This illustrates one of the advantages of power of 10.

It is easier to write and remember 10^{21} than its equivalent number: 1,000,000,000,000,000,000,000.

Try it yourself and see if it isn't easier to write 10^{33} than to write its equivalent number of: ---------- ----------.

11) The number 3^4 is read "3 raised to the fourth power".

It is equal to:

$$3 \times 3 \times 3 \times 3 = 81.$$

The number 4^6 is read ----------.

12) Multiplication by 10 is extremely easy since all I have to do is add one zero for each multiplication.

Another way to look at it is that multiplication by ten is the same as moving the decimal point one place to the right.

Thus, I can find the equivalent of 10^2 by multiplying 10 x 10 = 100; or, simply by adding a 0 after the 10 to form 100; or by moving the decimal point one place to the right to form 10.0. = 100.

In any event, 10^2 are equal to ----------.

13) Scientific notation uses powers of ten.

Several powers of ten are listed below:

$10^2 = 10 \times 10 = 100$
$10^3 = 10 \times 10 \times 10 = 1000$
$10^4 = 10 \times 10 \times 10 \times 10 = 10{,}000$
$10^5 = 10 \times 10 \times 10 \times 10 \times 10 = 100{,}000$
$10^6 = 10 \times 10 \times 10 \times 10 \times 10 \times 10 =$ ----------.

To get this question in on this sheet, I had to squeeze them in; but I guess as long as you can read the details make it acceptable.

This is still dealing with Searl in the year 1946 – and you might guess covers those extra samples he promise to do for those who have requested help with the maths side of the work.

14) ***There is a simple procedure for converting a number expressed as a power of ten to its equivalent number.***

I simply write down a 1 and after it write the number of zeros indicated by the exponent.

For example, 10^6 are equal to 1 with 6 zeros after it.

In the same way 10^{11} is equal to 1 with ---------- zeros after it.

15) ***Any base number with an exponent of 1 is equal to the base number.***

Any base number with an exponent of 0 is equal to 1.

Thus, X^1 = ---------- and X^0= ----------.

16)

Group A	Group B	Group C
$10^6 = 1{,}000{,}000$	$1000 = 10^3$	$10^7 = 10{,}000{,}000$
$10^2 = 100$	$10{,}000 = 10^4$	$10^9 = 1{,}000{,}000{,}000$
$10^9 = 1{,}000{,}000{,}000$	$100 = 10^2$	$10^{11} = 10{,}000{,}000{,}000$

To be sure you have the right idea, study each of the groups above.

Which group contains an error? ----------.

17) ***The other special case is 10^0.***

Here the exponent is 0.

Once again I follow the procedure outlined in Question 14.

Here again I write down a 1 and add the number of zeros indicated by the exponent.

However, since the exponent is 0, I add no zeros.

Thus, the equivalent number of 10^0 is 1.

That is 10^0 = ----------.

18) ***Now let's see how I convert in the opposite direction.***

Remember the numbers must be expressed using 10 as the base with the appropriate exponent.

The exponent is determined simply by counting the zeros; which fall on the right side of the 1.

Continue with question Searl had to be able to answer in 1946.

19) ***There are two special cases of powers of 10 which require some additional explanation.***

The first is 10^1.

Here the exponent of 10 is 1.

If I follow the procedure developed in question 14 I find that $10^1 = 10$.

That is, I put down a 1 and add the number of zeros indicated by the exponent.

Thus, 10^1 = ----------.

20) ***A brief study of this list will show that this simply a continuation of the list shown earlier in question 13.***

If the two lists are combined in a descending order, the result will look like this:

10^6	=	1,000,000
10^5	=	100,000
10^4	=	10,000
10^3	=	1,000
10^2	=	100
10^1	=	10
10^0	=	1
10^{-1}	=	0.1
10^{-2}	=	0.01
10^{-3}	=	0.001
10^{-4}	=	0.0001
10^{-5}	=	0.00001
10^{-6}	=	----------



21) ***Positive exponents represent numbers larger than 1.***

Thus, numbers such as 10^2, 10^{23}, and 10^{30} are greater than 1 and require ---------- exponents.

22) ***Some of the negative powers of 10 are listed below:***

10^{-1} = 0.1

10^{-2} = 0.01

10^{-3} = 0.001

10^{-4} = 0.0001

10^{-5} = ---------- .

NOTE that these extra test question which I had to undertake are being reproduced here mainly for those who have ask me to explain the maths in more details as they don't have the training in that domain; I hope now they are getting a better understanding of the maths involved in this work – I will show a few more to help.

23) ***In the examples give above, the exponents have been positive numbers.***

For simplicity, the plus sign has been omitted.

Therefore, 10^2 are the same as 10^{+2}.

Also, 10^6 are the same as ----------.



24) ***Numbers smaller than 1 are indicated by negative exponents.***

Thus, numbers like 0.01, 0.0001, and 0.00001 ate expressed as negative powers of ten because these numbers are less than -------.

25) ***In the same way, I can write 5,000 as 5×10^3.***

Some other examples are:

200 = 2×10^2

1500 = 15×10^2

22,000 = 22×10^3

120,000 = 12×10^4

1,700,000 = 17×10^5

9,000,000 = ----------.



26) ***I can think of the negative exponent as an indication of how far the decimal point should be moved to the left to obtain the equivalent number.***

Thus, the procedure for converting a negative power of ten to its equivalent number can be developed.

The procedure is to write down the number 1 and move the decimal point to the left the number of places indicated by the negative exponent.

For example, 10^{-4} becomes 0.0001.

NOTICE that the -4 exponent indicates that the decimal point should be moved ---------- places to the ----------.

27) ***Up to now I have used powers of 10 to express only those numbers which are exact multiples of 10 such as 100, 1000, 10,000, etc.***

Obviously, if these were the only numbers which could be expressed as powers of ten, this method of writing numbers would be of little use.

Actually, any ---------- can be expressed in powers of ten notations.

I hope that this is helping you, if you thought that I was not interested in you – you are mistaken.

I shall continue with a few more Science notations examples of how to deal with them as promised a few pages back.

28) ***The technique by which this is done can be shown by an example.***

If 1,000,000 can be represented by 10^6, then 2,000,000 can be represented by 2×10^6.

That is, I express the quantity as a number multiplied by the appropriate power of ten.

As another example, $2{,}500{,}000 = 2.5 \times 10^6$

Also, 3,000,000 = ----------.

29) ***You may have notice, which I sincerely hope you did: that when I use powers of ten there are several different ways to write a number – which I can understand if you are confused at a much higher level – it confuses me – that makes two of us.***

For example, 25,000 can be written as 25×10^3 because 25 x 1000 equals 25,000.

However; it can also be written as 2.5×10^4 because 2.5 x 10,000 equals 25,000; that is amazing Flowerbower, or is that well over your head.

What is even more amazing Flowerbower that it can even be written as 250×10^2 since 250 x 100 = 25,000.

In the same way, 4.7×10^4, 47×10^3, and not forgetting 470×10^2 are all three different ways of writing the number ----------.

30) ***As you can see there are several different ways in which a number can be written as a power of ten.***

Scientific notation is a way of using powers of ten so that all numbers can be expressed in a uniform way.

You may also wonder why I use a value of 6 as an exponent so often; agree that is quite an interesting question.

You see the Law of the Squares is just one face of a natural cube; which to my knowledge contain 6 faces; not only that in the flight side I use 6 elements – 5 of which are single elements and one contains more than on element, by arbitration is given the term insulator.

To see exactly what scientific notation is, consider the following examples of numbers written in scientific notation:

6.25×10^{18}	4.0×10^2	3.9×10^{-6}	2.7×10^3	22×10^3
3.7×10^6	6.8×10^{-4}	2.2×10^{-12}	64×10^{22}	32×10^{15}

NOTE that the exponent values are those commonly used in the materials construction of this work.

NOTICE that the numbers range from a very large number to an extremely small number.

I will now continue with this session to help those who have asked me to explain maths in more details, this is also for the benefit of Flowerbower who makes it clear that lacks education.
How strange that Flowerbower claims to be educated, and I state that I was not; certainly not by the same means... THANK HEAVEN!

And yet, all these numbers are written in a uniform way, just as my squares are done to get correct results every time.

This method of writing numbers is called scientific ----------.

31) ***By the same token, I can convert in the opposite direction.***

Thus, 2 x 10^5 becomes 2 x 100,000 or 200,000.

Also please note Flowerbower that 2.2 x 10^3 = 2.2 x 2,200.

And, 66 x 10^4 = ----------.

32) ***Numbers smaller than one is expressed as negative powers of ten in much the same way; to which I agree make sense.***

Thus, 0.0039 can be expressed as 3.9 x 10^{-3}; 39 x 10^{-4}; or 0.39 x 10^{-2}.

Also, 6.8 x 10^{-5}; 68 x 10^{-6}; and not forgetting 0.68 x 10^{-4} are three ways of expressing the number ---------- which again proves to me that the Law of the squares is precise and can be accepted as a tool to work with.

33) ***To be sure you have the idea look at the groups of numbers below.***

Group A	Group B	Group C
6.25×10^{18}	1.11×10^{11}	6.9×10^{10}
3.75×10^{-9}	-3.1×10^{2}	3.4×10^{7}
4.20×10^{1}	-3.1×10^{-2}	39.5×10^{2}
7.93×10^{0}	2.00×10^{2}	6.0×10^{4}

Which of the following groups contains a number expressed properly in scientific notation? ----------.

34) ***You have asked me to teach you and that is precisely what I am here to do.***

The rules for writing number in scientific notation are quite simple Flowerbower.

First, the decimal point always placed after the first digit on the left is not zero.

Therefore, the final number will appear in this form: 6.25; 7.3; 9.65; 8.31; 2.0; 64.12 and so forth:

It must never appear in a form such as: .625; 73; 96.5; .831 or 20.

Thus, there is always one and only one digit on the ---------- side of the decimal point.

35) *Finally, the magnitude of the exponent is determined by the number of places that the decimal point is moved.*

For example, 39,000.0 is expressed as 3.9×10^4 because the decimal point must be moved 4 places in order to have only one digit to the left of it Flowerbower you sweet little dandelion, please kindly take note I am trying so hard to make you look intelligent: if that is actually possible to do; which I doubt.

Using this rule, 6,700,000,000 are expressed as 6.7 x ----------.

36) *The second rule involves the sign of the exponent.*

If the original number is greater than 1, the exponent must be positive.

As all elements must be 1; nature does not deal in fractions of 1.

You cannot cut one Gold Au 79 atom in half and still have Gold; nature will not work in that manner.

Likewise you cannot take the magnetic layer and cut a fraction of material from it to find the secret of the Searl Effect; nature will not allow you to do so.

Likewise, if 67,000 require a positive exponent but 0.00327 requires a ---------- exponent.

37) *The number 0.00327 is expressed as 3.27×10^{-3}.*

Here the decimal point is moved 3 places in order to have one digit which is not zero to the left of the decimal.

Likewise 0.00027 is expressed as 2.7 x ----------.

38) *Listed below are numbers which are converted to scientific notation.*

Group A	Group B	Group C
$2{,}200 = 2.2 \times 10^3$	$119{,}000 = 1.19 \times 10^5$	$119 = 1.19 \times 10^2$
$32{,}000 = 3.2 \times 10^4$	$1{,}633{,}000 = 1.633 \times 10^6$	$93 = 9.3 \times 10^1$
$963{,}000 = 9.63 \times 10^5$	$937{,}000 = 9.37 \times 10^4$	$7.7 = 7.7 \times 10^0$
$660 = 6.6 \times 10^2$	$6{,}800 = 6.8 \times 10^3$	$131.2 = 1.312 \times 10^2$

Which one of these groups contains an error? ----------.

I shall continue with this education session with a few more samples in relation to scientific notation. This will play a critical part in reports upon this technology and I cannot be seen in public to ignore those who have been unfortunate not to have the chance to learn while young; like me, so I do understand your problem.

I am sincerely hoping that this section of my book does in fact help you in understanding my work.

39) The number 39.5 x 10^2 is not written in scientific notation, because there are two digits on the left side of the decimal point.

That is correct , that is something you never do – NO, NO, NO, never do that.

The minus signs in group B in example 33 page 17.137 may have confused you.

Although it has not been mentioned, unless I have and forgotten (if I have, due to over work and underpaid problems) that negative numbers can also be expressed in scientific notation.

Thus, a number like -8.200,000 becomes -8.2 x 10^6.

All the rules previously stated hold true except that now a ---------- sign is placed before the number.

40) 937,000 convert to 9.37 x 10^5 and not to 9.37 x 10^4.

Group A	Group B	Group C
$0.00037 = 3.7 \times 10^{-4}$	$0.44 = 4.4 \times 10^{-1}$	$.37 = 3.7 \times 10^{-1}$
$0.312 = 3.12 \times 10^{-1}$	$0.0002 = 2.0 \times 10^{-4}$	$.0098 = 9.8 \times 10^{-3}$
$0.068 = 6.8 \times 10^{-2}$	$0.0798 = 7.98 \times 10^{-2}$	$.00001 = 1.0 \times 10^{-5}$
$0.0092 = 9.2 \times 10^{3}$	$0.644 = 6.44 \times 10^{-1}$	$0.0075 = 7.5 \times 10^{-3}$

Which of the groups above contains an error? ----------.

41) Small negative numbers are handled in the same way.

Thus -0.0092 becomes -9.2 x 10^{-3}.

The minus sign before the number indicates that this is a negative number.

The minus sign before the exponent indicates that this number is less than ----------.

42) The final number in group A of question 40 requires a negative exponent.

Which of the groups below contains an error? ----------.

Sorry, there is not enough space here to list those values, I would like to do; so will carry on with this question on the next page.

42) Continue

Group A	Group B	Group C
$3{,}700{,}000 = 3.7 \times 10^{6}$	$9440 = 9.44 \times 10^{3}$	$20 = 2.0 \times 10^{1}$
$-5{,}500 = -5.5 \times 10^{3}$	$-110 = -1.1 \times 10^{2}$	$0.02 = 2.0 \times 10^{-2}$
$0.058 = 5.8 \times 10^{-2}$	$0.0062 = 6.2 \times 10^{-4}$	$-200{,}000 = -2.0 \times 10^{5}$
$-0.0034 = -3.4 \times 10^{-3}$	$-0.0123 = -1.23 \times 10^{-2}$	$-0.000200 = -2.0 \times 10^{-4}$

43) A kilowatt is equal to 10^3 watts while a megawatt is equal to -------- watts.

44) 0.0062 is equal to 6.2 x 10^{-3}.

Match the following:

1. 16	*a.*	*1.6 x 10^{-3}*
2. .0016	*b.*	*1.6 x 10^{4}*
3. 160.000	*c.*	*1.6 x 10^{0}*
4. 1.6	*d.*	*1.6 x 10^{1}*
5. .016	*e.*	*1.6 x 10^{-2}*
6. 16,000	*f.*	*1.6 x 10^{5}*



45) One thousand watts can be termed a kilowatt.

Also, one million watts can be termed a ----------

46) Another concept that goes hand in hand with powers of ten and scientific notation is metric prefixes.

These are prefixes such as mega and kilo which when placed before a word change the meaning of the word.

For example, the prefix kilo means thousand.

When kilo and meter combined, the word kilometre used.

This word means 1000 meters.

In the same way, the word kilogram means ---------- grams.

I shall carry on the next page with this session of teaching those who find it hard to follow maths in this book that I am writing to the website.

47) Since kilo means 1,000, I can think of it as multiplying any quantity times 1000 or 10^3.

Thus, kilo means 10^3.

Another popular metric prefix is mega.

Mega means million.

Thus, a megaton is one million tons or 10^6.

In the same way one million volts Star ship Explorer will produce for flight is referred to as a ---------- volt.

48) Kilo is often abbreviated by the letter K.

Thus, 100 kilowatts may be expressed as 100K watt.

Mega is abbreviated M.

Therefore 10 megawatts may be expressed as ---------- watts.

49) One volt is equal to 1000 millivolts or 1,000,000 microvolts.

Or, 1 volt equals 10^3 millivolts and 10^6 microvolt's.

Expressed another way, 1 milliovolt equals .001 volt while 1 microvolt equals .000001 volt.

Thus, 1 millivolt equals 10^{-3} volts while 1 microvolt equals ---------- volt.

50) Often it is convenient to convert from one prefix to another.

For example, since a megaton is 10^6 tons and a kiloton is 10^3 tons, a megaton equals 1000 kilotons.

And, since a megaton is one thousand times greater than a kiloton, the kiloton is equal to .001 megaton.

Now, consider the quantity 100,000 tons

This is equal to 100 kilotons or ---------- megatons.

51) There are also prefixes which have values less than one.

The most used are:

Milli- which means thousandth .001 or 10^{-3}.

Micro- which means millionth .000,001 or 10^{-6}.

One thousandth of an ampere is termed a milliamp.

Also, one thousandth of a volt is called ----------.

52) ***Powers of ten allow me to express a quantity using whichever metric prefix I prefer.***

For example, I can express 50 millivolts as 50 x 10^{-3} volts simply by replacing the prefix milli with its equivalent power of ten.

In the same way 50 microvolts is equal to 50 x ---------- volts.

53) ***If a second is divided into one million equal parts each part is called a microsecond.***

Also, the millionth part of a volt is called a ----------.

54) ***The quantity 5 K volts are 5 kilovolts or 5000 volts.***

Also, 5 M volts are 5 megavolts or ----------volts.

55) ***Additional aspects of powers of ten, scientific notation, and metric prefixes will be discussed at another time.***

56) ***Match the following:***

1. M watt	***a. $10^{-}3$ watts***
2. K watt	***b. 10^{-6} watts***
3. m watt	***c. 500 x 10^{-3} watts***
4. µ watt	***d. 10^{6} watts***
5. .5 watt	***e. .5K watts***
6 500 watts	***f. 10^{3} watts***
7. 500,000 watts	***g. .5M watts***
8. .00005 watts	***h. .05 K watts***
9. 50 watts	***i. 5 m watts***
10. .005 watts	***j. 50 µ watts.***



The eyes of this boy conceived the concept of the S.E.G. and the I.G.V. and no other persons involved thereof.

A boy who without formal education (which so-called experts are so quick to point out), did through his young days conceive the concept and that is known today as the Searl Effect without expert assistance.

I do agree that over time many skilled workers were involved in assisting in its constructions, experiments, investigations and development work; to that, he has no argument. The question is, were you one of them and who gave time to assist free of charge?

To all of you who wrote me for help in learning, I thank you for your faith in hoping that I would help you.

I sincerely hope that this part of this book will play a major role in helping you to understand what is herein stated.

I can only give you one more example for the time being; as I need to do a short examination of this first unit to follow by my answers to these questions – I hope that I can remember what they were.

57) When writing abbreviation for the prefix milli the letter small m is used.

A small m is used to distinguish it from mega which use a capital M.

Obviously, the abbreviation for micro cannot also be m.

To represent micro the Greek letter μ – pronounced mu – is used; bless them for their efforts to solve the problem; of course by arbitration as usual.

For the last time in this section comes the question.

Thus, 10 millivolts is abbreviated 10 m volts while 10 microvolts is abbreviated 10 μ volts.

Remember, m means 10^{-3} while μ means ----------.

Now that is the end,

MY EXAMINATION.

UNIT ONE.

CURRENT.

A boy just gone 14 years, studying to become an electrical Engineer as an apprentice and expected to undertake study at home.

This section has repeated what he studied then in 1946 and now is the time to give you an insight of his first test examination accepted experts of the day with those questions:

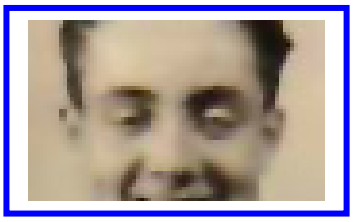
Here you judge if his education was far better then you had been brainwashed to believe by experts of hate.

The following multiple-choice examination designed to test Searl's understanding of the material presented in this unit.

What he had to do was to place a check beside the multiple-choice answer (A, B, C, or D) that he feels is most correct.

A simple request: how to answer test questions.

1. A positive ion is produced when an atom:



A. Loses an electron.
B. Gains an electron.
C. Loses a proton.
D. Gains a proton.

2. Which of the following statements is true?

A. The electron has a positive charge; the proton has a negative charge; and the neutron has no charge.
B. The electron has a negative charge; the proton has a positive charge; and the neutron has no charge.
C. The electron has a negative charge; the proton has no charge; and the neutron has a positive charge.
D. The electron has a positive charge; the proton has no charge; and the neutron has a negative charge.

3 Which of the following statements is true?



A. An electron attracts another electron.
B. An electron attracts a negative ion.
C. A proton repels an electron.
D. An electron repels another electron.

There is not enough room for another question; so you will have to wait to see what the next page produces; these are easy questions for adults – but this is a boy of 14 years trying to secure his future to survive on planet earth and he did survive for that boy is "I".

Examination continue:

4. There are two objects which have a deficiency of electrons.

The two objects are:

A. Negatively charged and will repel each other.
B. Positively charged and will repel each other.
C. Negatively charged and will attract each other.
D. Positively charged and will attract each other.

5. An atom has a neutral charge when it has the same number of:

A. Electrons as neutrons.
B. Electrons as protons.
C. Protons as neutrons.
D. Electrons as ions.

6. Current is defined as a flow of:

A. Protons from a negative charge to a positive charge.
B. Protons from a positive charge to a negative charge.
C. Electrons from a negative charge to a positive charge.
D. Electrons from a positive charge to a negative charge.

7. A substance which has a few free electrons is called:

A. An insulator.
B. A conductor.
C. An element.
D. A compound.

8. The unit of electrical charge is the:

A. Volt.
B. Ampere.
C. Valence.
D. Coulomb.

9. The unit of current is the:

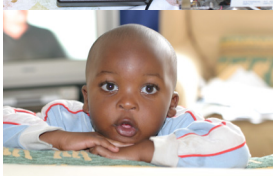
A. Volt.
B. Ampere.
C. Valence.
D. Coulomb.

10. The ampere is equal to:

A. One volt per second.
B. One coulomb.
C. One thousand microamperes.
D. One coulomb per second.





Through the eyes of a child, the S.E.G. was conceived.

Like the acorn the mighty oak grows.



