Scorpio Technology NEWSLETTER

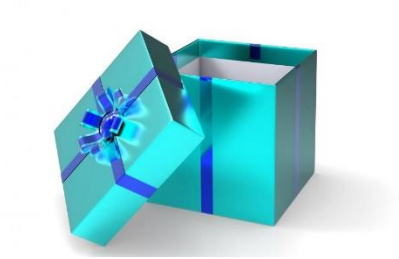
INSIDE THIS ISSUE

TEACHER CONFERENCES & WORKSHOPS

Scorpio is attending or supports these Design & Technology teacher activities:

iTE – 17-18/03/2022 Technology Education Conference, Sydney
DATTA QLD - 16-17/06/2022 Brisbane Convention and Exhibition Centre

LOOKING FOR GIFT IDEAS?



Check out the diverse range of Clearance Sale items which include great gift ideas for all ages. https://www.scorpiotechnology.com.au/sale-items

WELCOME

The end of the school year is quickly approaching. This is a great time to look at achievements and evaluate after another challenging year.

We're here to support you, however we can. Contact us at (03) 9802 9913 or email us at sales@scorpiotechnology.com.au

OUR SERVICES OVER THE HOLIDAY PERIOD

We're having time out too.

Our office will be closed from 3 p.m. on the **17th December 2020** until 9.00 a.m. **19th January 2022.**

Please contact our sales office by email during the Summer period if you require anything.

We wish you a happy and safe holiday and all the best for 2022.

2021 IN REVIEW

Another challenging year for us all. Covid-19 made us all look for alternate ways to do things. We had worldwide delays, shortages, postal delays and more. Scorpio was able to continue to supply your needs throughout this time with minimum delays.

Scorpio released a wide range of new products – for Design/Technology and Systems, Physics and Primary STEM, revised and updated existing products, and continued to source more great products for next year.

Lockdowns resulted in the cancelling of DATTA teacher conferences across Australia. We hope we can be with you in person next year. DATTA Australia ran its Design and Technology Week. Scorpio provided a **MAGNET CHALLENGE**.

Link: https://dattaaustralia.com/magnet-challenge/

We thank you for your continued support and hope that we can continue working with you again in the New Year.

LEARN TO MAKE, MAKE TO LEARN

"Practice makes proficient…NOT perfect."
Nancy Cain, Bead Artist and Designer

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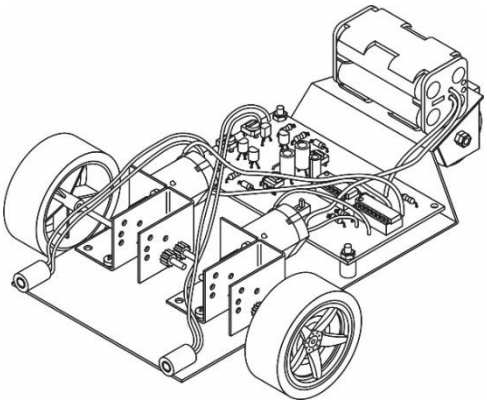
SECONDARY: NEW PRODUCTS



SEEKER V2 kit

The *SEEKER* kit is being replaced by the *SEEKER V2* kit. The functionality remains unchanged, but the PCB and electronics have been upgraded by introducing a new PCB, using a L293 Motor driver and Schmitt Trigger Inverter IC to replace many of the transistors used in the original kit. The *SEEKER V2* kit otherwise remains the same, being offered with the un-assembled gearboxes.

At the same time, a new variant - *SEEKER V2 ASM* – is being introduced, and this offers the gearboxes as pre-assembled units.

In line with this change, the *WANDERER V2* will (from January 2022) also be offered with the gearboxes as pre-assembled units – *WANDERER V2 ASM* .

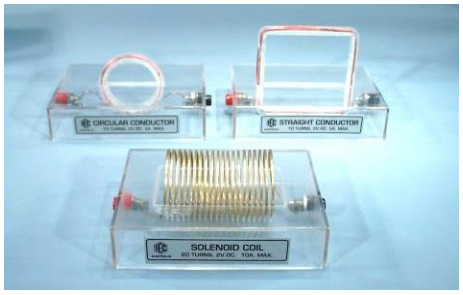
Click on link: https://www.scorpiotechnology.com.au/catalogues

SECONDARY PHYSICS

Investigate the physics laws mentioned in this month's feature article *What's in a Name?* with these products.

Alpha Scattering Apparatus
Code: AR1130260

- Low cost apparatus to demonstrate the Rutherford scattering by means of a gravitational analog of inverse square law repulsion.

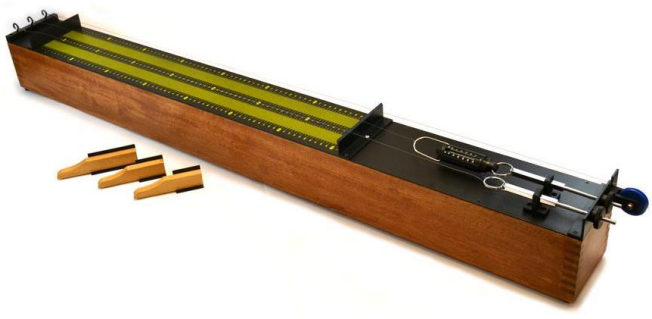


Magnetic Field Demonstrator – Set Of 3 With Shaker
Code: EM2067-001

- Set of 3 magnetic field demonstrators – straight conductor, round coil & solenoid
- Includes shaker with iron filings
- With small carry case.

