

OUR 'EUREKA' MOMENTS

In 1922, construction began on, what is referred to today as, the Physics and Astronomy Building (then called the Natural Sciences Building). In 1924, the building was completed and became the home for the departments of Astronomy, Mathematics, Physics, Zoology, Plant Sciences, Chemistry and Geology. At the time, the building served as a state-of-the-art setting for science research and teach-

ing with both AC/DC power supplies.

As Western's reputation for scientific research grew and departments relocated, it became the Physics & Astronomy Building and was adapted to fit the needs of the changing times. The current renovation has updated the facilities to meet the challenges of 21st century physics and astronomical research from space exploration to nanotechnology.

In celebration of past discoveries and future innovations, Western Science will host a re-opening event from 10:30 a.m.-12:30 p.m. Friday, Nov. 29 in the Physics and Astronomy Atrium.

What follows are some of the highlights of the world-altering science achieved in the halls of the building:

PETER J. SCHULTZ BUILT

the first positronic beam device in Canada and used it to advance the study of solid surfaces and thin films using variable-energy positron beams. Positrons turn out to be an extremely sensitive probe for both structural and electronic properties of materials. Macroscopic properties of materials like mechanical strength and electrical conductivity depend strongly on defects on the atomic scale. This technology allows aviation inspectors to detect damage to material at an atomic level before any visible damage is apparent. [WNI](#)

GIOVANNI FANCHINI DEVELOPS

electronic and optical nano-devices, including solar cells and studies their behavior in the environment. Fanchini has demonstrated a solution that, once it is sprayed on a glass slide and allowed to dry, becomes a solar cell. While traditional silicon photovoltaic solar cells are expensive and time consuming to produce, the new process has the potential to manufacture cheaper cells more quickly. [WNI](#)

PETER BROWN COORDINATED

an international team to develop predictive models to determine the potential frequency of large meteors entering Earth's atmosphere and reaching the planetary surface. His team found meteors of this size reach the surface of the Earth with far more frequency than otherwise assumed. This landmark finding may have a significant impact on the research focus invested in tracking technologies and disaster management protocols employed the world over. [WNI](#)

HELEN BATTLE BECAME

the first woman in Canada to be awarded a PhD in Marine Biology in 1928. When she returned to Western as an assistant professor in the Department of Zoology, she was one of the first to actively apply histological and physiological laboratory research methods to marine problems. She pioneered the use of fertilized fish eggs to study the effects of carcinogenic substances on development. This paved the way for not only testing for pollutants affecting fish populations, but also assessing the safety of drinkingwater. [WNI](#)

WAYNE HOCKING'S RESEARCH

uses specialized wind tracking radar to monitor the wave and turbulence dynamics in the upper atmosphere. Better short-term weather forecasts and more advance warning for smog alerts are probable payoffs from this Canadian breakthrough. The radar can spot signs of vast streams of ozone leaking from the stratosphere to near ground level, where it forms harmful smog. As much as one quarter of dangerous ground-level ozone may arrive this way, rather than as a pollution by-product. Through his work, NASA has gained additional insight into why the Space Shuttle Columbia perished on Feb. 1, 2003. [WNI](#)

BIOLOGY PROFESSOR MIKE

Grbic and Physics and Astronomy professor Jeff Hutter – for the first-time ever – tested the durability of spider-mite silk and found the bionanomaterial, which is one thousand times thinner than human hair, to be a potentially superior alternative to spider silk, itself long considered a highly attractive light-weight biomaterial due to its high tensile strength and elasticity. The potential applications would require further research but could include construction of scaffolding for cell growth, as well as tissue regeneration and transplantation. [WNI](#)

BLAINE CHRONICK'S WORK

is centered on the development of safer, more advanced medical devices for use within MRI systems. He is currently creating a comprehensive medical device testing and development facility to support companies and academic groups in the development of medical devices that are safe and operational even while within an MR scanner. [WNI](#)

TONY BROWN'S LAB

clearly demonstrated the genetic basis of insect resistance to insecticides. Brown's research team was the first to identify the chromosomal loci responsible for DDT resistance. He pioneered studies to employ biochemical genetics and molecular biology techniques for the investigation of insect resistance against insecticides. His expertise in this field led him to be sought by the World Health Organization, who accorded him the position of biologist while he was on special leave of absence 1956-58. [WNI](#)