Examination continues:

11. ***One milliampere is equal to:***

A. ***0.001 amperes.***
B. ***1000 amperes.***
C. ***0.000,001 amperes.***
D. ***1,000,000 ampere.***



12. ***One ampere is equal to:***

A. ***1000 microamperes.***
B. ***0.001 microamperes.***
C. ***0.000,001 microamperes.***
D. ***1,000,000 microamperes.***

13. ***Which of the following shows an ammeter connected properly for measuring the current through the lamp?***

A. ***Figure 17.1A.***
B. ***Figure 17.1B.***
C. ***Figure 17.1C.***
D. ***Figure 17.1D.***

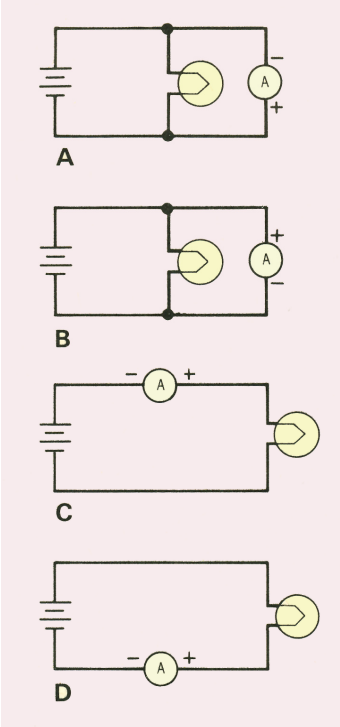
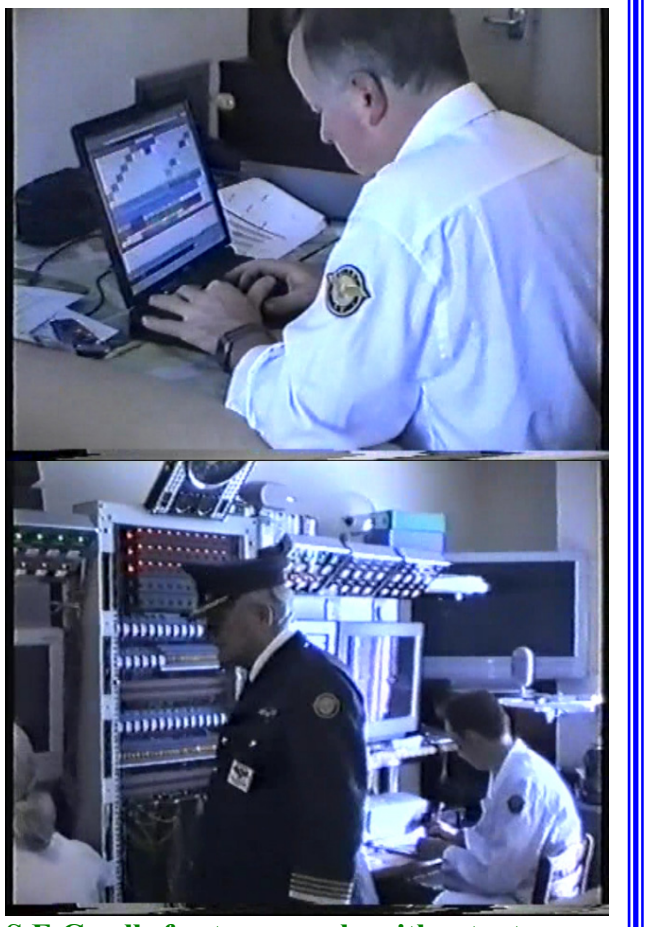


Figure 17.1

Which of the following shows An ammeter connected properly for measuring the current through the lamp?



S.E.G calls for team work, without a team there will never be any S.E.Gs.

Tomorrow is the future and our children depend upon us to do our duty to create it and not simply destroy it!

Without our help planet earth will die, one man cannot save planet Earth, it takes all of us to save it!

14. Which of the following is the correct schematic diagram of a closed switch, a battery, and a lamp connected in series?

A. Figure 17.2A.
B. Figure 17.2B
C. Figure 17.2C
D. Figure 17.2D

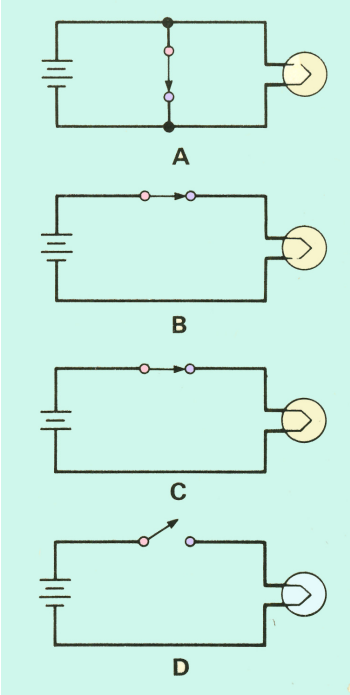
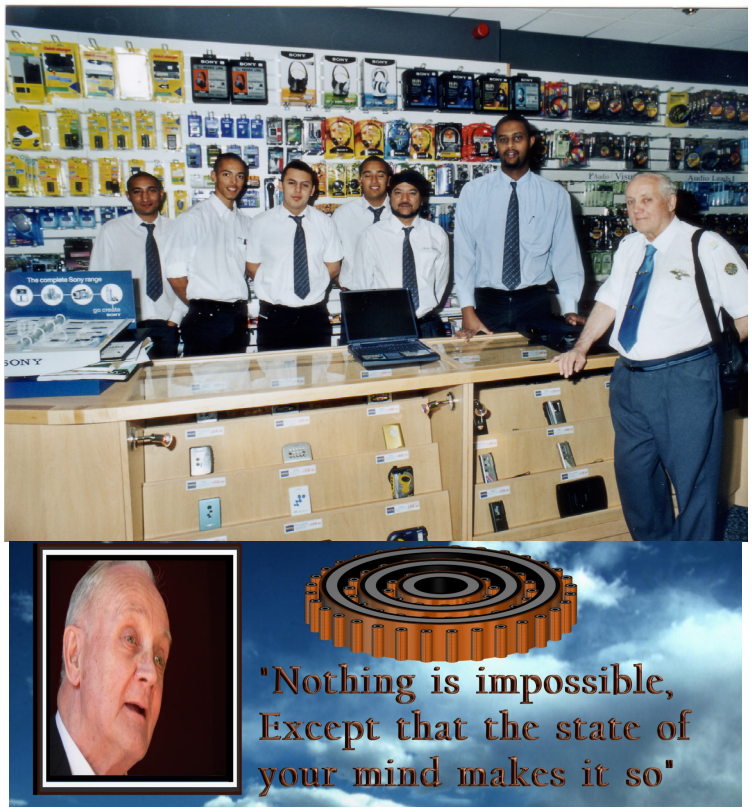


Figure 17.2.
Which of the following is
The correct schematic diagram
Of a closed switch, a battery,
And a lamp connected in
Series?



Man has been bent on damaging this planet for greed – Time that man start the task of cleaning up his mess. The Searl Technology can only help to clean up the Environment; if you do your part to prevent further damage to it, it's up to you to help now!

That is the end of Searl's first examination, and I agree that adults should have found that extremely easy to undertake.

Well I must state that Searl succeeded to get through it without any lost of hair in the process. Just for the records, he also was studying under Prof. Law on mathematics, through another institution.

He might have been self educated but certainly not stupid

The time has arrived to see how Searl answers those questions and check if your answers actually match his.

ANSWERS SEARL GAVE IN UNIT ONE UPON THE SUBJECT OF CURRENT:

1. A. The electron has a negative charge which is normally offset by the positive charge of a proton.

When the atom loses an electron, it loses a negative charge and, therefore, has a net positive charge.

ANSWER SEARL GAVE TO HIS FIRST EXAMINATION IN 1946:

2. B. The electron has a negative charge.

   The proton has an equal but opposite – positive – charge.

   The neutron has no charge at all – ***the Law of the Squares holds true.***

3. D. All electrons have negative charges.

   Since like charges repel, one electron will repel another.

4. B. Objects with too few electrons have positive charges.

   Since they have like charges they repel each other.

5. B. To have a neutral charge, the negative charge of each electron must be cancelled by a positive charge of a proton.

6. C. Since electrons have a negative charge, they must flow from negative to positive charges.

7. A. Without free electrons, a substance cannot support current flow.

   A substance with few free electrons is an insulator.



8. D. The unit of electric charge is a coulomb.

9. B. The unit of current is the ampere.

10. D. The ampere is equal to one coulomb per second.

11. A. A milliampere is one thousandths of an ampere.

    One thousandths is equal to 0.001.

12. D. A microampere is one millionth of an ampere.

    Thus, there are one million microamperes in an ampere.

13. D. This is the only diagram in which the ammeter is connected in series and polarity is observed.

14. B. In (A) the switch is not in series with the other two components.

    In (C) the symbol for the battery is incorrect.

    In (D) the switch is shown open.

These are John Searl's answers to his first examination dealing with current. This shows that Searl had his heart and soul on his job; he work hard, long hours to learn. Unknown to him that his push to learn was for something completely different and very soon he will become involved with that something now called the S.E.G. THE SEARL EFFECT GENERATOR! Boldly he walked where no man dares to go, into the world of the unknown which experts term IMPOSSIBLE!

News that the Hollywood DVD part 1, is already appearing on planet Earth, and plans for part 2 is already in the thinking pot; if it takes, it will take place in Thailand.

You can all now enter openly www.searlsolution.com and see all the news as it happens.

We are on the march to success and that means to the marketplace from where over the years I have been block by evil minds who want to own the technology.

This means they blocked you from having it as millions of people have died who should not had died. The technology was not available but it should had been. The problem is the Searl Effect Technology is only as good as your effort to help make it happen and to clean up this mess.

Governments must stop the destruction of forest for money gain and no longer be tolerated it because we have already gone far beyond the safety barrier. We must turn back and put in place the safety barriers so our planet can survive those odds events of nature.

If you want a better world for your children's sake and their children's sake, then we must set that foundation now for such a condition to develop.

It will never happen by itself – you must make it happen.

I can only lead you to that promise land of good health, clean power, clean fast transportation systems you can be proud of and it will never happen without you; you are the key to success of the Searl Technology.

The answers I gave in 1946 to my first unit based on Current: of my home training course, at least one of the courses of which I was studying; will be shown in this chapter 17 of my book; from around page 151 at this time is planned.

Doing this chapter in blocks of 50 pages makes it easy for you to download. Thus, so far you have 2 blocks of 50 pages creating 100 pages upon my life and work.

I expect that it will have 500 pages to the complete chapter or more precise I hope to make 500 pages of it so by reading should have a better understanding of the truth that is involved within this technology.

There is much to discuss and in my case due to the objectives which are planned within my companies that will be going straight to the marketplace.

What we are undertaking is a massive program, and it will take time before you will see the results from it.

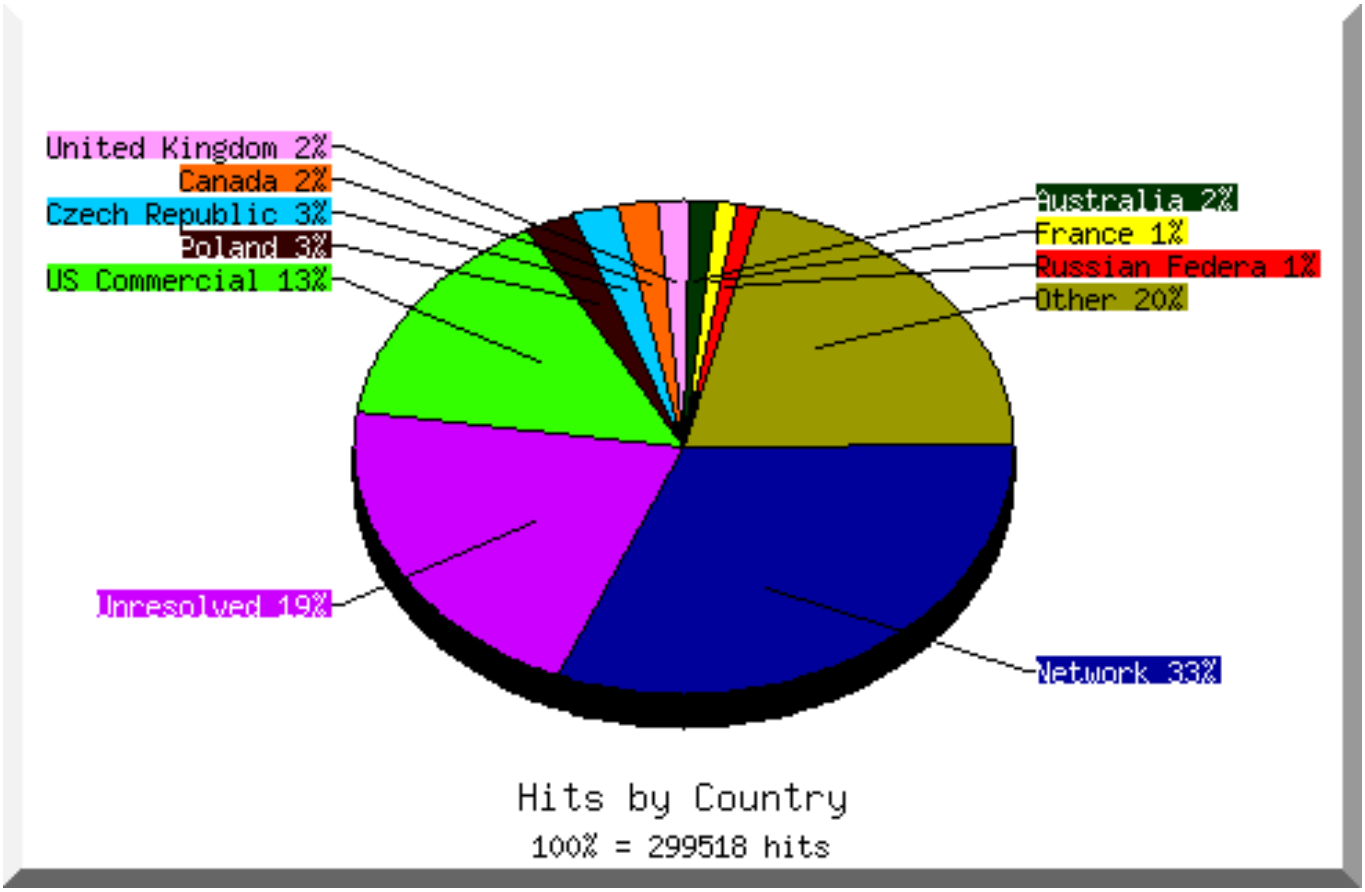
If funds really do poured in, then things would speed up, as material can be obtain in larger bulk to work with. Then this new magnetiser needs time to bring up to full power to check that all parts work regardless of the power setting involved. So far I understand that the tests that have been undertaken have worked as expected and I hope will be the case as the power is increased.

The power levels now I understand enough to print the roller segments.

The plate are still under test to see if the 12 sections could be done in one go; instead of 12 individual times.

Slowly but surely is the best motto for the cost today is so high that we cannot afford waste in a rushing. We shall get there at the minimum cost possible, but each step taken is paving way to future requirements and solutions. This is ideal for companies like us to create our future plans so no hold ups occur when the time to move to the market place happens.

Here is the latest information I have received about this site for your interest.



This a pie chart on www.searlsolution.com which gives an indication on the operation taking place on it. Taking all things in consideration, that is not bad for a young website under development and preparing for the future progress.

For me 1946 was exciting, mainly because I was facing new challenges and travelling on the underground daily was a new experience for me. Each day learning to strip motors, rewinding the coils and replacing them was all unknown to me and was proving facts that I would need to understand for the S.E.G technology.

So I had got the first bit of data for the SEG, also saw that in this work a strange sign was used that went by a strange name of exponent and that was the master key to the Law of Squares. That in turn clicked in the child's game termed hopscotch, from that the door was open to me and I was hooked with no escape route in sight as it was all done without my conscience mind being aware of it; but my subconscious mind had clicked on it.

I would be using it to give me the instructions of what to do and how to do it. Yes, so simple go to square 4, but you see I had no knowledge about square four then, or what it meant. That story belongs to another section of this book.

This document hereby released to the public by the authority of:



Prof. John Roy Robert Searl.
Searl Technology Ltd.
Tomorrow's Energy and Transportation Systems.
Head of R & D.

The fact that pneumatic motors have nevertheless become so popular shows to me the importance of the advantages they offer.

I guess that anyone who has ever worked with compresses air power sources will always turn to them again and again because their power output cam be precisely defined and because they are exceptionally robust which is of course another point that I have to consider.

What you must think of is that all I have to do is think of those cases in which power output data cannot be defined precisely ahead of time and actual performance is not determined until the equipment is started up.

The resultant improvisation, which can even entail replacing the power source, is completely eliminated with pneumatic motors.

Such a situation may become reality in the mass production of the Searl Effect Generator (S.E.G).

Torque and speed can be adjusted by regulating air pressure and flow accordingly, which means more than just saving time for the designer.

The problems alluded to in my past reports are by no means unusual.

That is why I have written this succinct guide to help designers of machinery and equipment including you to become acquainted with pneumatic motors.

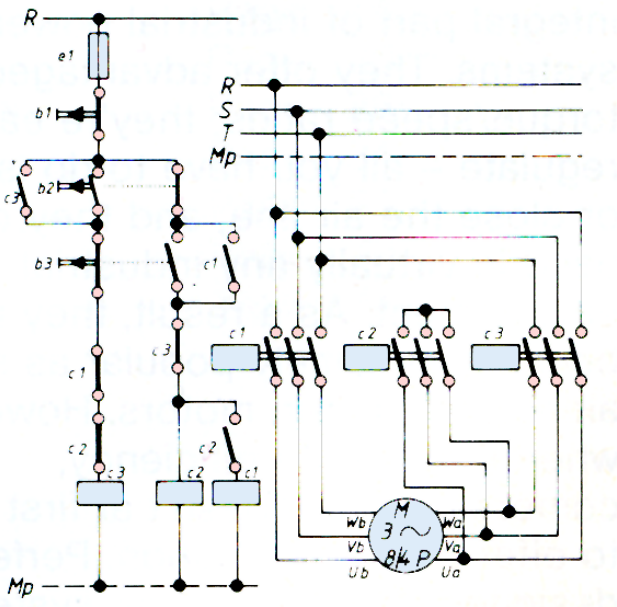
I sincerely hope that the engineers among my readers will forgive me for using such an oversimplified analogy to illustrate the technology behind pneumatic motors:

The volume of air that does the work in the motor corresponds to the current used by electric motors and determines the speed of the motor.

This air is more or less the “wind” (***not my wind***) in the motor that blows against the vanes of the rotor to rotate the shaft, which is exactly what happens with a windmill.

This air is also under pressure, and this pressure corresponds to the voltage of an electric motor: or to use the windmill as an example again – to the wind force.

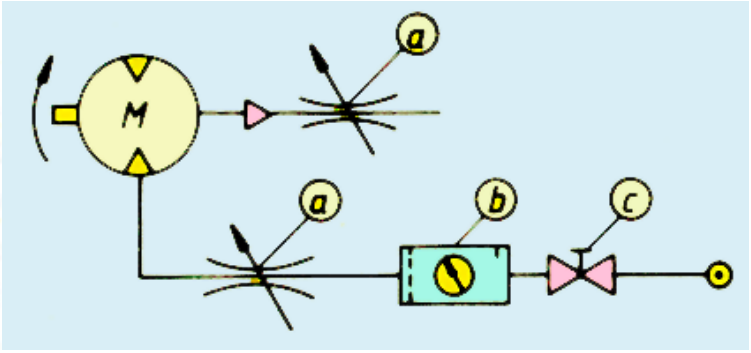
The air pressure determines the motor’s torque.



THE DIFFERENCES.

THREE-PHASE ELECTRIC MOTOR.

PNEUMATIC MOTOR/



Three-phase electric motor:

Reversing: P_N = 0.2/0.3 kW n_N = 1330/2700 rpm at 380 V 50 Hz with controls (Dahlander)

c = contactor with auxiliary contacts. b = switch

Pneumatic motor:

P_N = 0.33 kW n_N = 1330 rpm at operating pressure at six bar_e with controls.

a = throttles b = air-preparation unit c = shut-off valve.

The specific features of pneumatic motors can be most easily illustrated by comparing them with electric motors.

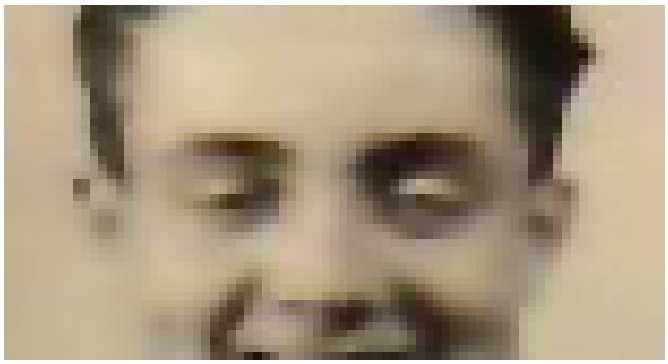
Therefore, I have prepared a schematic comparison of the standard parameters for a typical three-phase electric motor above left and a comparable pneumatic motor to the right of it.

The best way I looked at it, is to think in terms of those aspects of electric motors that have given me problems now and again in my design work.

Then I take a look at the situation with the pneumatic motor.

The schematic comparison makes it easy to visualize differences here.

I for one spend time visualising all things around me regardless into some format, which lets me view things in a different light than that which education allows you to do.



These are the actual eyes that watch everything around them and reason why things behave in the manner, which they do.

That made them want to know more about life, structure and function and the study of you in all detail from structure to function – my future needs this information.

Beware I am watching you watching me watching you.

Strange you do not know why I am watching you, because I want to understand how the Homo sapiens is deteriorating and how, or how changes are affecting age process, base upon my knowledge half the world have big problems in health that should had never been and I understand why this has happen.

By Genetic, testing of couples before marriage or planning a family whichever is the soonest would identify critical problems and such plans can be terminated before they start – such couples could adopt a child, this would slow down the rate of problems but would take a few generations to bring these health problems under control.

Sorry I change subject here but the next drawings I did not wish to break up the contents so keeping for the start of the next page.

Hoping that small break will allow your brain to catch up with your eyes.

Let me present the characteristic curves upon this issue to show the facts what I had to evaluate in the planning of ***Star Ship Ezekiel MK V***., which applies to any future program.

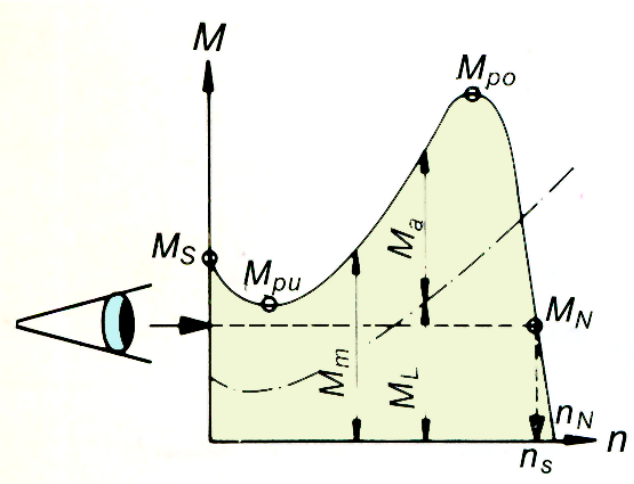


Figure 17.3 Electric motor

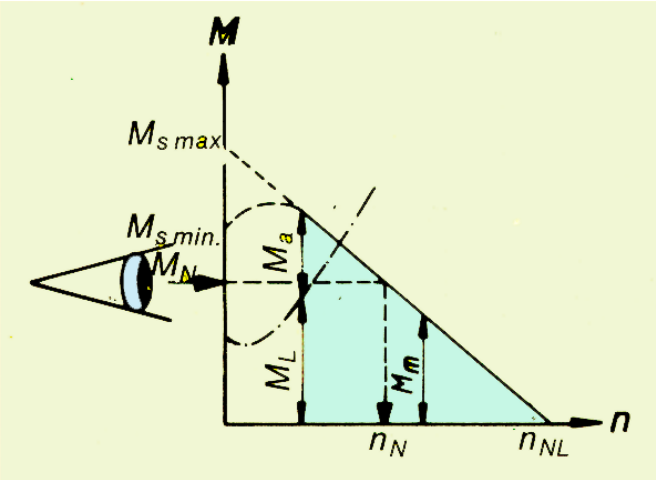


Figure 17.4 Pneumatic motor

FIGURE 17.3

M = torque in Nm ***n = speed in rpm.***

Mn = rated torque ***M_m = motor torque*** ***M_L = load torque*** ***M_a = acceleration torque***

M_s = starting torque ***M_{po} = pull-out torque*** ***M_{pu} = pull-up torque*** ***n_N = rated speed***

N_s = synchronous speed.

Figure 17.4 Pneumatic motor

M_N = rated torque ***M_m = motor torque*** ***M_L = load torque*** ***M_a = acceleration torque***

$M_{s\ max.}$ = starting torque ***$M_{s\ min}$ = min. starting torque*** ***n_N = rated speed***

$N_{no\ load}$ = no-load speed.

Now before continue with my approach system used to evaluate the options for flight, I wish to make clear that the flight power train is the ***Searl effect generator (S.E.G)*** but of a far more complex nature to those used for ground base operations.

Another issue, the ***Searl Effect Generator (S.E.G.)*** once constructed never stops.