Faraday's Pails
Code: Ph0902

- Set of 4 aluminium cylindrical containers fitted with insulating feet
- For use in electrostatics and other experiments.



1.29m Sonometer 3-Wire Pattern – Mersenne's Law
Code: PH0730

- Hollow wooden sounding box with 3 wires, scales between fixed bridges and 3 movable bridges.
- For use to demonstrate the relationship between wire tension, thickness and length.

Hydraulic Press – Syringe Type
Code: AR1020780

- For demonstrating the concepts of Pascal's Law.
- Comprises of 2 glass syringes with a cross-sectional ratio of 3:1 respectively

WHAT'S IN A NAME?

Article written by Alex Kapoyanis

"The more physics you have the less engineering you need."

Sir Ernest Rutherford,
(1871 - 1937)

Physicist who laid the groundwork for the development of nuclear physics


HARMONIE
VNIVERSELLE,
CONTENANT LA THEORIE
ET LA PRATIQVE
DE LA MVSIQVE,
Où il eſt traité de la Nature des Sons, & des Mouuemens, des Conſonances, des Diſſonances, des Genres, des Modes, de la Compoſition, de la Voix, des Chants, & de toutes ſortes d'Inſtrumens Harmoniques.
Par F. MARIN MERSENNE de l'Ordre des Minimes.
A PARIS,
Chez SEBASTIEN CRAMOISY, Imprimeur ordinaire du Roy, rue S. Iacques, aux Cicognes.
M. DC. XXXVI.
Auec Priuilege du Roy, & Approbation des Docteurs.

(Image): http://scihi.org/marin-mersenne

Physics is full of laws, principles, and equations, e.g., Newton's laws of motion, Mersenne's laws, Coulomb's law, Continuity equation, etc.…and the list goes on.

The origin of some of these names is instantly recognisable, e.g., Newton, as in the genius Isaac Newton. Others, not so. You may have heard of the following laws, but do you know after whom they were named and in what other fields these people were involved?

- **Raman Scattering** → Indian civil servant and physicist C.V. Raman (1888 - 1970)
- **Fick's Law of Diffusion** → German physician and physiologist Adolf Eugen Fick (1829 - 1901)
- **Mach number** → Austrian physicist & philosopher Ernst Mach (1838 - 1916)
- **Chandrasekhar Limit** → Indian-American astrophysicist Subrahmanyan Chandrasekhar (and nephew of C.V. Raman) (1910 - 1995)
- **Avogadro's Law (or Principle)** → Italian mathematical physicist Amedeo Carlo Avogadro (1776 - 1856)
- **Rutherford atomic model** → New Zealand-British nuclear physicist and chemist Ernest Rutherford (1871 - 1937)

When looking through the biographies of many past scientists, one sees that many of them were not limited to one branch of science. As a matter of fact, some had backgrounds that were totally unrelated to the scientific field for which they are most famous.

What is quite remarkable, is that some of these scientific masters, such as former bookbinder apprentice, Michael Faraday, didn't gain much more than a basic formal education. Faraday was a master at experimentation but was not mathematically skilled. Many of his discoveries relating to electricity and electromagnetism would require the mathematical talents of others, such as the Scottish mathematician, James Clerk Maxwell, to apply a mathematical formula to them.

Others, such as Blaise Pascal were home schooled. As an adult, Pascal was skilled in multiple disciplines – physics, philosophy, geometry, theology - and his namesake would be applied to a principle in of fluid mechanics, known as Pascal's Law.

Adolf Fick, the German physiologist, studied medicine. He is not only recognised in the field of physics through his association to the laws of diffusion of solutions, but also in medicine for the principle of cardiac output calculation. He invented the plethysmograph, which records the speed of blood in the human artery. Eighteen years later he developed a device, the tonometer, for measuring the hydrostatic pressure inside the eyeball from outside.

Amedeo Avogadro, was a Count (a title he inherited from his father), who gained a doctorate in cannon law. However, he lost interest in the field of law and began to increasingly dabble in maths and science, particularly physics. In the field of chemistry, the number of particles in one mole of any substance is known as Avogadro's Constant. Although Avogadro did not calculate this number, "its existence follows logically from his hypothesis and work" (Famous Scientists, 2015).

In the field of sound, the three relationships between frequency, weight, and tension of a string, is attributed to the 1637 work of French monk, mathematician, theologian, natural philosopher and music theorist, Marin Mersenne. These are now known as Mersenne's Law. (Image – left)

Austrian (Moravian) Ernst Mach's name may be immortalised with "the Mach number, which is synonymous with supersonic speeds" (Famous Scientist, 2015). Mach made contributions to the field of optics, mechanics and wave dynamics. However, he did not limit himself to the sciences. He also studied philosophy, mathematics and conducted research in multiple disciplines, including stereoscopy, retinal stimuli and auditory perception.

The biographies of these and many more well-known names make for fascinating reading. The journeys they took throughout their lifetimes, with all the twist and turns, highs and lows, show how great things can be achieved through lots of hard work, some luck and sometimes in areas totally different from where their journey first began.

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- https://en.wikipedia.org/wiki/Ernst_Mach#/media/File:Ernst_Mach_01.jpg