# U3A

# Dunedin Charitable Trust

A LEARNING OPTION FOR THE RETIRED

in association with

UNIVERSITY
OTAGO

Te Whare Wānanga o Otāgo

**Series 3 2009**

## FIVE MEN WHO CHANGED THE WAY WE SEE THE WORLD

**Dates: Thursday, 24 September – Thursday, 29 October 2009**

**Time: 10 am – 12 noon**

**Venue: Knox College, Arden Street, Opoho**

**Enrolments for this course will be limited to 50**

**Course Fee: $30.00**

**Tea and Coffee provided**

**Course Organiser: Graham Batts (477 4880)**

**Course Assistant: Judith Cowley (471 0026)**

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You may apply to enrol in more than one course in each series (subject to numbers). If you wish to do so, you must indicate your choice preference on the application form, and include payment of the appropriate fee(s).

All applications must be received by noon on Wednesday, 12 August 2009, and you may expect to receive a response to your application on or about 21 August.

Any questions about courses after 21 August should be made to the Secretary, U3A Dunedin, telephone 471 9913 or on email at <graysinn@clear.net.nz>

*Please keep this brochure as a reminder of venue, dates, and times for the courses for which you apply.*

# FIVE MEN WHO CHANGED THE WAY WE SEE THE WORLD

Some scientific advances are so revolutionary that once they have been made (and accepted) it is almost impossible to see things in the old way. Anyone trained in Physiology or Medicine for example has difficulty seeing the heart and blood vessels through the eyes of pre-Harveyian physicians. Five men who brought about such revolutions have been chosen. Their lives and personalities will be discussed and put into context, what they did and how it changed our view of the world.

The course will be presented by Dr Sam Sneyd, formerly Professor of Clinical Biochemistry, University of Otago.

## 24 September    The nature of scientific revolutions

The solar system before Copernicus with emphasis on the Ptolemaic system
Problems with the Ptolemaic system
The heliocentric universe. Book 1 of the Revolutionibus
The reception of Copernican theory

## 1 October and 8 October    Opticks – Newton's experiments with light

Newtonian mechanics and Newton's laws of motion. This will entail a description of Galileo's mechanics and its relationship to Newton's ideas.
The law of gravitation. Again this will entail a discussion of the work of Galileo to cement the Copernican theory and a discussion of Kepler's laws.
Calculus. Only a very brief description of the differential and integral calculus

## 15 October    Faraday

Faraday's early work with Davy
Production of a magnet by an electric current
The principle of the electric motor
Faraday's concept of the field

## 22 October    Einstein

Einstein's miraculous year:
Brownian motion and the atomic nature of matter
The photoelectric effect and the photon
Special relativity
a. Maxwell and the aether
b. The Michelson-Morley experiment
c. Einstein's ideas on the relativity of simultaneity explained.

## 29 October  Hubble

Cosmology before Hubble  The little that was known about the nebulae
The search for a standard candle. The Cepheid variables and the measurement of the distance of the nebulae.
The red shift. Variation of the red shift with distance. The expanding Universe.
Theories of the expanding Universe. Hoyle and the steady-state Universe vs the "Big Bang".
The cosmic microwave background. Penzias and Wilson.
Current ideas of the age of the Universe. Is expansion accelerating?