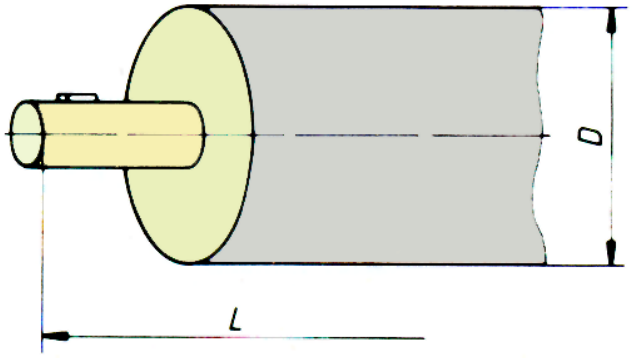
Therefore, the ***Searl Effect Generator*** is either under load function or not under load function – meaning its running at cruising speed – speed changes with voltage change, which proven with the mock-up.

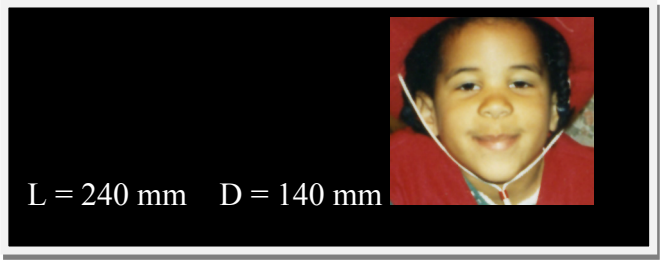
The ***Searl Effect Generator*** regardless of its application has an idle speed when off load, and as far as the Homo sapiens sight is concern cannot detect any form of acceleration when it switches on load.

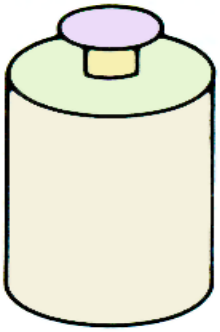
It appears to all sense and purpose to switch instant to the new rate of rpm; if and that maybe a small word with a great meaning, there is in fact acceleration factor involved then it has to be an extremely small window for one not to be able to witness it.

In this report, I am looking for a solution to operate the landing legs and flight cells etc.

Let me give you some insight in reference upon the dimensions and weights from which I must evaluate options:



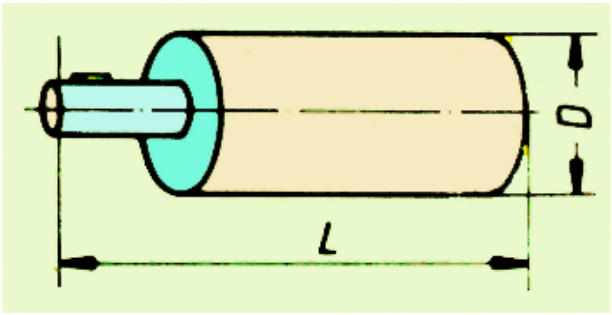


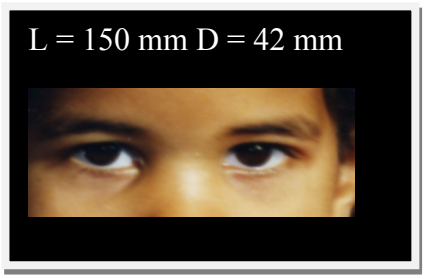


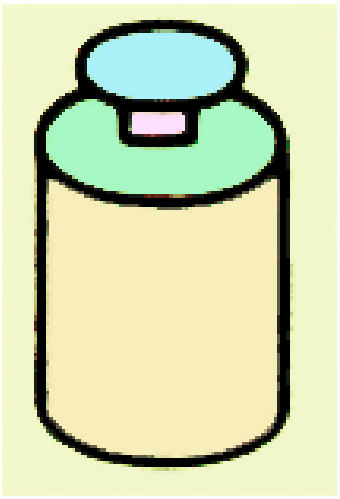
~ 5kg.

The solution for a commercial space operation: design is not simple but unless we search for answers: nothing of worth will ever be achieved.

The answers are there somewhere, we just have to find them; and find them we shall!







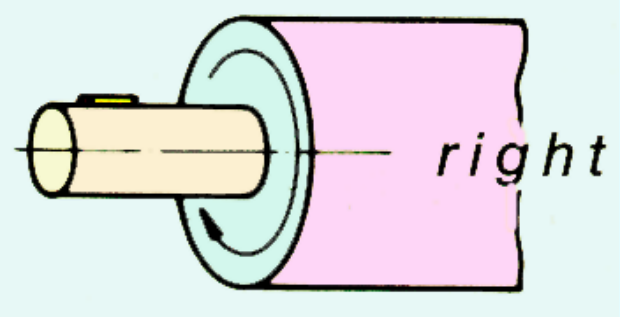
~ *0.75 kg.*



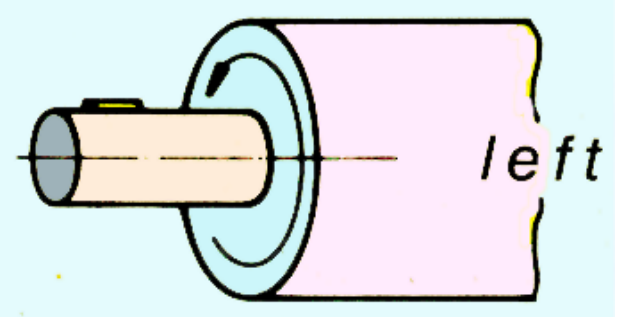
Here I have been showing my thinking as a child. Not as an expert – but as an observer – without standard education as defined by the experts; regardless of their claims I am free to think and to act upon the results of that thinking regardless of those experts claims that it will not work – it's impossible – yes it is impossible in their domain; but it's possible in my domain.

Let my eyes continue with the facts of time now past; that you may understand what and how I was able to uncover the tools that unlocked the door of the future that is meant to be.

DIRECTION OF ROTATION ELECTRIC MOTOR:

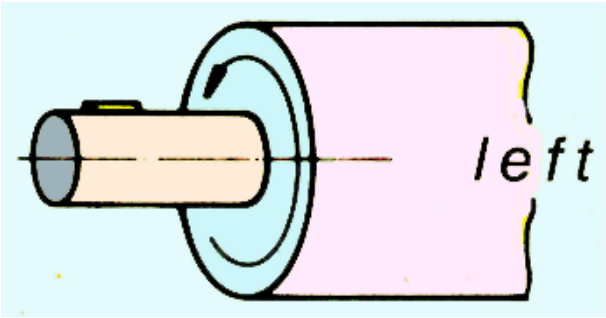


Standard indication.

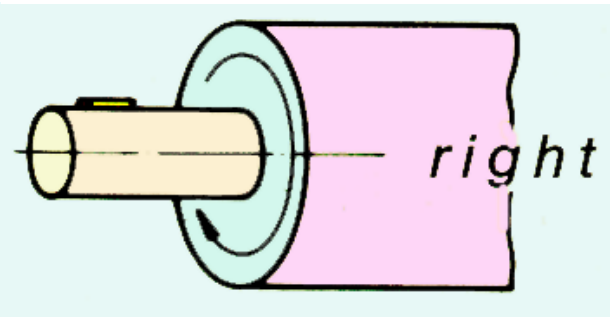


By reversing polarity.

DIRECTION OF ROTATION PNEUMATIC MOTOR:



Standard indication.



Only with reversible types.

Yes, for adult mind, this was an easy matter to understand; but this is a young man mind trying to understand his childhood dreams and bring them into reality without the basic understanding of science, which he is trying to make sense of.

To force the issue he took on this massive task of ***Star Ship Ezekiel MK V***. design to evaluate his dreams to a structure concept of functions that would result in a commercial operated space business.

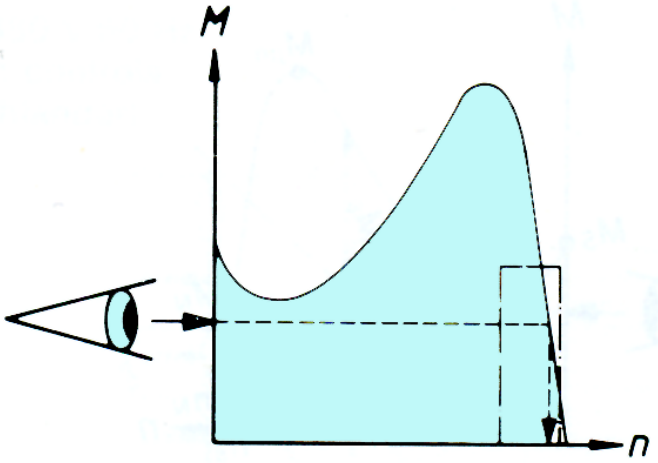
Searl therefore openly perform this work for the media to watch and they reported this work for a period of two years when he said stop; as he just could not get the work done, as he was trying to please them day after day.

Let us face reality, the horizontal structure for space is much harder to develop than the vertical concept that in itself was extremely costly and lot of disappointments along the way to success; for both the U.S.A. and Russia.

Star ship Ezekiel MK V. project I shall use because that was the time slot from 1968 until 1979 of mass media activity to show the work that I undertook to test the ideas out from the dreams of a young child.

Not one reporter had the intelligence to realise what they were looking at – to their minds it was just a great joke that sold their paper; the only interest they had was how many papers could be sold on the story.

Reality is extremely difficult for those who live in the domain of fantasy, and for the experts alike.



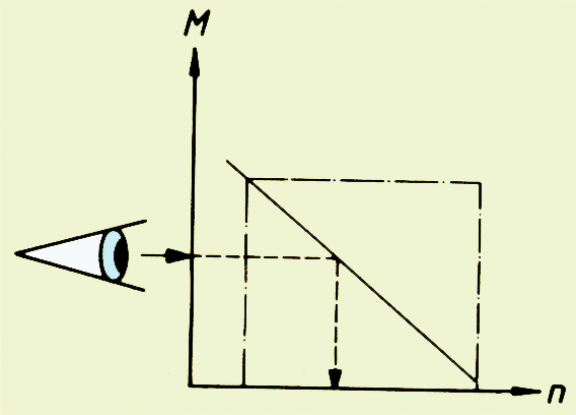
Narrow range of operation with ~ constant speed

rated data

range of operation



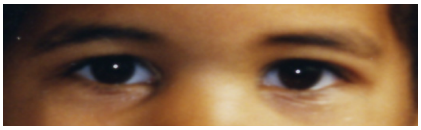
TORQUE / SPEED RELATIONSHIP ELECTRICAL:



Wide range of operation with variable speed.

rated data

range of operation



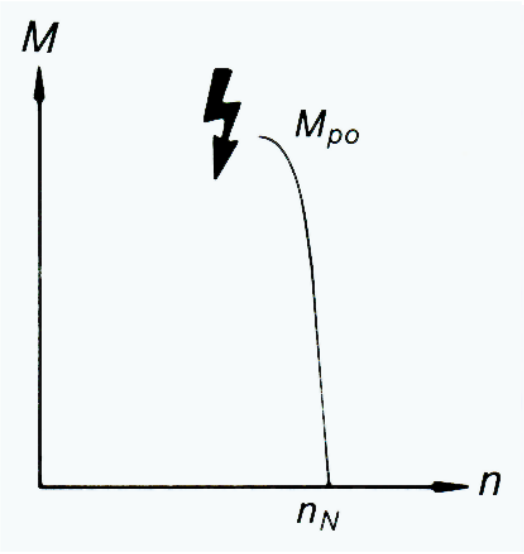
TORQUE / SPEED RELATIONSHIP PNEUMATIC MOTORS.

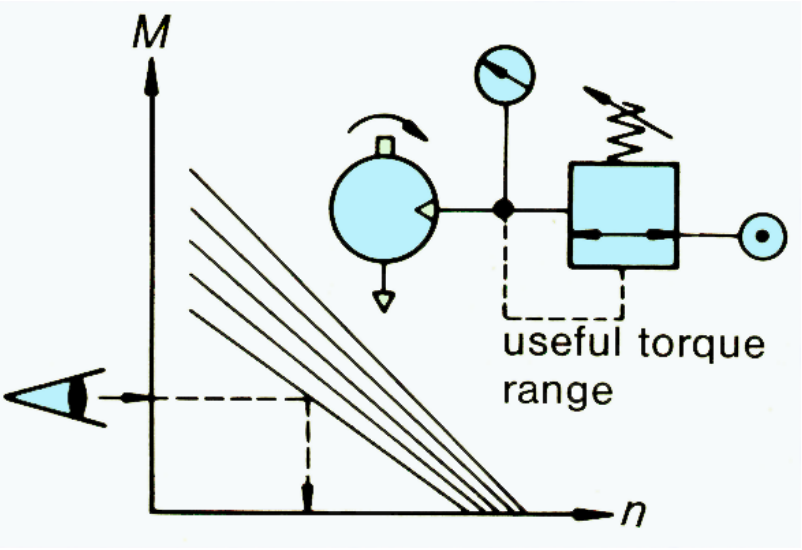


Thailand is still number one in the effort of reproducing the Searl Effect generator at this date.

Freddie is working hard to interest people that such technology is within reach of man's capability.

The world is now looking at the Searl Effect Technolog (SET).





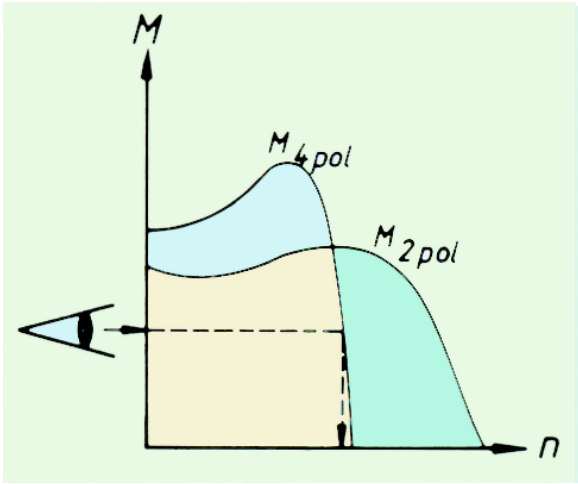
TORQUE ELECTRIC MOTOR:

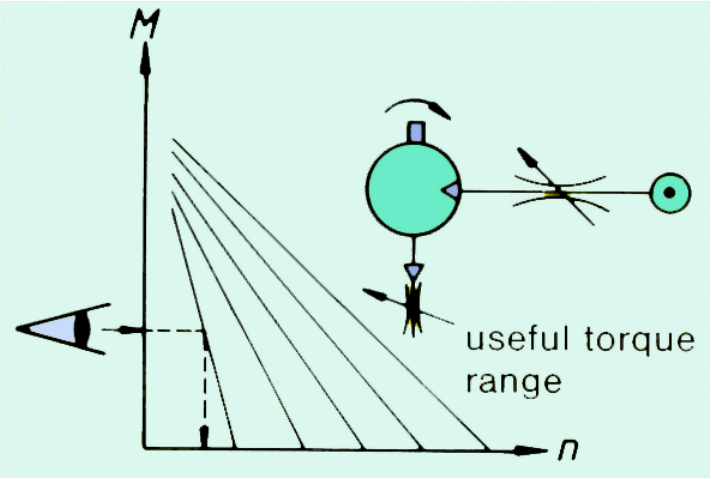
Invariable, a = function of M_L

Because of n_N and therefore limited by M_{po}.

TORQUE PNEUMATIC MOTOR:

Variable from 50% to 100% of M_s by means of pressure regulator.





ELECTRIC MOTOR SPEED:

Two-stage, 50% and 100% of n_N by Switching pairs of poles – Dahlander Circuit.

PNEUMATIC MOTOR SPEED:

Variable from 29% to 100% of n by means of Adjustable restrictor.

Agree that within my books, I have stated that the primary function of landing legs and flight cells would be hydraulic rams – but before that decision was taken, I had to study all options of function regardless to certify to myself, which would be the better option.

What you witness here: is one of those steps I had to take.

Starting with this introduction part, for the sake of those of you who have no idea of what I am talking about, even if it makes no difference to you in that respect; if it looks good what difference does it make if you still do not understand it.

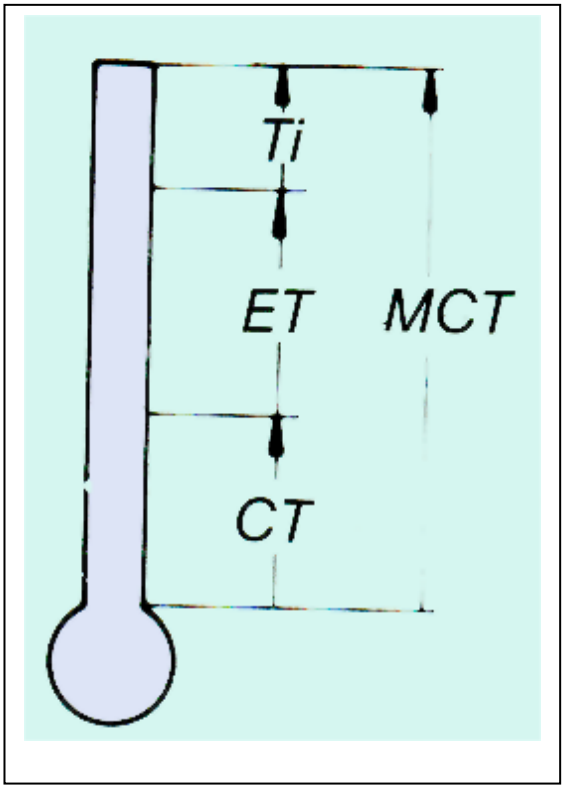
OPERATING TEMPERATURE ELECTRIC MOTOR:

CT = Coolant temperature – ambient temperature.

ET = Excess temperature

Ti = Temperature increase

MCT = Maximum authorize constant temperature



The operating temperature is limited by the physical properties of the insulation materials.

The MCT should not be exceeded because the heat-Absorption properties become steadily worse.

Because of the change in the relationship between the State of the insulation and the reaction of the motor Protection switch, there is a danger that the insulation Will burn through.

This is just one of hundreds of problems, which I have to take into account in making my judgement upon which option would serve the purpose of ***Star Ship Ezekiel MK V operational functions*** best in the long term.

Remember that the problem before me is that of long-term missions into deep space not local runs to the Moon or the ISS they are just a bus ride away.

Our thinking for deep space missions of long-term durations require a completely different approach, one that is truly reality and has no fantasy or crap attached to it. Very few today actually is free from these brainwashing effects; so far I have only found one of them and in reality you cannot fly to Mars with a crew of two and perform a two year mission or more: to make the economics valuable to go there in the first place.

A commercial operation must make a profit to exist – that profit can be in data recovered upon the planets life cycle if there has been any form of life there and how far did it advance before it vanished and why did it vanish.

We now understand why life vanished that issue is now very clear, what is not clear is if life ever existed at any time and if it did what form it had achieved before being wiped out.

This knowledge gain would give us a better understanding how life might end here:

Though I have a good picture how that will happen; as today, there are so many pointers to the reality of life and how it is possible for it to exist and that reality is fading fast and I see hardly anyone trying to slow it down; lots of great talking nothing actually doing that is where the problem lies. From my end, I have been giving my life to solving problems in how to save you in the coming events of nature, which have now already started to happen.

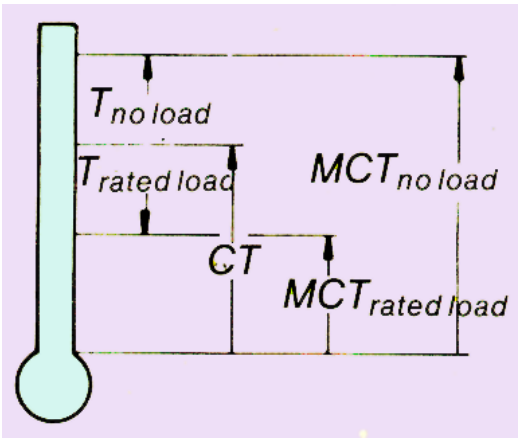
$MCT_{NO\ LOAD}$ = *Maximum authorised constant Temperature With no load.*

$MCT_{RATED\ LOAD}$ = *Maximum authorised constant Temperature with rated load.*

CT = *coolant temperature – ambient*

$T_{no\ load}$ = *increase in temperature with no Load*

$T_{rated\ load}$ = *increase in temperature with rated Load.*



OPERATING TEMPERATURE PNEUMATIC MOTOR.

The operating temperature is limited by the physical properties of the vanes and seals, which I can appreciate that issue.

It is approximately 100^0C and may be increased to 120^0C briefly.

Clearly that is one major issue that I must consider within my thinking; knowing that the total team effort relies entirely upon my acceptance of a component part for a precise structure and its function not to fail under load.

There are many firms who know what the feeling is like when their equipment failed at a public meeting; and I have also experience other companies equipment failing at my meetings likewise, whereas so far to date my own equipment has never let me down in public, of course there can be a day yet to come when I will have to face such an event happening, As long as it is not while I am still kicking.

Please forgive me if I get carried away from time to time as I am writing from my heart, and my heart gets exciting when I am writing; a major problem it has a habit of telling the truth and many people never like to see the truth do they Flowerbower?

NOTE that higher temperatures result in premature wear of vanes and seals.

The temperature of the pneumatic motor increases to approximately 20^0 above ***CT*** with no load and decreases to approximately 20^0 below ***CT*** under the rated load.

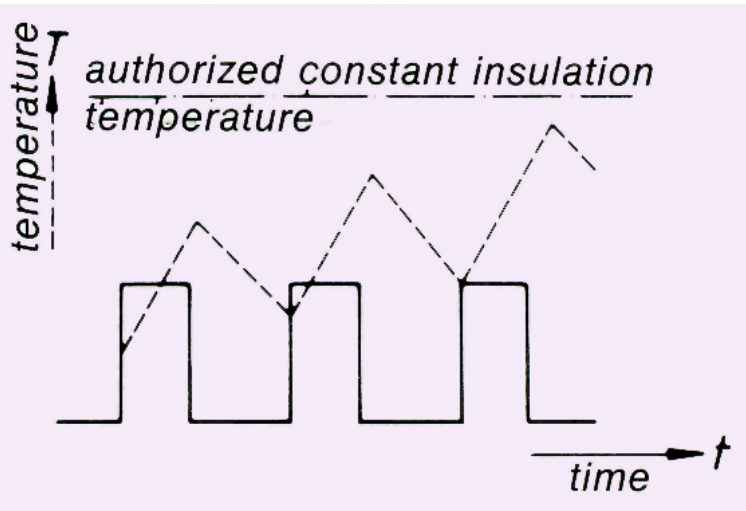
How strange; the ***Searl Effect Generator (S.E.G)*** off load operates at room temperature, but temperature decreases with load increases.

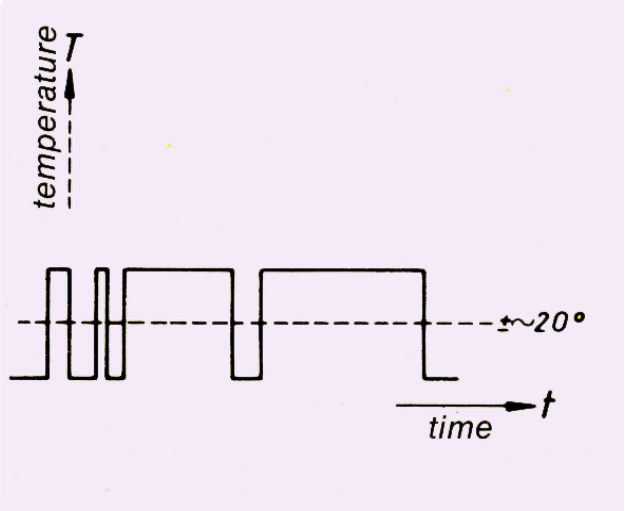
Are we saying that the roller sets of the ***Searl Effect generator (S.E.G)*** are acting in a manner similar to that of the vanes of the pneumatic motor?

Interesting thought.

So far in this introduction I am purely laying down the base of the subject of the pneumatic motor in relation to the electric motor, from which, hopefully you will be able to follow the greater details in the next chapter of this book.

Let me confirm here that in the mass production lines of the S.E.G pneumatic motors will be employed.





CYCLIC DURATION FACTOR :

ELECTRIC MOTOR:

Limited – heat created as a result of high loading

Current must be dissipated by a corresponding

Cooling phase.

Common values for this factor are 15, 25, 40 and

60%.

CYCLIC DURATION FACTOR:

PNEUMATIC MOTOR:

Unlimited – 100%

There is no limit to the ratio between the

Period of loading and the duration of the duty

Cycle.

The heat absorbed by the expansion of the compressed air counteracts heat produced by mechanic friction.



That is correct clean power to the people!

Even if ***Pneumatic motors:*** are not installed as the main functions within the ***Inverse-Gravity-Vehicles,*** they will be employed in the ***robotic*** and ***automations mass production*** of both the ***Searl Effect generator (S.E.G)*** and the ***Inverse-Gravity-Vehicles (I.G.V).***

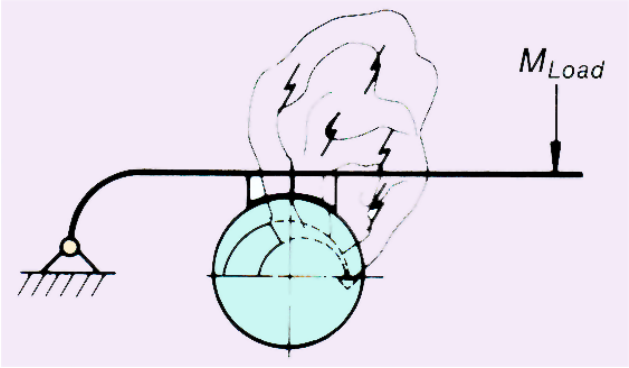
In addition, I wish here to confirm here: that I even made up a test bed as a computer for adding and subtracting and it worked perfect.

Like all the very large press photos sent me by the media at the time: have walked; the photos I can confirm was stolen by freelance reporters; clearly the term freelance is most suited, meaning steal whatever you can while the owner is not about.

However, who stole the pneumatic computer I have no idea, with so many other bits disappearing; being use at that time.

My family that I know including cash stole the railways goods and brand new electric equipment of that period, and sold for silly money payments. Life for me in those days were bloody hell and I doubt if any other man would had tolerated such a life, they would had walked out in the first 6 months of marriage where I struggled for 31 years to keep my marriage; before giving in and walked out for good.

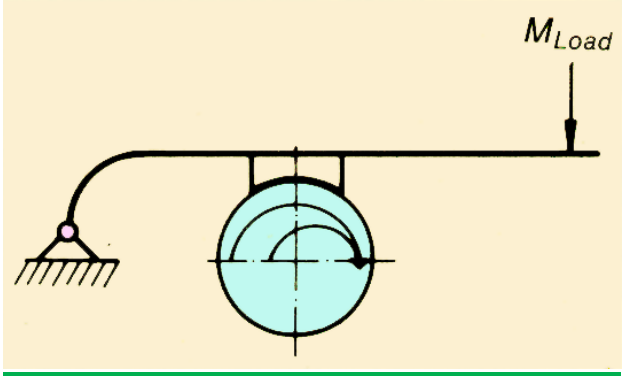
STANDSTILL LOAD ELECTRIC MOTOR:



Can cause problems: because the motor protection switch cuts off the power in the case of excess temperature and; then turns it back on after a specific period of time elapse.

If this process is repeated at frequent intervals, the insulation may be exposed to dangerous pockets of heat in the winding.

STANDSTILL LOAD PNEUMATIC MOTOR:

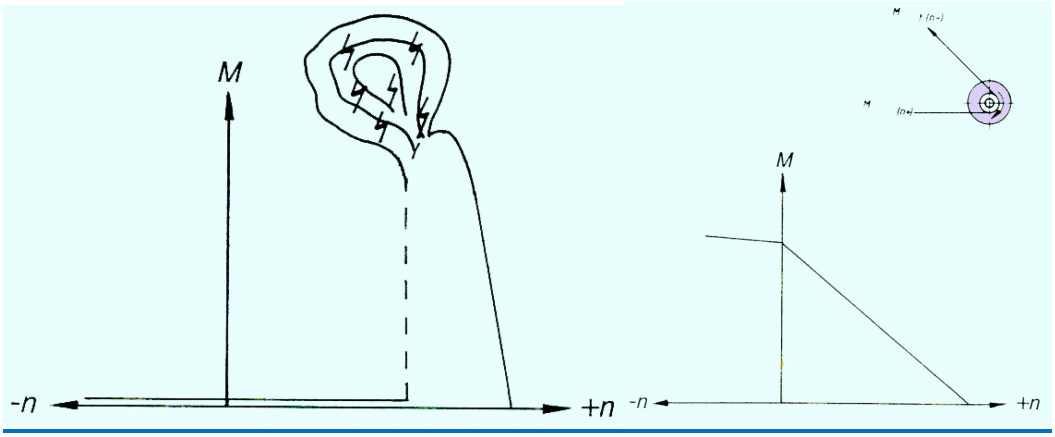


No problem and no danger: because the motor can withstand loads that bring it to a standstill.

The motor then restarts as soon as the load torque is reduced, and the process can be repeated indefinitely.

The motor torque remains present.

REVERSING OVERLOADS;



ELECTRIC MOTOR;

As soon as the pull-out torque is reached, rotational function and torque are no longer available.

The current increases to the starting load and is Switch.

The motor then rotates with no load.

PNEUMATIC MOTOR:

Motor torque increases from M_n to M_s

In addition, stays at this value without changing direction.

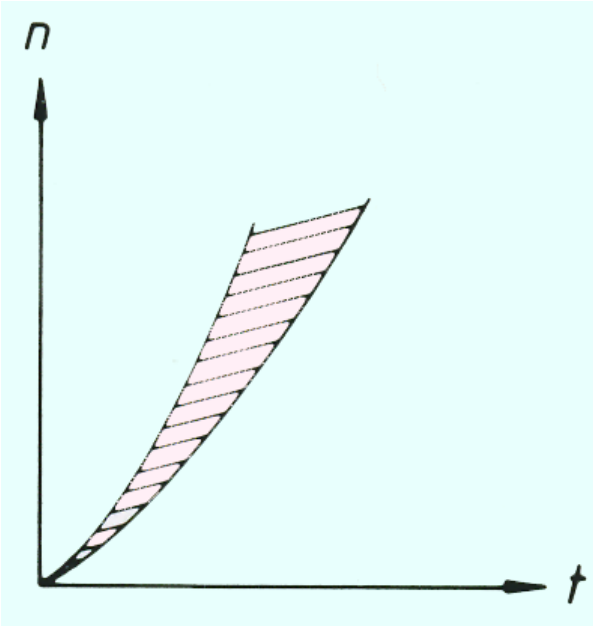
The direction of the motor is determined By the direction in which the torque is Greatest.

This type of operation requires adequate lubrication and reduced air pressure.

In addition – $M_{no\ load}$ should not be exceeded.

STARTING TIME :

ELECTRIC MOTOR:

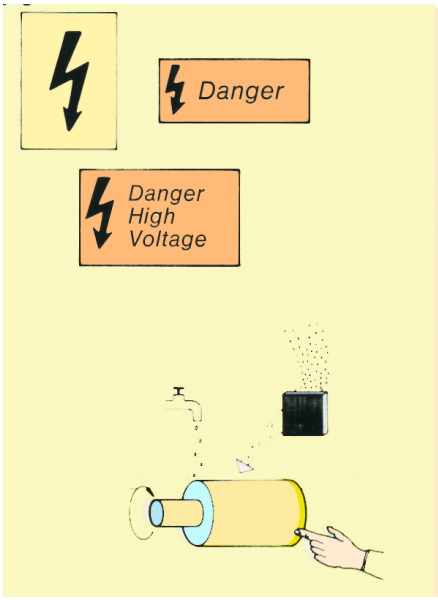


Cannot be controlled.

Starting time is a function of M_L.

It is necessary to take into account the fact

That the motor can heat up.



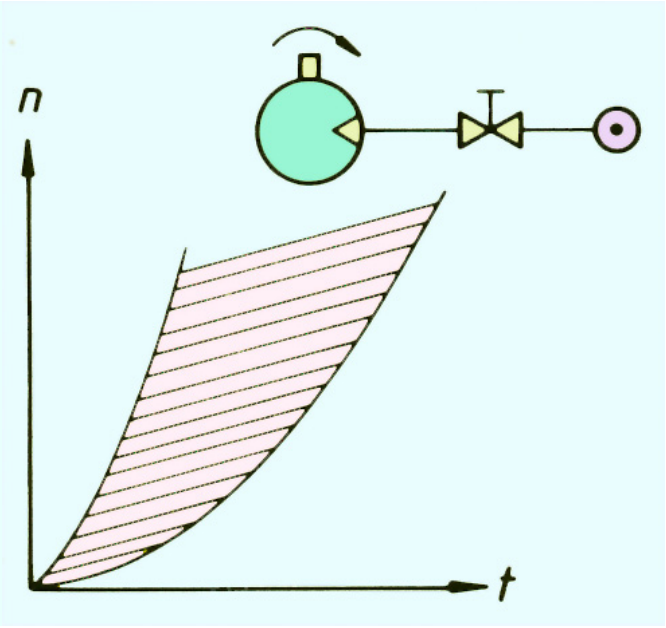
PROTECTION ELECTRIC MOTOR:

May present problems.

It is necessary to pay attention to the type of

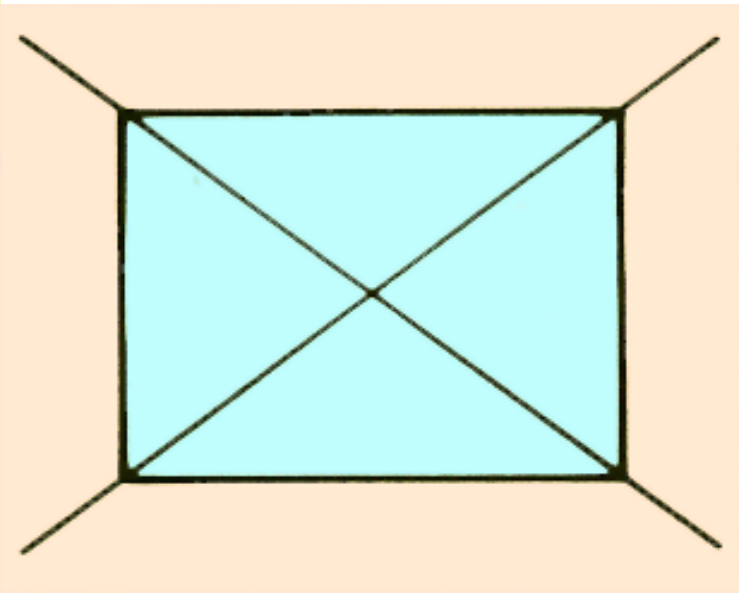
STARTING TIME:

PNEUMATIC MOTOR:



Infinitely variable as a function of the extent

To which the cut-off valve is open.



PROTECTION PNEUMATIC MOTOR:

No problems.

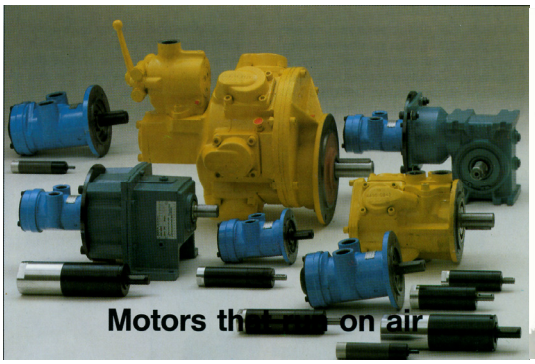
Compressed air is a form of energy that is not

Protection.

Improper operation may give rise to electrical Shocks.

Dangerous.

The pressure inside the motor keeps dust, gas and water out.





For all of you who have no idea what I have been talking about here is two pictures of motors, which run on, air which is the subject under investigation here.

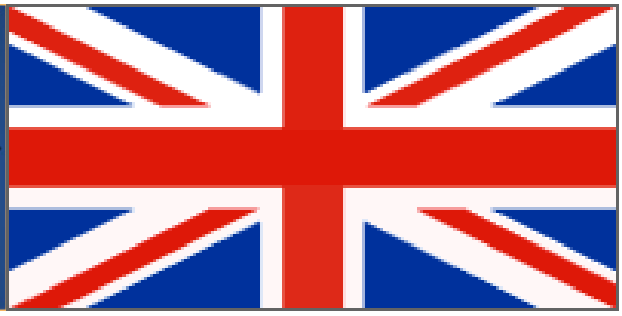
Quite naturally, such motors would be useless on planets that are like our Moon that has no atmosphere.

That was one of the major problems, which rejected their use on ***Star Ship Ezekiel MK V project***.

This completes the introduction part of this document, which has been released to the public by authority of:







Prof. John Roy Robert Searl. Head of Research and Development.

DIVISION: Manned Flight.

This repeat has colour added to it and all drawings done larger as many have requested then to be larger, with some update inserts to show how things have gone.

I sincerely hope that this change will improve its appeal to those who want to learn about how I was able to create such technology nought knowing, but just one simple game held all the information needed to create this amazing technology.

Not forgetting all those triggers needed that fell in the correct order for success.

Such as the court, homes foster home, school, naval base, electric rewinds, Chemist shop, hospital, engineering, electrical, electronics and flying all added vital bits of the jigsaw.

Without which nothing would had happen – but it did happen – thanks to those dreams that laid the foundation of an ancient technology long forgotten.

What more can I possible say – accept that the experts failed to create such concept – that upset them!

MAGNETIC EFFECTS OF AN ELECTRIC CURRENT:

MAGNETIC FIELD DUE TO A CURRENT FLOWING ALONG A STRAIGHT WIRE:

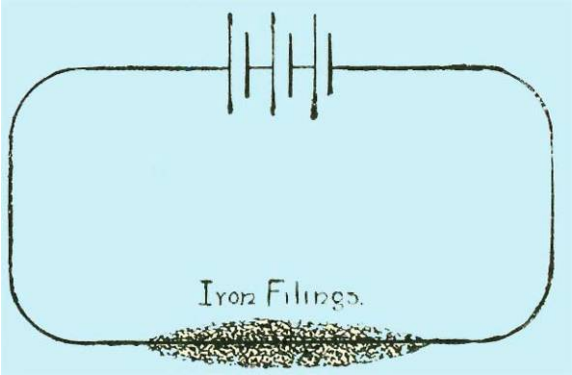


FIGURE 17.1

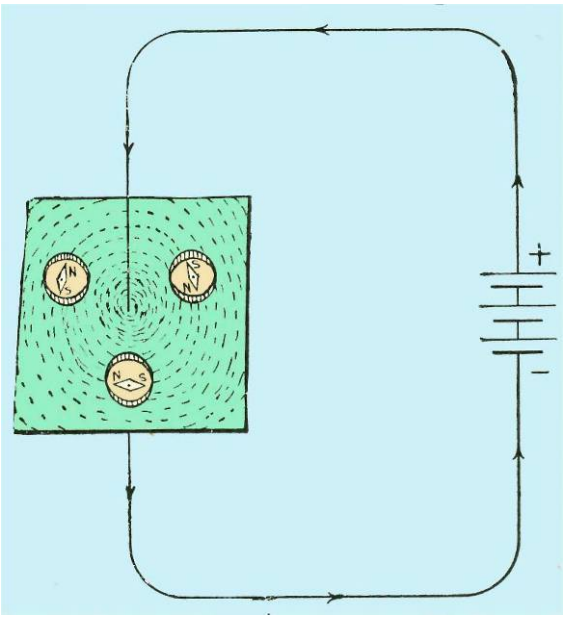


FIGURE 17.2

I have seen that an electric current possesses magnetic properties and is capable of magnetising a piece of iron Fe 26.

A few simple experiments, which I carried out, convinced me that there are lines of force surrounding a conductor conveying an electric current, which lines are identical with those processes by a magnet.

In the first place, I connect the terminals of a powerful battery with a fairly long copper Cu 29, and then I dip the wire into iron Fe 26 filings.

What I found was that the filings would cluster around the wire, as shown on Figure 17.1.

On breaking the circuit and thus stopping the current, the filings will immediately drop away from the wire.

To my mind, if not yours this effect cannot be due to the wire becoming magnetised, because copper Cu 29 is a non-magnetic material.

The same results I found can be obtained if a wire of any other material were used.

Hence, it is the space surrounding a conductor that becomes magnetic, but only so long as the current is flowing.

As further illustration, a wire can be fixed in a vertical position and passed through the centre of a piece of cardboard.

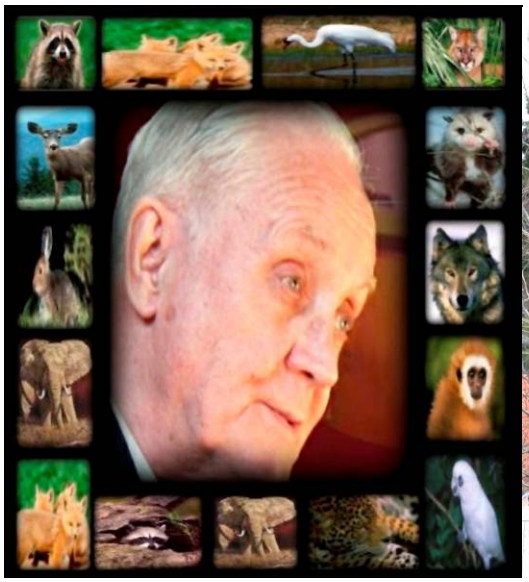
Connect the wire to a battery or any other source of electrical energy, and then sprinkle ***iron Fe 26*** filings upon the cardboard,

If the cardboard be gentle tapped, as I did do, they perform a strange affect by actually arrange themselves in concentric circles around the wire, as shown in Figure 17, 2.

NOTE here is a boy with no formal education so your experts claim; is trying to understand about electricity as he is training to become an electrical engineer.

When he did this experiment and witness the result there was a bang in his head that shock him for what he saw created an interesting issue and a big question – I guess you never in a million years question life upon such a simple experiment.

I bet you still have no idea what I am talking about and the reason is simple you are brainwashed by education and religion no doubt which block you from seeing things they don't want you to see because they do not have any answers to such questions.





Yes, everything shown here and in fact everything created by nature has one common factor that electrical experiment created in my mind as a question – but I doubt if you can see it.

Try stripping naked, stand before a full length mirror look hard at yourself front side back, what do you actually see which is common in all things created by nature, forget functions its structure that is in question.

Guess you are blinded by education why you cannot see the problem – well good thing I can see the problem.

That is another subject: that will be under discussion in relation to Homo sapiens in space missions.

This proves to my mind that the magnetic field of an electric current flowing along a straight conductor is made up of circular lines of force.

In order to confirm this, a few compass needles may be placed upon the cardboard, when they will be seen to set themselves, as also shown in Figure 17.2.

Thus, I can account for the behaviour of the ***iron Fe 26*** filings in my first experiment, as they would set themselves along the lines of force.

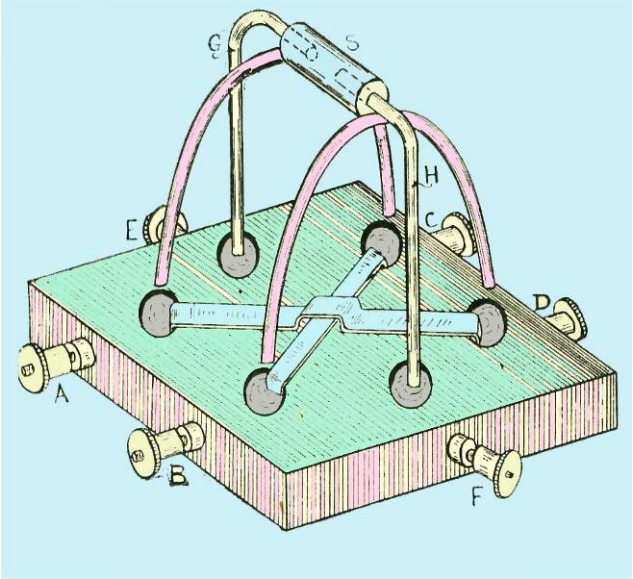
The filings would also have a tendency to move into the strongest part of the field, which would cause them to cling to the conductor, as if it attracted them, whereas the ***magnetic influence*** is in ***the space surrounding the wire*** and not the conductor itself.

By now, you ought to be getting the message that this boy of 14 years means to achieve success in the electric domain and he is without question happy about his job and commendation, vital two issues that helps a boy to learn, who has no formal education.

However, this boy has no idea what the future holds for him, and he accepts every day as it comes, no different to you I guess.

He is keeping away from girls even though some tease him during the lunch hour, but he ignores them, he does not have any idea what he is missing out on.

THE COMMUTATOR OR CURRENT REVERSER:



In a large number of experiments, I found it helps if you can when necessary to reverse the direction of the current in a wire, without changing the connections of the wire to the battery.

In order to do this, a simple appliance, called a *Commutator,* is used.

It usually takes the form of a square block of wood with a hollow in each corner in which *mercury Hg 80* is placed.

Figure 17.3.

These ***mercury Hg 80*** cups are connected diagonally by means of thick pieces of ***copper Cu 29*** wire, and two terminals ***A, B, C, D*** are connected to the two cups at each end of the block, as shown in Figure 17.3.

The swinging arm (***S***) consists of two pieces of bent wire ***G*** and ***H***, which are separated by means of an insulating handle (***S***) and connected to the terminals ***E*** and ***F*** on each of the remaining sides of the block.

This arm carries two other pieces of thick wire bent in the form of an arc, so that, by swinging the arm, they can be made to dip into either pair of ***mercury Hg 80*** cups.

When the commutator is to be used, the poles of the battery are connected to the terminals ***E*** and ***F***.

The other parts of the circuit are then joined up to the ***mercury Hg 80*** cups ***A. B. C. D.***

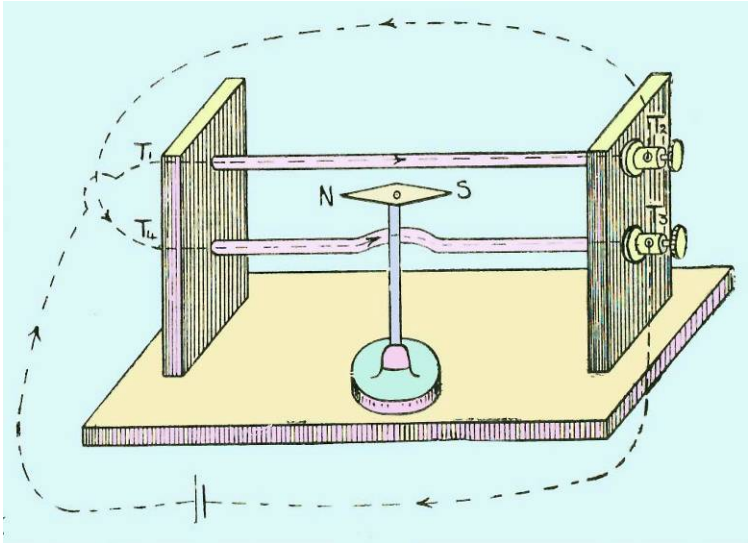
If the arm is in a vertical position, as shown in the sketch, the circuit is disconnected and no current will flow.

By swinging the arm from one pair of ***mercury Hg 80*** cups to the other pair, the direction of flow of the current is reversed in the circuit.

OERSTED'S EXPERIMENTS:

About the year 1819, unfortunate I was far too busy trying to find a father and mother to be; that I missed the coming event of a scientist named Oersted 1777 – 1851 Danish physicist:

Discovered that when a magnetic needle is placed near a wire conveying an electric current, the needle is deflected according to the direction of the current and the position of the needle.



To carry out his experiments he devised the simple apparatus, shown in Figure 17.4, which is known as Oersted's stand.

With this apparatus, he was able to observe the effect of a current upon the magnetic needle with respect to the direction the current was flowing.

FIGURE 17.4

These observations can be demonstrated by the following experiments.

Before commencing any experiments, the Oersted stand should be placed with the needle in the magnetic meridian, and the wires parallel therewith.

(a) Connect a battery to the stand so that the current will flow through the top wire in the direction from T_1 to T_2, that is, from north to south.

The north pole of the needle will then move towards east.

(b) On reversing the current by means of a commutator, switch so that it flows from T_2 to T_1, that is from south to north, the North Pole moves towards the west.

(c) Send the current through the bottom wire in the same direction, that is, from T_3 to T_4.

The needle will then be deflected towards the east.

(d) Reverse the direction of the current and make it flow from T_4 to T_3, and the deflection of the needle will then also reversed.

(e) By means of a long wire connect the terminals T_2 and T_4, keeping the wire far away from the needle, so that its magnetic effect upon the needle will be as small as possible.

(f) Now join up the battery to thermals T_1 and T_3 so that the current will flow from T_1 to T_2, through the long wire to T_4, and then along the bottom wire to T_3 back to the battery.

The dotted lines in Figure 17.4 show the connections for this experiment.

Thus, it will be seen that the current is flowing through both the top and bottom wires in the same direction.

If the needle is exactly halfway between the two wires, no deflection will be observed.

On reversing the current so that it enters the stand at terminal T_3 and leaves it at T_1, there will again be no deflection.

(g) Connect T_2 and T_3 by a wire and then join the positive pole of the battery to T_1 and the negative pole to T_4.

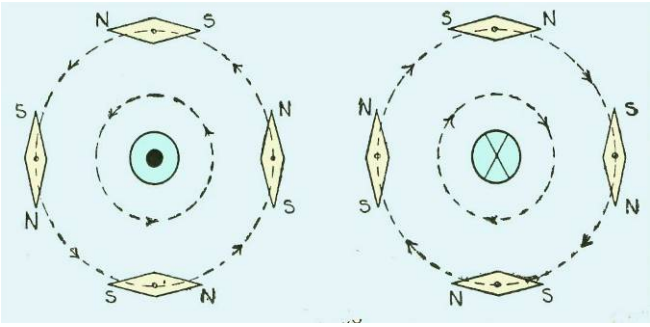
The current will then make a complete turnaround the needle, and will thus be flowing in opposite directions along the two straight parallel portions of the wire.

Consequently, the twisting movement on the needle will be much greater than in any of the previous cases.

(h) ***If the direction of the current be reversed, the deflection of the needle will be the same as in experiment (g), but in the opposite direction.***

These experiments show the relationship between the direction of the current in the conductor and the position of the needle, and form the basis of numerous rules upon which the principles and design of many machines and instruments depend.

DIRECTION OF MAGNETIC FIELD DUE TO A CURRENT IN A STRAIGHT WIRE:



When a magnetic needle is placed near a straight conductor conveying an electric current, the needle tends to set itself along the lines of force.

The needle cannot actually follow the lines of force, as they are circular, but it takes up the nearest possible position, as shown in Fig.17.5.

Figure 17.5

The needle is then said to set itself at a tangent to the circular lines of force.

In diagrams showing conductors in section, it is usual to denote the current flowing away from us thus (***X***), and with a dot when the current is flowing toward us, as shown in Figure 17.5.

The lines of force are in the direction in which the north poles of the needles point.

It will be seen by the arrows that the lines in the right-hand side diagram of Figure 17.5 are in the same direction as that in which the hands of a clock move, or, as it is technically called, in a ***clockwise direction***.

The lines of force at the left hand side are in the opposite or ***counter-clockwise direction***.

Hence, the direction of the lines of force is reversed when the direction of the current is reverse.

MAXWELL'S CORKSCREW RULE:

James Clerk Maxwell 1831 – 1879 Scottish physicist showed that the direction of the current and its magnetic field are related to one another in the same way as the forward and backward motion and directions of an ordinary corkscrew.

When I drive a corkscrew into a cork, I rotate it in a clockwise direction.

Similarly, when the current is flowing down through the wire – ***see right hand Figure 17.5*** -, the lines of force will have a right-hand or clockwise direction.

In withdrawing the screw from the cork, it is rotated in a counter-clockwise direction.

Therefore, when the current is flowing up through the wire – ***see left hand figure 17.5*** – the lines of force

Will have a left hand or counter-clock-wise direction.

This rule can therefore be expressed as follows:

Imagine a corkscrew being screwed along a wire in the direction in which the current is flowing.

The direction in which the screw rotates indicates the direction of the lines of force.

By the aid of this rule, I have a clear explanation of Oersted's experiments, and it also suggests that a compass needle will be deflected in one direction when placed above a wire conveying a current, and in the opposite direction when placed below the wire.

AMPéRE'S SWIMMING RULE: is another very useful rule to remember, but it requires a little more imaginative effort than the corkscrew rule.

Imagine a person to be ***swimming with the current*** and his / her ***face towards the needle***.

The North Pole will be deflected towards his / her ***left hand***.

In all these experiments, an electric current can be produced by using a few chromic acid cells.

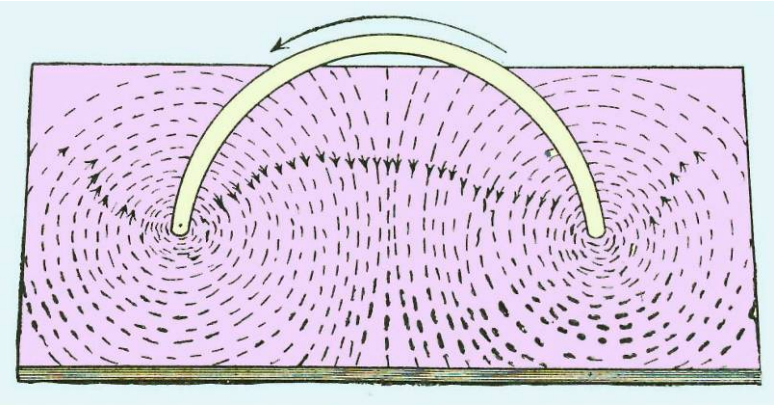
It should be remembered that the magnetic field surrounding a conductor is dependent for its maintenance upon the ***flow of electricity***, because a body charged with static electricity has no magnetic field and therefore has no effect upon a neighbouring magnet.

Therefore, it would be correct to state that in the Searl Effect Generator (S.E.G) until the roller sets are placed upon the plates there is no electricity, only static electric is available in both plates and roller sets.

Therefore, there is no magnetic field available.

Once the rollers sets are in place, then there is electricity available thus, a magnetic field becomes active.

MAGNETIC FIELD DUE TO A CURRENT IN A CIRCULAR WIRE:



If a wire be bent to form a loop or circle, and a current passed through the wire, lines of force will circulate in the immediate neighbourhood around it, as though the wire were straight.

FIGURE 17.6

On following these lines, it will be seen that, within the circle, they all have the same direction.

The magnetic field due to such a circle of wire can be shown by a piece of cardboard placed across a diameter of the circle, as in Figure 17.6.

By sprinkling, ***iron Fe 26*** filings upon the cardboard and switching on the current, a map of the magnetic field will be obtained as shown.

What do you think of that FLOWERBOW – I guess you have no idea being such a big expert of bullshit!

It will be seen that all the lines pass through the inside of the circle in one direction, and if the current were reversed, they would pass in the opposite direction.

The iron Fe 26 filings show that the lines of force at each side of the loop are in the form of concentric circles, and the arrows show their directions.

This was the findings also of the ***Inverse-Gravity-Vehicle (I.G.V)*** that the magnetic field leaves the periphery in concentric circles, similar in nature like ripples on the surface of water when a stone is dropped in.

As the lines approach the centre of the circle, they tend to flatten on the inside and travel through the circle in straight lines.

Thus over a small area in the centre of the circle the lines of force are parallel and at equal distances from one another.

I can therefore say that the magnetic field at the centre of the coil is uniform.

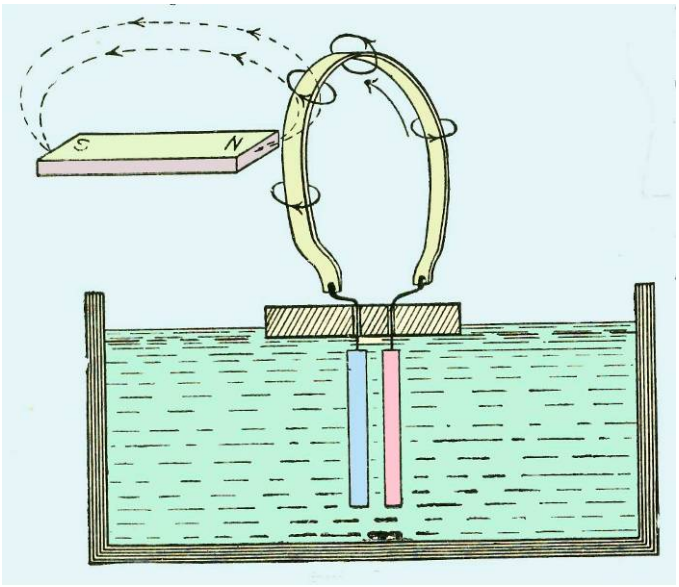
It will also be noticed that, as the lines of force pass through the circle they enter it at one face and leave it at the other.

The two faces of the circle will have opposite polarity, which again prove that the law of the squares hold true even here, the face from which the lines of force leave the circle being of North polarity, and the other face of South polarity.

Since I know that, the lines of force leave a magnet at its North Pole and entre it at its South Pole.

I can consider the coil of a single turn of wire as resembling a magnetised disc of steel of the same diameter as that of the circle of wire, and magnetised in such a way that the opposite faces of the disc have opposite polarity.

I can also look at the magnetic layer of the roller sets in the same light, including those of the plates of the ***Searl Effect generator (S.E.G).***



A disc of steel magnetised in such a manner is usually called a MAGNETIC SHELL, and a magnetic shell which possesses a field of force identical with that of a current passing through the wire circuit is termed the EQUIVENT MAGNETIC SHELL OF THE CIRCUIT.

It should be remembered that when considering the magnetic field of a single turn of wire, the lines of force do not lie only in the plane, but they encircle the wire all round the coil and pass through the interior at all parts.

Figure 17.7

This is identical to the plates, roller sets of the Searl Effect Generator (S.E.G), in some ways the plates, and roller sets appear similar in nature as a single wire loop.

De La Rivé's Floating battery: is used to demonstrate that a circle of wire through which an electric current is passing resembles a magnet in all other respects.

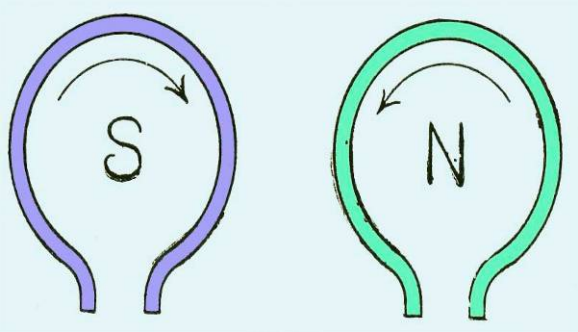
It consists of a large dish containing ***dilute sulphuric acid***, into which is placed a plate of ***zinc Zn 30*** and one of ***copper Cu 29***, similar to those used in the simple voltaic cell.

Two short pieces of wire are attached to these plates and passed through the holes in a flat cork.

The free ends of a loop of thick copper Cu 29 wire or strip are fixed to the ends of the wires, which project above the cork, as shown in Figure 17.7.

The loop is so arranged that it is vertical when the cork is floating, and as the loop is connected to the battery – ***thus completing the circuit*** – it will set itself in a position at right angles to the magnetic meridian.

The two faces of the loop therefore exhibit magnetic polarity.



By tracing the direction of the current and applying the corkscrew rule, I can find the polarity of each face.

Thus, if I look straight at the plane of the loop, as in Figure 17.8, and the current flows round the loop in a clockwise direction, then the face I see has south polarity.

Figure 17.8

If the direction is counter-clockwise, then the fact I see has north polarity.

This can be verified by bringing a bar magnet near the loop and observing how it is attracted or repelled, according to the pole presented.

Suppose the south pole of the magnet be brought towards the centre of the north side of the loop, the wire will be immediately attracted by the magnet, along which it will move until it reaches the middle, or the equator, where it will remain at rest.

This is clearly witness in the mock up that have been demonstrated on the websites.

Similar results will be observed when the north pole of the magnet is brought towards the centre of the south pole of the loop.

On presenting the north pole of the magnet to the North Pole, side of the loop the latter is immediately repelled.

The loop will, however, only move away for a short distance, when it will turn round until its south side is facing the north pole of the magnet, and then it will be attracted as in the previous case.

This is basic the Searl Effect action in the Searl Effect generator, the difference being that many magnetic fields are in action at the same time.

If the south pole of the magnet were moved towards the south side of the loop, I again have repulsion and then attraction.

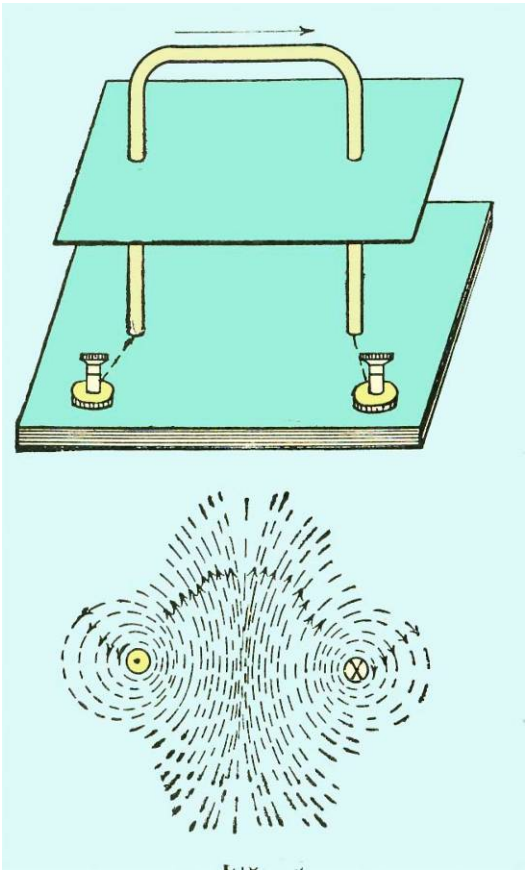
Referring again to Figure 17.7, I see that the magnetic field due to the current is in the same direction as that of the magnet, and therefore the two fields attract each other until they reach a position where their forces are in equilibrium, that is, when the loop reaches the equator of the magnet.

If two such batteries and loops are placed in the same vessel, they will set themselves in such a position that the loops are parallel, with their circulating currents flowing in the same direction.

Two Parallel Straight Conductors conveying Electrical Currents:

When two conductors conveying electric currents are placed parallel to each other, they attract or repel one another according to the direction of the current in each.

It is obvious to my mind, from the experiments described, that attraction or repulsion is due to the force set up in the intervening space by the magnetic fields of each wire.



To thoroughly understand this I must consider the magnetic field due to the currents in both wires.

This may be done by using the simple appliance shown in Figure 17.9, which consists of a thick copper Cu 29 wire arranged in a rectangular and vertical position and fixed to a baseboard with two terminals.

When a battery is connected to the terminals, the current will flow up one side of the rectangle and down the other.

Hence, I have two parallel conductors conveying currents in opposites.

The magnetic fields due to the current in each conductor can be investigated by sprinkling iron Fe 26 filings upon the small horizontal table.

Figure 17.9

The lower diagram in the figure shows the manner in which the filings will arrange themselves and also the direction of the currents.

It will be seen that the lines of force have opposite directions around each wire, but they have the same direction between the wires.

Now lines of force, which have similar directions, repel one another.

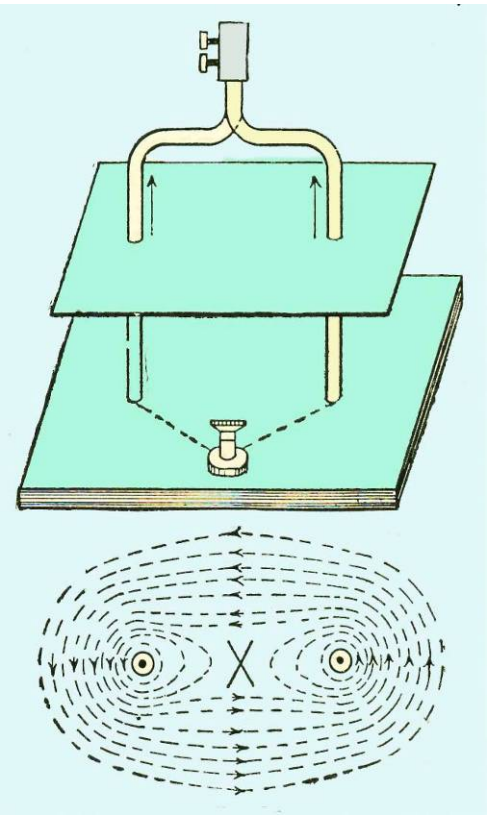
Therefore the two conductors, if free to move, would go further apart, which the mock up demonstrates.

This tendency of the conductors to move away from each other can be seen by the distortion of the lines of force.

The concentric circles around each wire are flattened on the sides, which are between the two wires, whilst they appear to bulge out on the opposite sides of the wire.

This simple experiment taught me those ***parallel conductors, which convey electric currents in opposite directions, repel one another***.

Magnetic fields due to currents flowing in similar directions can be mapped out by using the apparatus shown in Figure 17.10.



By connecting the two terminals to a battery, the current will split and flow in the same direction through each conductor.

On sprinkling iron, Fe 26 filings on the horizontal table the magnetic field due to the currents in both wires will be mapped out, as shown in the lower part of Figure 17.10.

The lines are formed in concentric circles around the immediate neighbourhood of each wire, but farther away from the wires, they become more egg shaped, with the narrow end pointing towards the centre of the space between the two wires.

Since the lines of force pass round each conductor in the same direction, that is, in a counter-clockwise direction, they will neutralise each other at a point (X) between the wires.

On the outer sides of the wires, the lines of force merge into one another and form complete chains encircling the two wires.

Figure 17.10

A careful examination of the directions of the lines shows that the conductors will have a tendency to come together.

If two conductors were suspended so that they were parallel and free to move, and a current passed through them in the same direction, the two conductors would move towards each other.

These experiments have proved to me that parallel conductors, which are conveying electric currents in the same direction, attract one another.

STOP – THINK-ACT: the ***Searl effect generator*** uses roller sets, which are feed onto a plate structure. Therefore, ***what are they representing*** – you have never stopped to think – ***you know it cannot be done*** – ***why can it not be done*** – why do experts talk with fork tongue – here you have been reading what experts have done and agree as I likewise do with them – yet they talk out of their arse – ***WHY?***

First, the roller sets are in parallel, therefore they will act as wires do in parallel if they convey current.

Therefore, each roller set will generate magnetic fields whose effects are similar to those of wire conductors.

It is the Law of the Squares in all conductors regardless if they are wire or roller sets the same law applies.

Because the torque on each roller set is causing the magnetic field to pulse from plus to negative continuously.

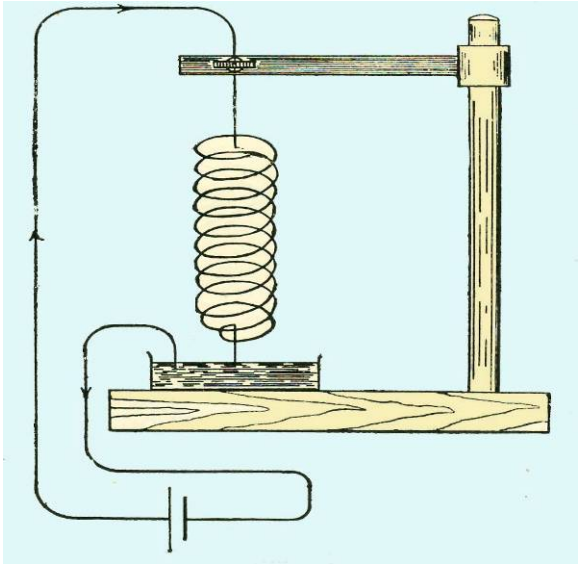
Each roller set in operation is creating the same effect that in turn is reacting against what should be a standard continuous magnetic wave on the plate that is now being force to break up into sets of magnetic waves due to the interference pattern generated by the rollers sets being mass in motion.

Each roller set magnetic wave are creating concentric circles due to the function of motion, while the generated magnetic wave of the plates are also being created in concentric circles, which the rollers set actually ride through them.

The reactions within the materials cause them to attract and then to repel, thus they suck in electrons then repel them.

In other words it is a pump, or more precise a ramjet maybe a better term.

Ampére verified these observations concerning the behaviour of parallel conductors conveying electric currents in the following manner:



A piece of wire was bent into the form of a rectangle and suspended so that it was free to turn about a vertical axis.

A current was then passed through the wire; on bringing another conductor conveying an electric current near and parallel to one of the sides of the rectangle, attraction or repulsion took place, according to the directions of the currents.

These effects were observed by the bent wire turning its vertical axis.

Figure 17.11

The forces acting between conductors carrying currents in similar directions can be shown to produce mechanical motion by the following experiment:-

Suspend a ***copper Fe 19*** spiral spring so that its upper end is fixed, as in Figure ***17.11***, and its lower end just dips into a vessel containing ***mercury Hg 80***.

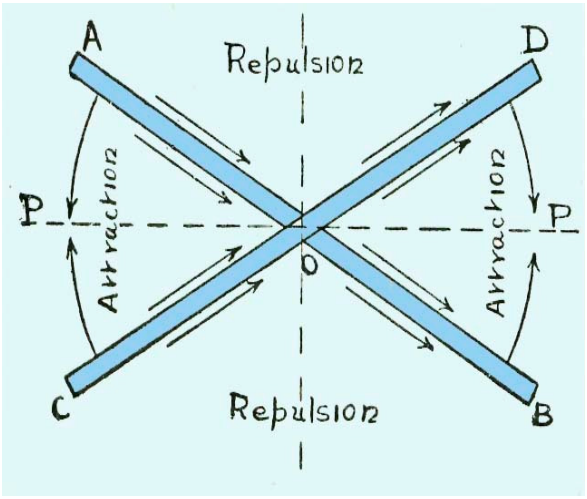
An electric current is then passed through the spiral by connecting the upper end to one pole of a battery and the other pole to the ***mercury Hg 80*** by means of a ***copper Cu 29*** wire.

The current will then flow in the same direction in each turn of the spiral, and there will be mutual attractions between each of the turns, resulting in contraction of the spiral, so that the lower end will be raised out of the mercury Hg 80, thus breaking the circuit.

The spiral will then expand to its original length, and making contact with the mercury Hg 80, complete the circuit and again contact.

In this way the spiral will vibrate, automatically open, and close circuit.

Two Inclined Conductors conveying Electric Currents:



If two freely suspended current carrying conductors are inclined at an angle to each other, the forces acting between them tend to bring the conductors into a parallel position.

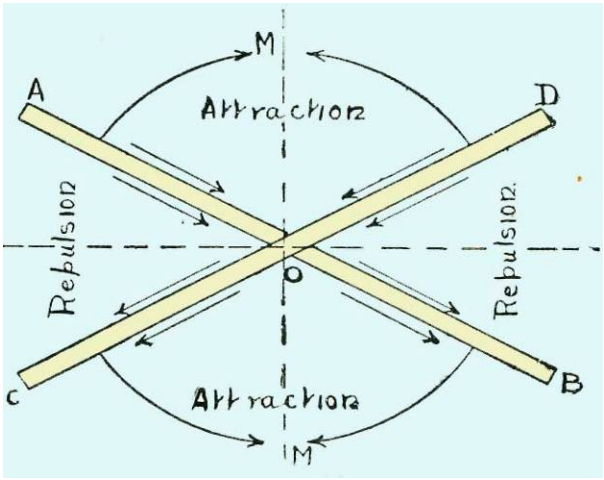
This is explained by diagrams.

Thus, in Figure 17.12, if AB and CD are two conductors conveying currents, as indicated by the arrows, the conductors will be urged to move so they become parallel.

Figure 17.12

The currents along AO and DO are flowing in different directions and there is repulsion.

The currents along AO and CO flow in the same direction, and therefore the magnetic fields will attract one another.



Hence the ends A and C will tend to move towards each other, with the result that the two conductors would take up the intermediate position PP.

Similarly in Figure 17.13, I have attraction between the currents the currents in AO and DO, and repulsion between AO and CO.

The two conductors will therefore tend to take up the intermediate and parallel position MM.

Figure 17.13

MECHANICAL MOTION PRODUCED BY A MAGNETIC POLE AND ELECTRIC CURRENT:

It has been shown that the direction of a magnetic field is the direction in which the north pole of a compass needle points, or the direction in which a single north pole would be repelled.

Therefore, if a single north pole, free to move, were placed in the magnetic field due to the current in a conductor, such a pole would rotate round the conductor, the direction of rotation depend upon the direction in which the current flowed along the conductor:

A single south pole would rotate in the opposite direction to a single north pole.

Since it is impossible to obtain a magnet with a single pole, I use an apparatus similar to that shown in figure 17.14, in which only one pole of the magnet is affected by the magnetic field due to the current; a bent

Magnet is supported on a pivot so that it is free to rotate about a vertical axis.

A conductor is connected to a battery by means of the central mercury Hg 80 cup MC and the circular channel CC containing mercury Hg 80.

This conductor is held parallel to the upper half of the magnet by means of an insulated support, and when an electric current is passed through the conductor in a downward direction the magnet and central mercury cup will revolve in the direction indicated by arrows.

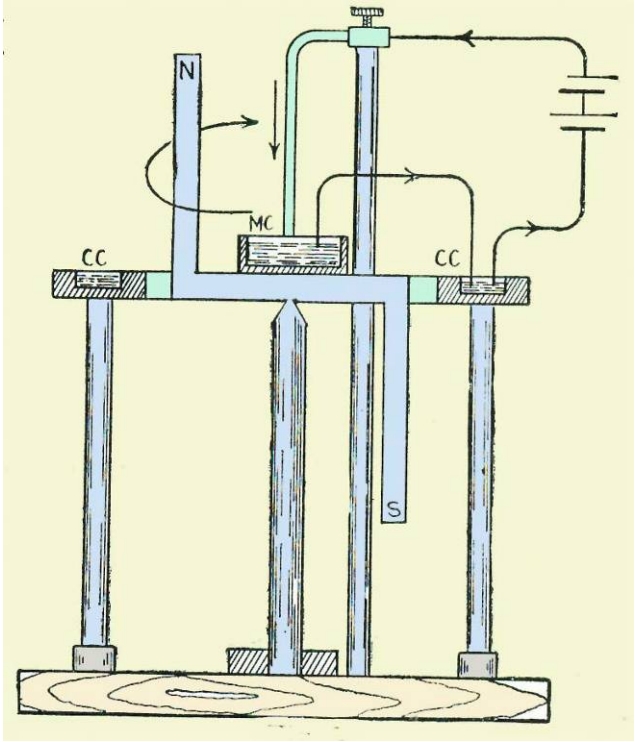


Figure 17.14

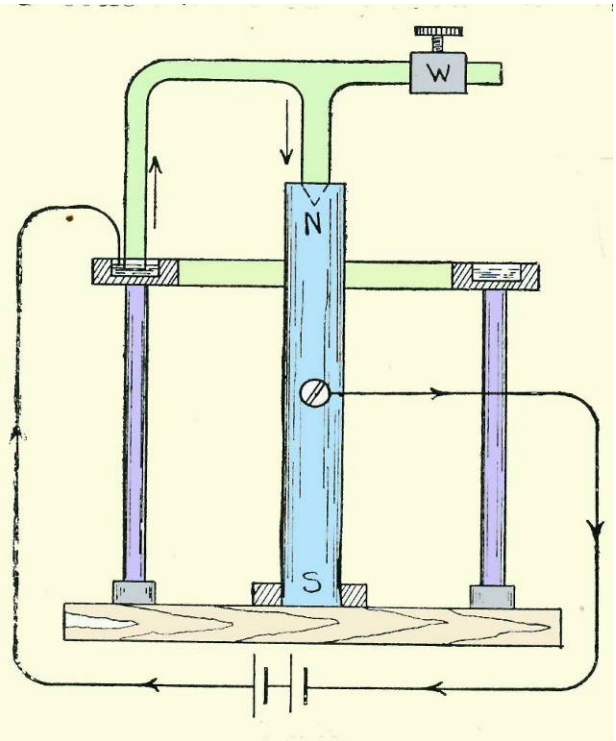


Figure 17.15

If a strong current and a powerful magnet be employed, a speed of one hundred revolutions per minute may be obtained.

By reversing the position of the bar magnet or reversing the direction of the current, the magnet will rotate in the opposite direction.

If, instead of having the conductor fixed, the magnet be fixed, the conductor will move around the magnet.

This can be demonstrated by using the apparatus as shown in Figure 17.15; but, instead of employing a pivoted bent bar magnet, an ordinary bar magnet is fixed in the stand.

In order that the conductor may turn freely about the pivot on the top of the magnet, a small balance weight (W) is attached to the end of the conductor.

When the current is switched on, the conductor will rotate round the magnet in a counter-clockwise direction, as seen from above, and remain vertical and parallel to the magnet.

These experiments show mw how mechanical motion can be produced by an electric current.

The present day electric motor is the outcome of these simple experiments first performs by a scientist named Michael Faraday 1791 – 1867 English physicist.

Electrical energy may therefore be transmitted over a considerable distance and then converted into mechanical energy by some rotating arrangement, such as an electric motor.

This document released to the public by authority of:

HOW IT WORKS?



Prof. John Roy Robert Searl; head of research and development.

Manned Flight Division – human behaviour studies

Searl Technology Ltd

Searl Magnetics Ltd.

DISC INC. USA *NST. THAILAND.*

We are the tomorrow people for Energy & Transport systems.

SEG IS THE WAY Searl International Marketing Hub is in process of being setup.

This company set up requires equipment for its undertaken products such as



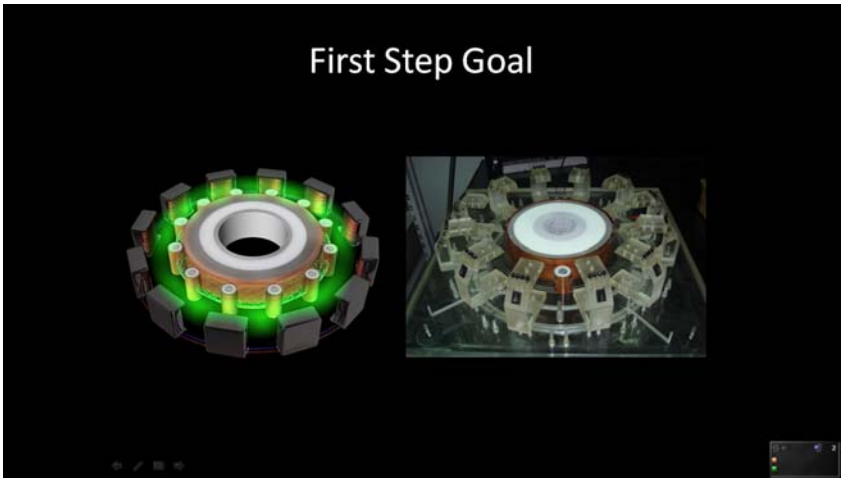
This is the Tektronix WFM3000A. Just one bit of equipment that can play a useful part of this research work.

DOC-SISRC-ST-SM-OR-1

DATE: 28th May 1968

EDITION: First.

ISSUE: Second.



Searl Technology Ltd-Glasgow-Lanarkshire-Scotland.

LOCATION : Headquarters-Glasgow-Scotland.

DIVISION : Energy and Transportation Systems.

SEMINAR : Operational Research.

LECTURER : Prof. John Roy Robert Searl.

STATUS : Head of R&D human behaviour Studies.

This document: now updated; to include changes from the original document, which was released back in 1968 as a newsletter.

In an increasing scientific and technological world, the demand from industry, business and commerce is for men and women who are both literate and numerate.

Just as ***Searl Technology Ltd*** appreciate that a good literary education is recognized as providing a base which enables and permits ***Searl Technology Ltd*** and ***Searl Magnetics Ltd*** a continuing and effective means of communicating.

The ability to understand and discuss business problems more numerately is also fast becoming a prerequisite of ***Searl Technology Ltd*** and ***Searl Magnetics Ltd*** modern managers.

It is self-evident, for example, that ***Searl Technology Ltd*** and ***Searl Magnetics Ltd*** and pending ***Searl International Marketing Hub*** that wishes to survive in a continually changing world must keep abreast of the technology available as far as its products, services and method of operations are concerned.

One of the results of this constant cyclic advancement between business and technology is that managers are required within ***Searl Technology Ltd*** and ***Searl Magnetics Ltd*** and when ***Searl International Marketing Hub*** becomes operating; to operate in a rapidly changing business environment. To implement our objectives, Governments be seen supporting its drive for they would benefit from its success.

In such circumstances, the decision situations will range from problems that are well defined and easy to structure, to problems, which are more complex or ill defined.

In an effort to help and assist the practising manager of ***Searl Technology Ltd*** and ***Searl Magnetics Ltd*** and the pending ***Searl International Marketing Hub*** across this spectrum of decision making situations, a number of new approaches – techniques – will have to be developed; these have since 1968 been developed.

In addition, many other analytical techniques for ***Searl operational Complex:*** were extended and enhanced.

The advances in the structuring of decision problems have been possible because of two, interrelated, developments, namely:

1. The development and application of high speed, low cost computing facilities for business management of ***Searl Technology Ltd*** and ***Searl Magnetics Ltd:*** be implemented within ***Searl International Marketing Hub***.

2. The development and application of numerical analysis techniques for business problems have added system skills to these companies operations.

This document is concerned with the latter development.

NUMERATE TECHNIQUES:

Not surprisingly, the methods employed in numerical analysis are predominantly mathematical and statistical in nature.

Unfortunately, these characteristics tend to cause some anxiety for the less numerate manager; rather like that of the law of the squares who may not have received a thorough and vigorous grounding in the theory behind these techniques.

Hence, although this document is concerned with providing the readers of this website with a primary revision aid, it is also hope that the approach adopted by Searl will appeal to the practising manager.

Who simply wishes to better understanding some of the numerical analysis techniques that will be employed often within ***Searl Technology Ltd*** and ***Searl Magnetics Ltd*** and the future ***Searl International Marketing Hub:*** that will appear on this website, in structuring and solving his / her decision problems.

The aim of this document then is to act as a primary revision aid for all you students who have requested me for help, who are studying for business and management examinations, and as such, the text is concise.

Readers of this website: are therefore earnestly recommended to obtain more detailed explanations of the numerical methods and techniques contained in this document.

As most operational research, studies are concerned to some degree or other with the theory of:

1. ***Probability;***
2. ***Random variables;***
3. ***Sampling.***

Therefore, in this document I shall provide the reader with some background knowledge in the area.

For more detailed information upon these companies' functions: in respect to this subject area, the reader is recommended to consult all parts of this book.

THE STUDY OF VARIABILITY:

This document: is intended to serve as a brief revision aid for the staff of ***Searl Technology Ltd*** and ***Searl***

Magnetic Ltd and the pending Searl International Marketing Hub: who have an understanding of descriptive statistics, probability and sampling.

Readers who have little or no background in these areas should study all parts of this book.

THE SCIENCE OF VARIATION STATISTICS:

Many people regard the world as being something fixed and unchanging, or at least which changes in a regular, ordered way.

Any kind of behaviour, which upsets this regular, ordered pattern, is seen to be undesirable and something, which is to be avoided.

However, in reality life is full of change, of deviations from the preferred stable equilibrium.

Man's effort to understand, control and impose order on such phenomena has led Searl to the study of variability – the science of statistics.

The reason why this field of study is important; is best summed up by Searl 1968: when at his lecture at Saint John's Hall in Mortimer Berkshire he points out that:

The science of statistics should help ***Searl International Space Research Consortium*** by acting as an analytical and interpretive tool on data, extracting conclusions, with a measurable and stated degree of justification.

The study of variability helps ***Searl Technology Ltd*** and ***Searl Magnetics Ltd*** and pending ***Searl International Marketing Hub Ltd*** to understand the variation inherent within our reality, as the all-important first steps of understanding, controlling and imposing our will on the atom to create energy for us.

STATISTICAL DATA:

Data are the essential building blocks of statistics.

Statistical data can be classified as:

1. Primary.
2. Secondary.

Primary data are the result of the direct collection of raw material, while secondary data consist of material, which has been collated from other sources of information.

COLLECTION OF DATA:

There are numerous ways of collecting data for statistical enquiries:

1. Primary data:

    (i) ***Direct personal observation:***

    Due to the high cost of collection, this method is restricted to use in laboratories and in scientific experimentation such as ***Searl Technology Ltd*** and ***Searl Magnetics Ltd***.

    (ii) ***Personal interview approach:***

    This method: is often used by market research companies to ascertain specific product information.

    (iii) ***By forms and questionnaires:***

Which are sent out through the post,

This approach, while being less costly than (a) above, has the disadvantage that a high percentage of the targeted population often fail to complete and return the forms.

2. ***Secondary data:***

   This type of data is collected from information previously collected by others:

   (a) Government departments.

   (b) Royal commissions.

   (c) Trade associations and research bodies.

   (d) Technical and Trade journals.

   Errors in statistical data:

   Irrespective of the method of data collection, all statistical data should be scrutinized at the earliest possible stage for errors, omissions and inconsistencies.

   In particular, secondary data should never be accepted for use without careful examination of:

   1. ***The source of information.***
   2. ***The purpose of the original data.***
   3. ***The degree of accuracy aimed for and achieved in the original study.***

In many cases, terms and meanings made in the original investigation may not coincide directly with the current investigation.

For example, the following difficulties may arise:

1. ***Involuntary changes:***

   A change of personnel may occur, leading to a change in interpretation of ideas and practices.

2. ***Variations:***

   Changes due to variation in definition, VAT or income tax changes alter the amount of revenue collected.

3. **Geographical:**

   Readjustment of local government boundaries may take place.

4. ***Incomplete information:***

   Not all information is complete.

   For example, unemployment statistics are derived from a number of people who are entitled to unemployment benefit.

   The unemployment figures do not include people who, having lost their employment, decide not to seek additional work, as is often the case with female employees.

   Alternatively, people who, although unemployed, are not entitled to unemployment benefit; which gives useless information in respect as to how many people are unemployed at any one time.

Statistical measurement:

As can be seen from my previous statements on statistical data, statistics implies counting or measuring.

In certain cases, direct counting may be possible and is used for objects, which can easy be separated such as houses, men, cattle, roller sets, roller segments, plates etc.

In other cases, the measurement must be made by reference to some acceptable unit, such as, in the Gulf Oil States, production of oil is not counted in litres but is measured in barrels.

Statistical units of measurement are derived from a variety of sources and, for this reason; some caution has to be exercised in how they are applied.

The method of measurement adopted depends upon the exact nature and purpose of the investigation.

However, the following precautions should be observed:

1. ***The unit of measurement must be definite and specific:***

   Any special meaning implied by scientific, trade or customary usage should be identified before the classification of data takes place.

2. ***Homogeneity and uniformity:***

   A given choice of unit is unsatisfactory if it implies different properties or characteristics on different occasions.

3. ***The unit of measurement must be stable:***

   For example, the fluctuations in £ sterling make it an unsuitable statistical measure of value.

   Hence, the practice has arisen of converting current £ sterling values into £ sterling values of the current year by means of suitable coefficients, really that might account for its lack of being stable.

4. ***The unit of measurement must be appropriate for its purpose:***

   A correct measure of performance for a manufacturing unit would be standard hours rather than a single monetary value, based on sales value.

   If the latter unit of measurement were used, the performance of the production unit could be increased simply by substituting gold handles for brass ones.

   Although the sales value figure would indicate an improvement, in reality no improvement would have taken place.

Statistical variates:

It can be seen from the above that any set of facts may form the subject of statistical measurement, provided that the individual facts can be specified and identified.

Basically, this requires:

1. ***The grading or classifying of the various kinds of facts according to their relevant characteristics;***

2. ***The counting or measuring of the items contained in each class or grade.***

The name given to the set of characteristics in 1 above is the ***variate***, whereas the counting or measuring is commonly referred to as the ***frequency*** or ***measurement***.

The variate – the collection of facts, which will be the duty cycle of the ***Searl International Marketing Hub*** to obtain which may be either ***quantitative*** or ***qualitative.***

A variate is said to be quantitative when it can be measured numerically, such as, age, height, and income; and qualitative when it can only be described verbally, such as hair colour, geographical location.

In addition, if the variate is quantitative then it may be either continuous or discrete.

A variate is said to be continuous when it passes from one value to the next by infinitely steps, such as height and the law of the squares; and discrete when there are gaps between one value and the next, such as, children per family, the ***Searl Effect generator (S.E.G)*** or the ***Inverse-Gravity-Vehicle (I.G.V).***

This distinction between quantitative and qualitative variates is statistically important, since the former lend themselves to mathematical treatment, whereas the latter do not.

I feel that at this point I would like to give a summary upon my feelings:

1. This is only one planet from where I sit it is treated as many planets in concept – this is unstable situation for a paradise state.

2. Money therefore should be of one defined standard, preferable in decimal format, one value fixed, only then is money stable and industry becomes stable.

   From this chair money is the most unstable commodity on planet Earth, that is why this planet is in a cesspit and so unstable that there is no way man can create a paradise for all humankind.

   Result means unrest, hate; evil is generated as a solution to the instability state of the planet.

   Governments should be educated to a point that they can see this problem and take steps to correct it, but no they demonstrate any control over the problem; instead, they allow it to develop so no one can have a paradise on Earth except few of the very rich can enjoy.

I rest my case.

This document released by the authority of:



Prof. John Roy Robert Searl Head of R&D human behaviour studies.

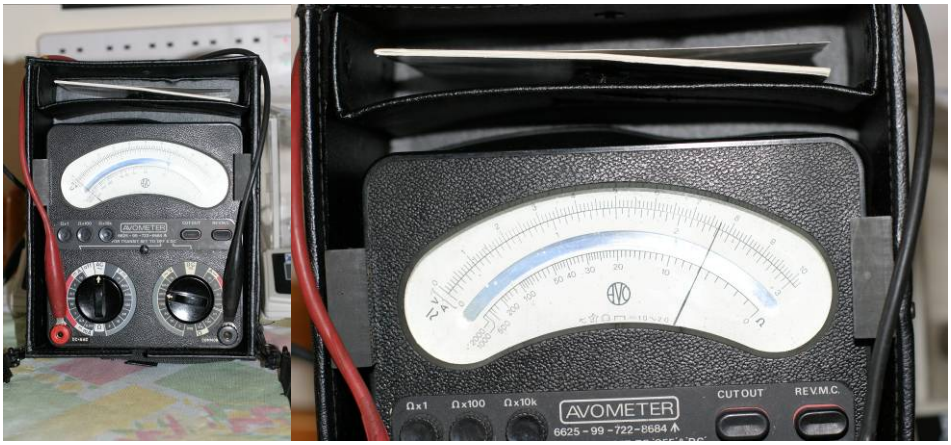
Searl Technology Ltd - Manned Flight Division.

We are the tomorrow's people; creating the world of tomorrow in clean energy and transportation systems.

Rome was never built in one day nor will the future energy and transport systems be in production in one day – but time is master of all things – and time – and only time will bring forth the future energy and transport systems for all humankind regardless into reality.

But, if we all work together as one time would be speeded up so you all can see and use such developments sooner than later, but that answer relates to your efforts – you must prove to time that you are worthy of such technology and only then will time give it to you.

Strange that in the book you take as gospel there are two stories to my understanding that says the same as I do, and that is your god talking there; not me, I am talking here.



S.I.S.R.C. – Mortimer – Reading – Berkshire – England.

LOCATION : Headquarters – Mortimer – Berkshire – England.
DIVISION : Tomorrow's Energy and Transportation Systems.
DATE : 1st September 1947.
SUBJECT : Voltage.
AUTHOR : John Roy Robert Searl.
STATUS : Superintendent of documents – UK

It has became necessary to repeat my old newsletter in this book to answer those expert idiots on the web that claim it was impossible that I could had invented the S.E.G. that somebody else invented it; but with all their expertise they do not tell you who - WHY?

The answer is quite simple dear Watson – no one else has ever done it except Searl – so simple. The purpose of this book being available to all free is to tell you how I did it in full details, which shows how ignorant these experts are.

Even if these newsletters are, very old now they still show how it was done and who were involved.

VOLTAGE:

INTRODUCTION:

Recap to the previous chapter, I show that a battery produces a force which causes electrons to flow in a closed circuit.

I had not learnt very much about the force, except what I experience from a rubber like the hand strap applied to my bottom and the teacher's hand applied to my bottom which no doubt was the sudden burst of electrons flow that I felt through those cheeks.

Whether that force is identical to that, which I spoke of in relation to that force caused by electric charges at the battery terminals is not certain if not it was as nears as reality you could experience.

That is, an excess of electrons at one terminal and a deficiency of electrons at the other produce the force.

Guess that is the same in the case of that hand strap and teachers hand there are that excess electrons available, at add to my cheeks.

This force is called an electromotive force.

I guess that could cover that spanking too: even though I thought, it was a strap force or a hand force that was being applied.

Literally, electromotive force means the force, which moves electrons.

The measure of this force is called voltage.

In fact, the terms electromotive force and voltage are frequently used interchangeable always though, strictly speaking, they do have slightly different meanings.

In this chapter, I will be discussing voltage or electromotive force in details WHY.

Simple – the ***Searl Effect generator (S.E.G)*** produces voltage, which is clearly an electromotive force clearly, because that force makes the roller sets move, whose velocity is in relation to the strength of that force being experienced by the roller set.

You will learn about the several ways in which this force was produced and used by me.

You will also learn how voltage is measured; and several important laws concerning voltage: which I had to grow, accustom to as to be able to carry out my research and development.

There was never any short cut available for me, no one could advise me on what best to do, I was therefore the spirit of the future technology, alone in the world of the blind, and on the whole that status still exists.

Finally, you will perform experiments as I did which demonstrate some important concepts about voltage.

When you have completed what I did back in 1946, you should be able to:

1. ***Define electromotive force (emf), potential difference, and voltage.***
2. ***Define volt, millivolt, microvolt, kilovolt and megavolt, which are needed for the Searl Technology.***
3. ***List six different ways in which an electromotive force can be produced.***
4. ***Explain the process by which charges are separated in a battery.***
5. ***Explain the construction of the dry cell and the lead-acid cell.***
6. ***Demonstrate how to connect batteries in series and parallel.***
7. ***Explain how the total voltage and current capacity changes when batteries are connected in series and parallel.***
8. ***Explain the difference between a voltage drop and a voltage rise.***
9. ***Explain the concept of ground, negative voltages, and positive voltage.***
10. ***Demonstrate the proper method of connecting a voltmeter to a circuit and measuring voltage.***
11. ***Construct a simple circuit from a schematic diagram.***

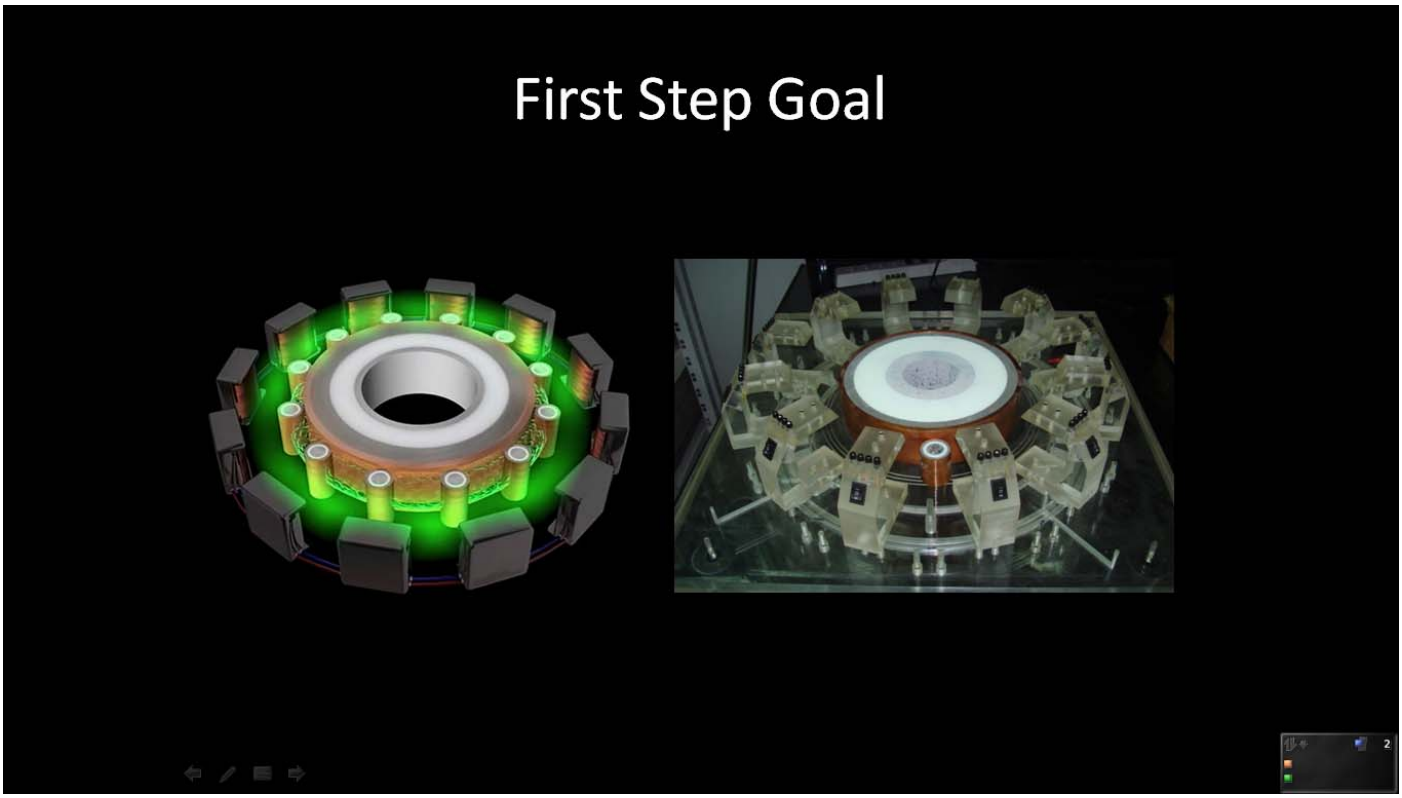
This presents just one hair thickness, which you will have to understand to make an ***S.E.G***. and for the ***I.G.V***., multiply that by a thousand times what you need to know will be around that value to start.

Therefore, I guess we should now state let the electromotive force roll, any experts around can say if I am correct or not in this document, but I guess your pride is far too great to admit that I am correct in details.

It is no skin off my nose as I am heading the re-work now being undertaken to go into mass production.

My sole interest is to get the ***Searl Effect Generator (S.E.G)*** into mass production as such; I am not interested in what experts think if it will not work.

Because it has worked in the past – the only different that construction system is not suitable for mass production – so I am changing the construction technique so it can meet mass production systems which we shall be construction for it.



ELECTRICAL FORCE:

I have stated that current will not flow in a circuit unless an external force is applied.

You experts are smiling now because you think unwisely that statement proves that you are right and you got me by the balls – sorry to inform you that you have missed them by miles not inches.

I agree that in the circuits discussed in the previous chapter, the force was provided by batteries.

Because at this stage I am just explaining how I went about creating the concept, which has become world known as the Searl effect.

The battery changes chemical energy to electrical energy by separating negative charges – ***electrons*** – from positive charges – ***ions***.

What is strange about that?

Why in your expert minds: which states that the ***Searl Effect generator (S.E.G)*** cannot separate negative charges – ***electrons*** – from the positive charges – ***ions*** – please explain me no understand your thinking, which appears to my mind as crap and to minds that are far more intelligent as well?

There must be some explanation: you can come up with; as if you are taking drugs; or got pissed up night before at a pub party to cover the insanity you have displayed in public.

These charges produce the force or pressure, which causes electrons to flow and to do useful work, like forcing the roller sets to move.

This force is given several different names that are used more or less interchangeable.

Let us examine the three most popular names and see what each name implies.

ELECTROMOTIVE FORCE (EMF):

One popular name is electromotive force, which is abbreviated emf by arbitration.

This name is very descriptive since it literally means a force, which moves electrons.

Thus, emf is the force or pressure, which sets electrons in motion.

Flowerbower don't you agree that it is amazing that this force is a natural result of Coulomb's law.

You and your imbeciles on YouTube show the world that you have neither formal education nor any secondary education of worth.

You will recall that Coulomb's law states that like charges repel while unlike charges attract.

The battery, by chemical action, produces a negative charge at one terminal and a positive charge at the other.

The negative charge is simply an excess of electrons while the positive charge is an excess of positive ions.

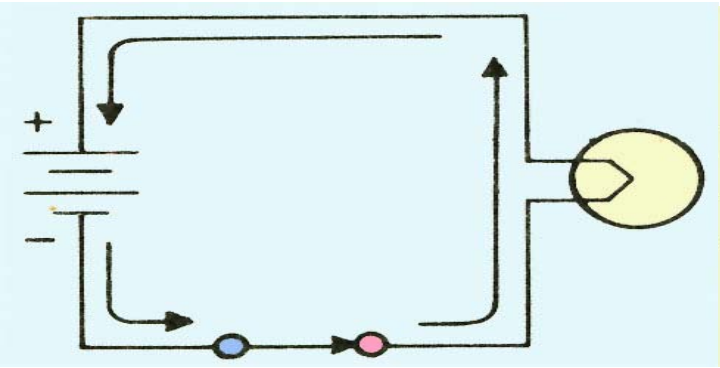


Figure 18.A1.

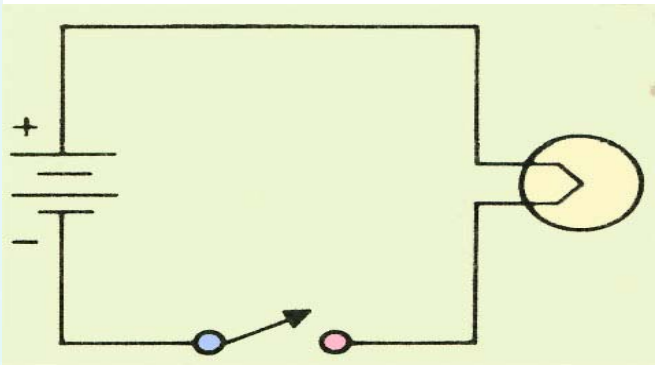


Figure 18.B1.

18.1A EMF causes electrons to flow in closed circuit.

A pathway for electron flow exists between the battery terminals.

Free electrons are repelled by the charge on the negative terminal and are attracted by the charge on the positive terminal.

The two opposite charges exert a pressure, which forces the electrons to flow.

Thus, the force or pressure is the result of the attraction of the unlike charges.

To summarise, emf is the force, which sets electrons in motion in a closed circuit.

POTENTIAL DIFFERENCE:

Another name for this force is potential difference.

This name is also very descriptive.

It describes the characteristics of emf in an open circuit

Emf is the force, which causes electrons to move as shown in Figure 18.1A.

18.1B Potential for current flow exists even though there is no current.

However, consider the situation shown in figure 18.B1.

Here, electrons cannot flow because the switch is open.

Nevertheless, the battery still produces the same pressure or force as before, this applies to the ***Searl Effect Generator*** in the same manner, due to its natural function.

Thus, the potential for producing current flow exists even though no current is presently flowing.

As used here, potential means the possibility of doing work.

If the switch is closed, current flows, the lamplights, and useful work is done.

Therefore, whether a battery is connected into a circuit or not, it has the potential for doing work.

Actually, any charge has the potential for doing work.

For example, it can move another charge by either attraction or repulsion, which of cause is how the ***Searl Effect generator (S.E.G)*** works.

Even a single electron can repel another electron.

If one electron moves as the result of the action of the other electron, some small amount of work is done.

In the battery, I am concerned with two different types of charges – ***the law of the squares*** again – rather than a single charge.

The electrons at the negative terminal are straining to rush to the positive terminal and cancel out the positive charge there.

In the same way, the positive ions at the other terminal are straining to draw the electrons.

We call this force potential difference.

It is the potential for doing work: that exists between two different charges.

A

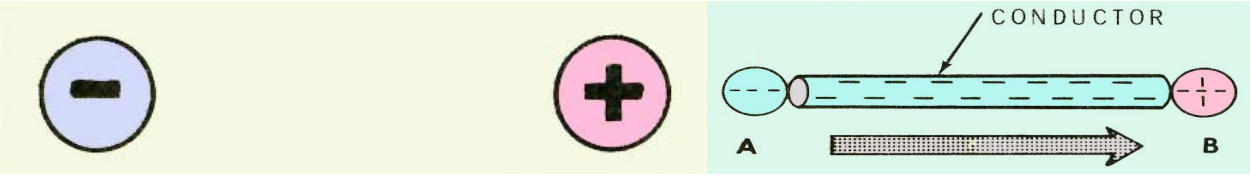


Figure 18.2 Static charges have the potential for doing work.

Charge A ***Charge B*** ***One million electrons flow to cancel charges.***

One million excess electrons. ***One million too few electrons***.

The amount of work that can be done must be related in some way to the characteristics of the charges.

I can illustrate this point by considering some static charges.

Figure 18.2A shows a small negative charge separated from a small positive charge.

Let us assume that charge ***A*** has an excess of one million electrons while charge ***B*** has a deficiency of million electrons.

If a conductor is connected between the two charges, electrons will flow from negative to the positive charge.

The work done here is the moving of electrons.

To cancel the two charges, one million electrons will flow from charge ***A*** to charge ***B.***

B

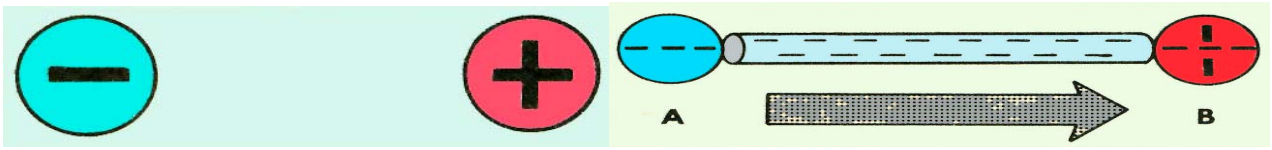


Figure 18.2B Static charges have the potential for doing work.

Charge A two million excess electrons ***Charge B two million too few electrons.***

Two million electrons flow to cancel charges.

Now consider what happens if the two charges are doubled as shown in Figure 18.2B.

Here charge ***A*** has an excess of two million electrons while charge ***B*** has a deficiency of two million electrons.

If a conductor is connected between the two charges, the two million electrons will rush from charge ***A*** to charge ***B***.

Thus, twice as much work is done.

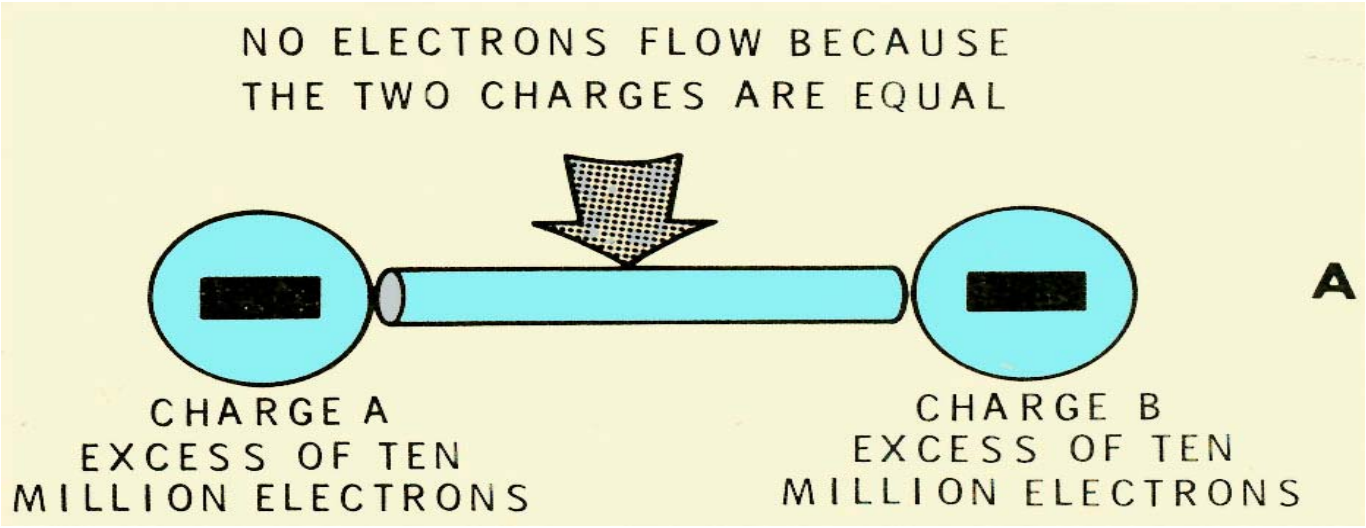


Figure 18.3A. No potential for doing work exists between equal charges.

However, the magnitude of the charges is not the important consideration.

This also applies to the ***Searl Effect generator (S.E.G).***

It is the differences between the two charges that are important, which also applies to the ***Searl Effect Generator (S.E.G).***

Figure 18.3 illustrates that no work can be done if both charges have the same polarity and magnitude, which also applies to the ***Searl Effect Generator (S.E.G).***

In Figure, 18.3A two charges are shown.

Each has a negative charge caused by an excess of ten million electrons.

How much work is done if these two charges are connected by a conductor?

The answer, of course, is that no work is done.

Because the two objects have exactly the same charge, no electrons can flow from one to the other.

Thus, there is no potential for doing work.

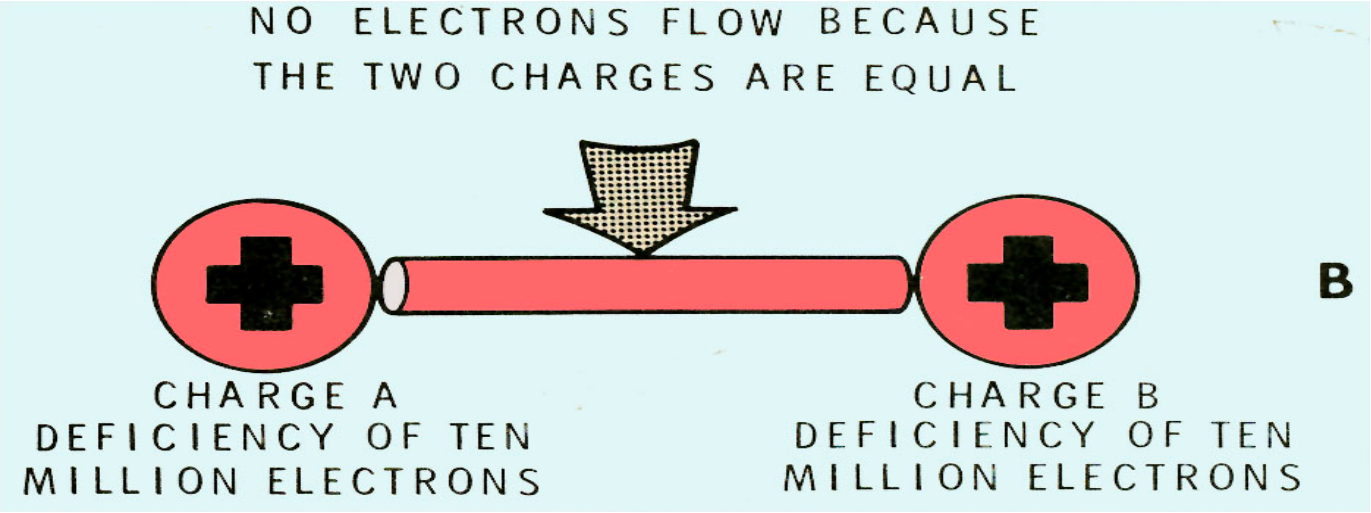


Figure 18.3 No potential for doing work exists between equal charges.

Figure 18.3B shows that the same is true for equal positive charges.

The potential to move electrons exists between any two unlike charges.

That is, when two charges are different, electrons will flow from one charge to the other if given a chance.

Charges can differ in two ways, as in the ***Searl Effect generator (S.E.G).***

FIRST, they can be of opposite polarity.

This simply means that one is positive and the other negative as shown in Figure 18.2.

SECOND, they can have different magnitudes, as in the ***Searl Effect Generator (S.E.G).***

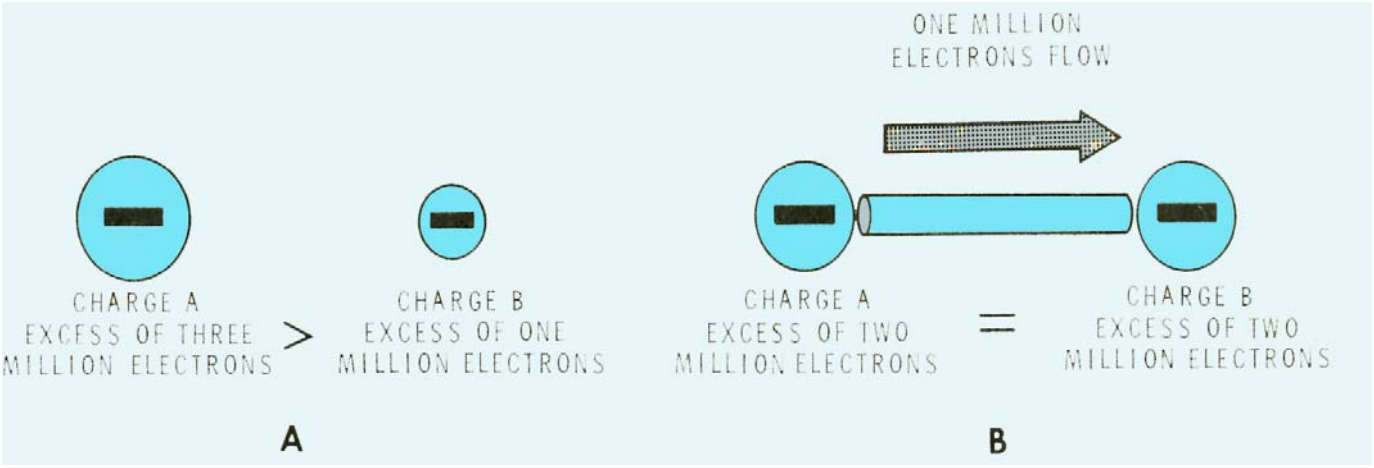


Figure 18.4 A potential exists between two chares of the same polarity if they have different magnitudes.

For example, Figure 18.4A shows two charges, which have the same polarity – ***negative*** - but has different magnitudes.

Charge ***A*** is more negative because it has more excess electrons than charge ***B***.

If a conductor is connected between the two charges as shown in Figure 18.4B, electrons will flow from the greater negative charge to the less negative charge.

The number of electrons will be exactly the right amount to equalize the two charges.

In this example charge, ***A*** originally has three million excess electrons while charge ***B*** has only one million excess electrons.

To equalize the two charges, one million electrons will flow from charge ***A*** to charge ***B***.

Electron flow ceases as soon as the two charges become equal.

NOTICE that the direction of current flow is from the more negative charge to the less negative charge.

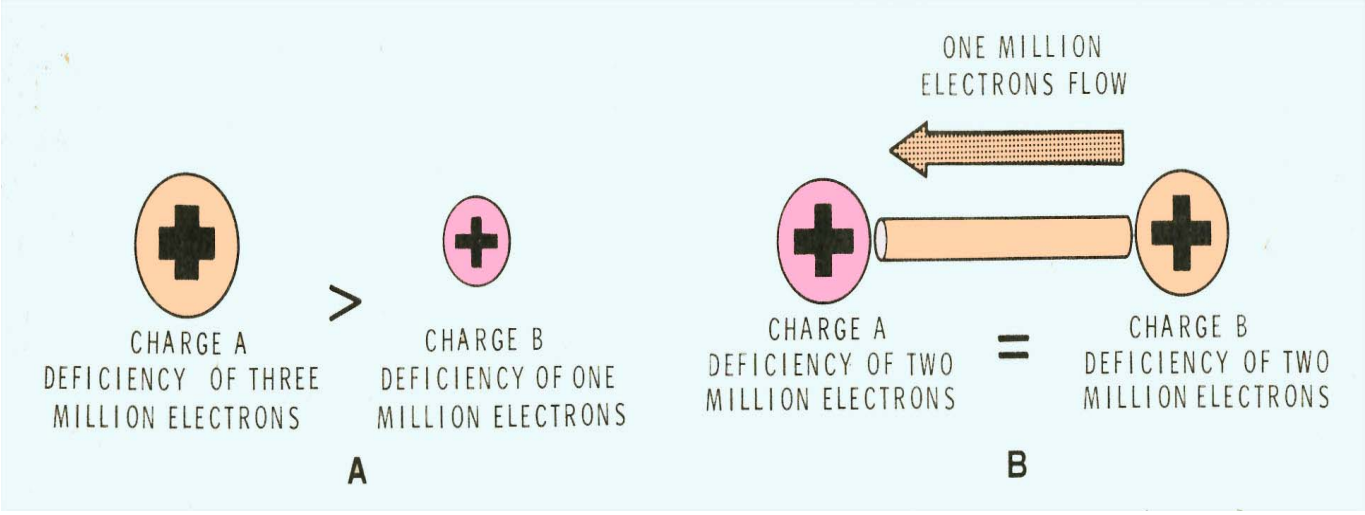


Figure 18.5 Electrons flow from the less positive to the more positive charge.

Figure 18.5A, illustrates two positive charges of different magnitudes.

A potential exists here because electrons will flow if given the chance.

Figure 18.5B shows a conductor connecting the two charges.

NOTICE that electrons will flow from the less positive – ***more negative*** – to the more positive potential.

Again, the number of electrons, which flow is the amount necessary to exactly balance the two charges; which is precisely how the ***Searl Effect Generator (S.E.G)*** operates

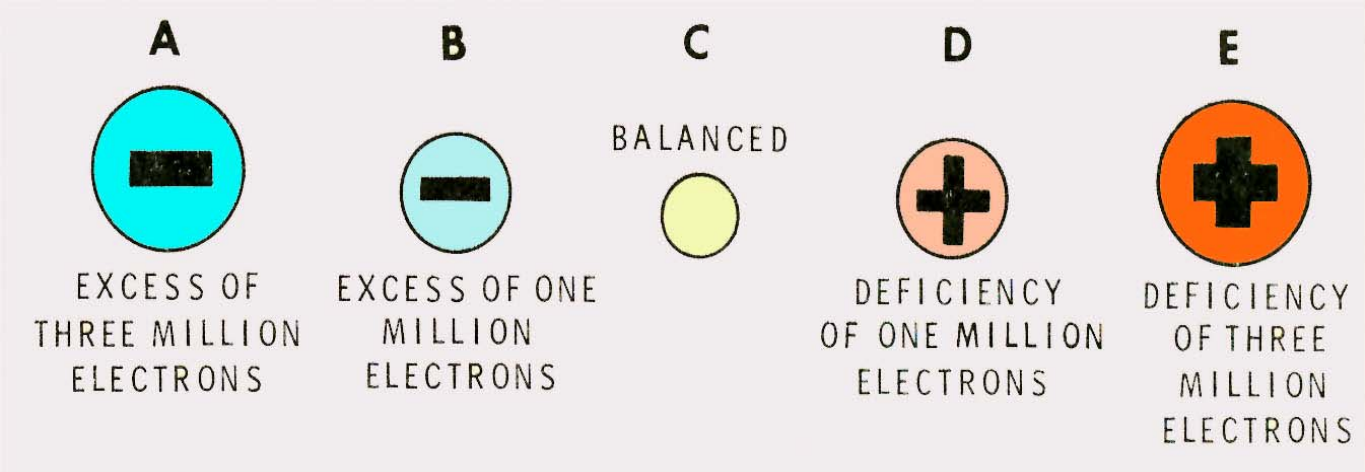


Figure 18.6 Five levels of charge.

Figure 18.6 shows five terminals at various levels of charge.

Since no two are at the same charge level, a difference of potential exists between any two terminals.

Consequently, if a conductor is placed between two terminals, electrons will flow until those two charges are balanced.

NOTICE that terminal ***C*** has no charge.

That is, it contains the same number of electrons as positive ions.

Nevertheless, if terminal ***C*** is connected to any other terminal, electrons will still flow.

If it is connected to one of the negative terminals, electrons will flow into terminal ***C.***

If it is connected to one of the positive terminals, electrons will flow from terminal ***C.***

Remember that electrons always flow from the more negative to the more positive terminal.

VOLTAGE:

Another term, which is often used interchangeably with emf and potential difference, is voltage.

However, strictly speaking there is a difference between voltage and emf.

Voltage is the measure of emf or potential difference.

For example, the battery in your car has an emf of 12 volts.

The supplied by wall outlets is 115 volts while that required by most electric stoves is 220 volts.

A large screen colour TV receiver producers an emf at one point, which may be 25,000 volts or higher.

High-tension power lines often have a difference of potential as high as 5000,000 volts.

Inserted up date above.

The unit of emf or potential difference is the volt.

At this point, it is difficult to visualise exactly how much emf constitutes one volt.

However, as you work with electronics, this point will become clearer, well at least that did with me.

One volt is the magnitude of emf, which will cause one unit of energy or work to move one coulomb of charge from one point to another.

The metric unit of energy or work is the joule.

This unit is equally difficult to visualise since it is defined in other unfamiliar terms such as Newton's.

However, joules can be expressed in the more familiar English units.

For example, one joule is equal to 0.738 foot-pounds.

A foot-pound is the amount of work required to lift one pound one foot.

Thus, a joule is approximately the amount of work required to lift ¾ of a pound one foot off the ground.

Using this information, let us return to the volt.

One volt is the emf required to cause one joule – or 0.738 foot-pounds – of work to move one coulomb of

Charge ***– 6.25 x 10^{18} electrons*** - from one point to another.

To look at it another way, when the movement of one coulomb of charge between two points produces one joule – ***or 0.738 foot-pounds*** – of work, the emf between the two points is 1 volt.

Later on, after I have discussed resistance, I will define the volt in terms of current and resistance.

It will be much easier to visualise then, as it was for me so long ago back there in 1946 as a young apprentice training to become an electrical engineer.

The abbreviation of volt is ***V***.

Thus, 1.5 Volts is abbreviated 1.5V.

As with amperes, metric prefixes are attached to indicate smaller and larger units of voltage.

Thus, one millivolt equals 1/1000 volt, while one microvolt equals 1/1,000,000 volt.

In addition, one kilovolt equals 1000 volts while one megavolt equals 1,000,000 volts.

I have added these last details for the benefit of all those who have ask me to explain maths etc so they can understand what is being stated here.

This is the way I taught myself back in 1946, and I sincerely hope that you will enjoy following down that road that I travelled so long ago and experience the same joys from technology and science which I have done through devoted studies over the years and never let any expert imbeciles change your mind.

Those type are mentally sick, they failed at formal education, and secondary education is almost zero rated, they are failures and resent those who are devoted to research and development and show their ignorance impudent been dragged up through childhood to have disrespectful to others.

They: should be horse whipped, and given force labour at the double for 25 years, 7 day working week to break their ignorance and insulting behaviour, in the effort to make human beings out of them.

PROGRAMMED REVIEW:

This review is presented here to enhance your understanding of the material presented in this chapter.

Read each of the numbered questions carefully and fill in the missing blanks.

1. Often the name potential difference is turned around and called a ---------- of potential.
2. A force or pressure exists between charges as a result of Coulomb's law.

   This law states that like charges repel and unlike charges attract.

   Consequently, they are repelled by negative charges and attracted by ---------- charges.
3. Although this is the force, which causes electrons to move in a circuit, the force can exist without the movement of electrons.

   For example, a battery, which has been removed from a circuit, still has an emf between its terminals.

   Therefore, emf can be thought of as a potential for producing the movement of electrons.

   Because of this, another name often given to emf is ---------- difference.

   Well I hope you are able to answer them I did when I was 14 years old.

4. The force, which causes electrons to move: is given several names.

   One name is electromotive force and is abbreviated ----------

5. An emf exists between these two charges.

   Emf is measured in volts.

   Thus, voltage is a measure of potential difference or ----------

6. A difference of potential exists between any two charges, which are not exactly alike.

   Figure 18.6 shows five terminals each of which is at a different potential of state of charge.

   Terminal ***A*** has the most negative charge while terminal ***E*** has the most positive charge.

   Therefore, the greatest difference of potential exists between terminals ***A*** and ----------

7. It is important to remember that even an uncharged body has a difference of potential with respect to a charged body.

   Thus, although terminal ***C*** is electrically neutral, it is more negative than terminals ***D*** or ***E***.

   In addition, terminal ***C*** is more positive than terminals ---------- and ----------

8. Consequently, if a conductor is connected from ***A*** to ***B***, electrons will flow from the more negative terminal to the more positive terminal or from ---------- to ----------

9. If a conductor is connected from charge ***A*** to charge ***E***, electrons will flow from ***A*** to ***E*** until both charges are neutralised.

   Therefore, ---------- electrons will flow from ***A*** to ***E***.

10. A difference in potential also exists between two unequal positive charges.

    For example, charges D and E are both positive but charge --------- is more positive.

11. An emf exists between two unequal negative charges.

    For example, charge ***A*** is more negative that charge ***B***.

    Alternatively, stated another way, charge ***B*** is more ---------- than charge ***A***.

I think I have given you enough to check if you have been studying this article; the answers will be given later in this chapter that is if I do not forget.

A volt represents one joule of energy – ***or work*** – per Coulomb of charge.

Do not worry that this magnitude of emf is difficult to visualise.

As you continue in the units that follow, you will develop a better understanding of this quantity as I did in 1946.

As you will see later, the volt has a very simple relationship to the ampere.

This book is primary for those who really want to learn, and for you experts to show how it was achieved, I am not boosting that I done this and that, I simply saying this is how it was done, and who did what and how and what it cost and why there are no ***S.E.G*** available today.

Producing EMF:

Emf is produced when an electron is forced from its orbit around the atom.

An electric pressure exists between the free electron and the resulting positive ion.

Thus, any form of energy, which can dislodge electrons from atoms, can be used to produce an emf.

In no case is energy actually created.

It is simply changed to electrical energy from other forms.

For example, a battery converts chemical energy to electrical energy while a generator converts mechanical energy to electrical energy.

My dream one states there are six common methods of producing emf.

Each has its own applications.

Let me briefly discuss each of these.

MAGNETISM:

AS USED IN THE SEARL EFFECT GENERATOR (S.E.G):

This is the most important method of producing electrical power in the world today.

At our present level of technology, it is the only method, which can produce enough electrical power to run an entire city.

Well I guess over 99 percent of all electrical power is produced by this method.

When a conductor is moved through a magnetic field, an emf is produced.

This is called magnetoelectricity.

The force of the magnetic field and the movement of the conductor provide the energy necessary to free electrons in the conductor.

If the conductor forms a closed loop, then the electrons will flow through the conductor.

The basic requirements are a magnetic field, a conductor, and relative motion between the two; that is precisely what the ***Searl Effect generator (S.E.G)*** consists of; so what is this crap: I hear from so-called experts.





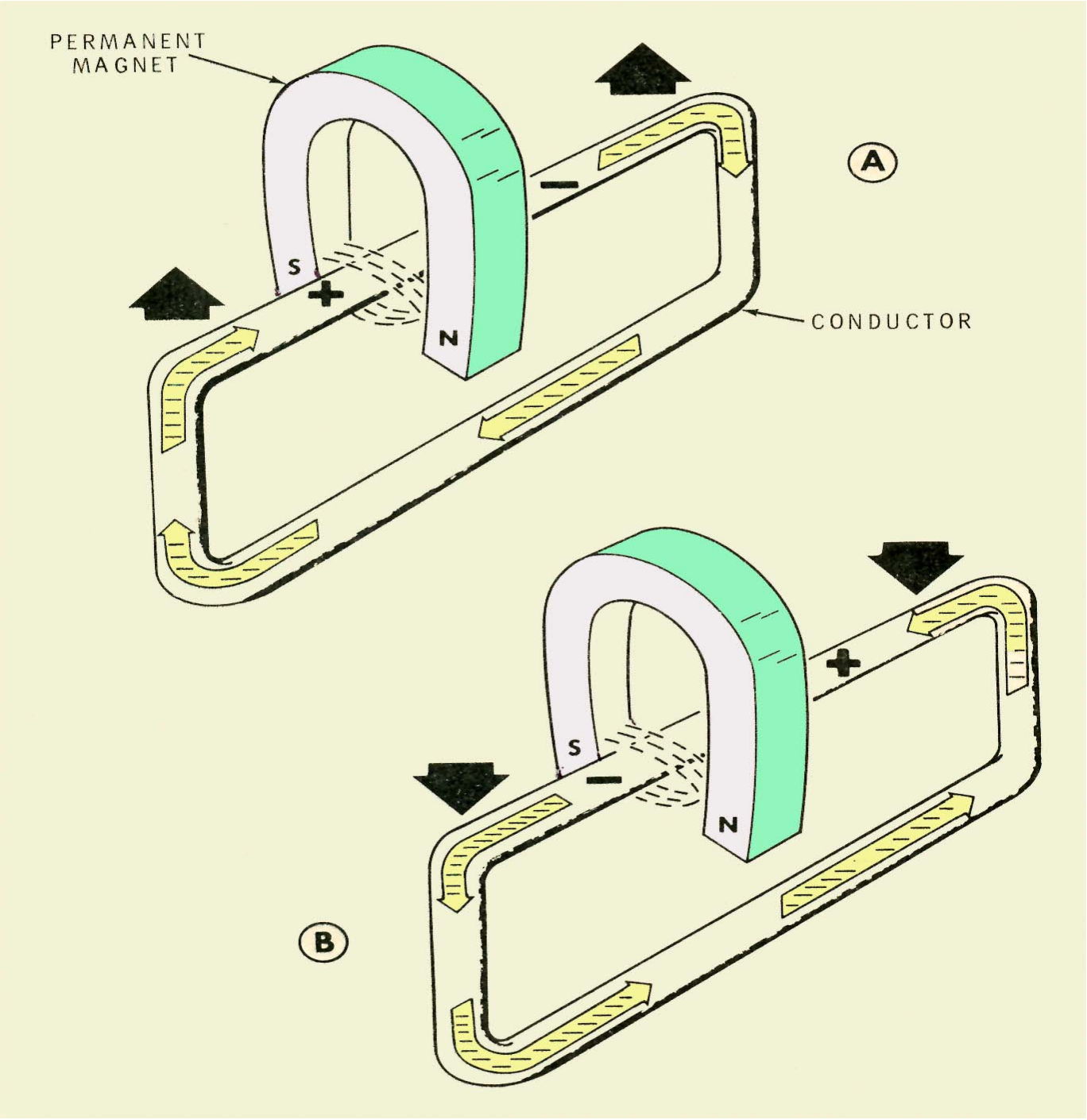


Figure 18.7 Electricity from magnetism.

Figure 18.7 shows a simple example.

Here the magnetic field is produced by a permanent magnet; likewise the ***Searl Effect generator (S.E.G)*** is constructed by many permanent magnets – unfortunate they have special functions therefore incorrect to called them magnets, instead call them magnetic devices.

The field: is represented by the lines drawn from north to south poles of the magnet.

If a conductor is moved up so that it cuts, the field a shown in figure 18.7A, electrons will flow in the direction indicated.

The same effect will be obtained if the conductor is held still and the magnet is moved down. All that is required is relative motion between the magnetic field and the conductor.

Figure 18.7B shows that electrons will flow in the opposite direction if the relative motion is reversed.

If the conductor is moved up and down in the magnetic field, the electron flow will reverse each time the motion reverses.

In generators, a reciprocal motion like this is required, which the ***Searl Effect Generator (S.E.G)*** also operates in the same function.

Thus, the current produced alternately flows in one direction then the other.

This is known as alternating current or simply AC.

In power generating stations in some parts of the planet, the reciprocal motion occurs ***60*** times each second.

Thus, the power supplied to our homes is often referred to as ***60 cycle AC***.

In power generating stations in other parts of the world, this reciprocal motion occurs only **50** times a second.

Thus, the power supplied to our homes is often referred to as ***50 cycle AC***.

This is an alternating current which goes through the forward-and-reverse current cycle either ***60*** or ***50*** times each second, I will not be concerned with alternating current although I will discuss magnetism in some detail later.

CHEMICAL:

The next most popular method of generating electricity is by chemical means sometimes called electrochemistry.

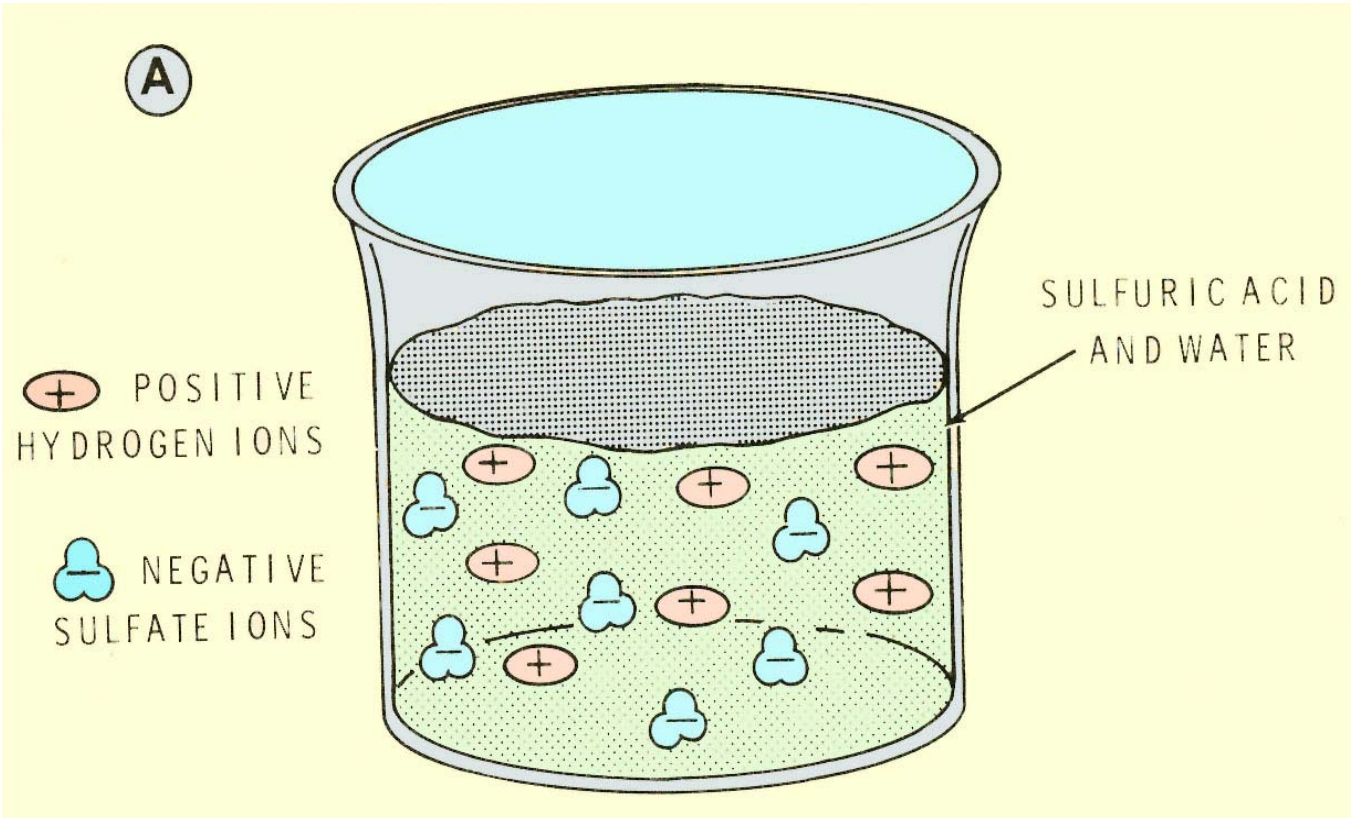


Figure 18.8 Electricity from chemicals.

Automobile and flashlight batteries are examples of two typical applications.

There are many chemical reactions that will transfer electrons so that an emf is produced.

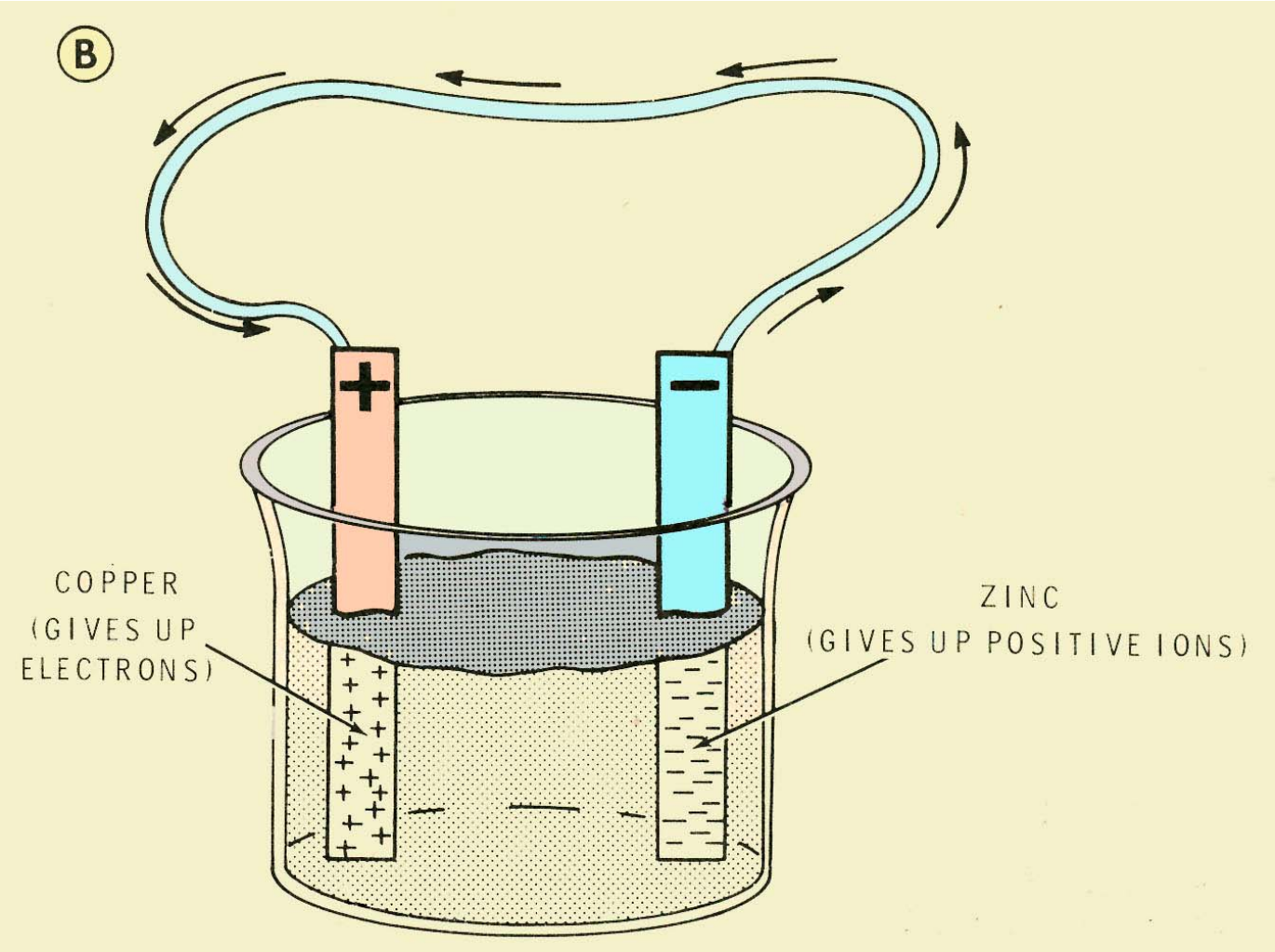


Figure 18.8 Electricity from chemicals.

Figure 18.8 illustrates how a basic battery or cell can be made.

A glass beaker is filled with a solution of sulfuric acid and water.

This solution is called the electrolyte.

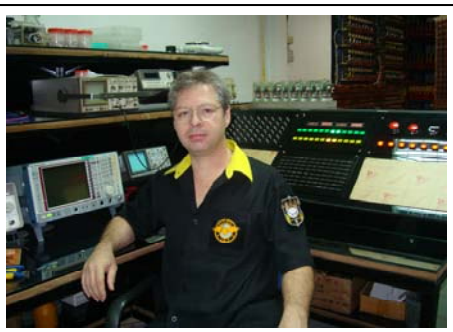
In the electrolyte, the sulfuric acid breaks down into hydrogen and sulfate.

Because of the chemical action involved, the hydrogen atoms give up electrons to the molecules of sulfate.

Thus, the hydrogen atoms exist as positive ions while the sulfate molecules act as negative ions.

Even so, the solution has no net charge since there is the same number of negative and positive charges.

Next, two bars called electrodes are inserted into the solution.



One bar is copper while the other is zinc.

The positive ions of hydrogen attract the free electrons in the copper.

Thus, the copper bar gives up electrons to the electrolyte.

This leaves the copper bar with a net positive charge.

The zinc reacts with the sulfate in much the same way.

The sulfate molecules have a negative charge.

Thus, positive zinc ions are pulled from the bar.

This leaves the zinc bar with a surplus of electrons and a net negative charge.

If a conductor is connected between the zinc and copper bars, electrons will flow from the negative to the positive terminal.

Because current flow is always in the same direction, I call this direct current or ***DC***.

Compare this with ***AC*** voltage produced by magnetism in Figure 18.7.

I will discuss somewhat more practical batteries in detail later in this book.

For now due to the amount of subjects needed to discuss I will take a break and end here, to be continue later.

This document released by authority of:



Prof. John Roy Robert Searl. Head of R&D. Energy and Transport Systems.