lions of other implements, utensils and appliances; and, the *mightiest* of all – books and newspapers. The sheer volume of press trade in terms of people, land, money and materials is just not possible to estimate today. Just to give an example, Americans need more than a hundred billion cans for food and beverage every year[1]. Similar astronomical figures also apply to millions of other domestic, automotive and electronic products made using press tools. Thus, press tools generate as much wealth as waste; and, therefore, recycling is a key part of press trade. Supplementing *recycling*, designers are also focusing more and more on handling thinner and thinner sheetfeed to produce smaller, lighter, cheaper and more compact products.

Handling petal-thin sheets calls for sophisticated and sensitive press tools to protect the products. Designing such tools demands a thorough appreciation of engineering science on the one hand and a competent selection of motors and controls on the other. In the context of press tools design, knowledge of engineering mechanics pertaining to plasticity, fracture and contact phenomena is essential. Regarding motors and controls, a basic appreciation of digital data acquisition to facilitate computer control of machine tools is desirable.

Traditional press toolmakers have arrived at this critical juncture not fully trained to blend their legendary artistic skills with the precision and control of contemporary science and technology. Lamentably, as a result, many small-time trades and crafts are gradually vanishing from the scene and their place taken over by big-time global industries. It is somewhat ironical that press tools have played a key role in globalization through free press and free trade.

All said and done the number of books written by practitioners is steadily dwindling leading to an alarming dearth of *authentic* information about engineering practice. In this respect, the book under review is a welcome whiff of fresh air bringing out the aura and aroma of press trade. The author presents a panoramic view of the subject including materials, processes, manufacturing, planning, selection and existing standards along with an introduction to computer-aided design of press tools. The book covers a wide variety of operations performed by press tools beginning with cutting, bending, forming and drawing as four separate chapters (B–E). There is one chapter (F) on miscellaneous operations such as bulging, embossing, coining, etc.

The publishers of this book use a different tradition for indexing chapters (A, B, . . ., N); and, pages, figures, tables and examples are marked as A1, A2, etc. This style of indexing the contents is confusing and makes it difficult for the readers to access information quickly. It is perhaps appropriate to borrow a line from an essay on tradition by T. S. Eliot: ‘In English writing we seldom speak of tradition, though we occasionally apply its name in deploring its absence’. Hopefully, the publishers will restore tradition in the next edition of this book. The author may also find it of some value to compare the *ratio* of tonnage to weight of different presses listed in the chapter on selection of presses. This tonnage to weight ratio serves as a useful design *index* to assess the design efficiency of commercially available presses. The author may also consider adding information about a few foreign machines with regard to their design index. It is also worth considering adding more material on forming – limit diagrams and processing maps to emphasize the interplay of mechanics and materials science in press working[2–4].

In summary, this book highlights the various dimensions in the design and construction of a variety of press tools from a practical viewpoint. I recommend this book for all *real* engineers either at school or at work, and for all managers of industries using press tools.

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Personal News

PERSONAL NEWS

Sir Mark Oliphant (1901–2000) – An obituary

The popular radio comedian Fred Allen once asked an actor impersonating a physicist as to why anyone would spend his time trying to smash atoms. The reply, delivered in a thick German accent, 'Vell, someday someone might vant half an atom' brought the house down. Sir Mark Oliphant, who died on 14 July at the age of 98, was one of the few scientists who was privileged to work with the New Zealand-born Nobel-prize winning physicist Ernest Rutherford, in whose Cavendish Laboratory, at Cambridge University, the atom was first smashed and split. Oliphant was an Australian, whose direct, outspoken manner, informal personality, zest for life and boisterous laughter endeared him to Rutherford. He was happiest when he could get down to doing experiments, often with equipment that he himself designed and built. His instrumentation showed the influence of Rutherford's string-and-sealing-wax approach. He was not always successful, for when he ran short of money to complete the world's most powerful accelerator for nuclear research, his project was mischievously referred to as the 'white Oliphant'. He was however a brilliant scientist. Prior to World War II, the

Cavendish Laboratory where Oliphant worked was an outstanding institution for experimental nuclear physics. At one time, it had eight Nobel laureates responsible for some of the spectacular discoveries in physics.

Marcus Laurence Elwin Oliphant was born in Adelaide, South Australia on 8 October 1901. He was educated at the University of Adelaide where he graduated in Physics. He married Rosa Wilbraham and proceeded to Cambridge, as an 1851 Exhibition Scholar, and began working with a group of particle physicists at the Cavendish Laboratory led by Rutherford. From a small quantity of heavy water that was obtained from G. N. Lewis, Oliphant and Rutherford began the bombardment of deuterium (heavy hydrogen) nuclei. These deuterons under accelerated bombardment at times interacted with one another to produce a new hydrogen isotope, named tritium with a mass number 3. The discovery of the tritium isotope of hydrogen in 1934 by Oliphant and Rutherford was a milestone, for it was fundamental to the subsequent production of nuclear bombs.

In 1937, Oliphant was not only appointed to the Poynting Chair of Physics at the University of Birmingham, but elected a Fellow of the Royal Society as well. The University had obtained a substantial grant from Nuffield, the motor magnate, to build a cyclotron, and Oliphant began to expand and improve his nuclear physics department. It was in Birmingham that Oliphant helped develop and build the resonator magnetron – a device that greatly improved the efficiency of the centimetric radar, and one that was later instrumental in the sinking of German submarines in the Atlantic during the war. Oliphant invited the Austrian émigré, Otto Frisch and found him work as an auxiliary lecturer. He also recruited another brilliant German theoretical physicist, Rudolf Peierls who became joint head of the Mathematics Department with G. N. Watson in Birmingham. Subsequently, Otto Frisch and Rudolf Peierls initiated the atom bomb research in England.

In August 1943, a group consisting of James Chadwick, Marcus Oliphant, Francis Simon and Rudolf Peierls went to the United States from England to exchange scientific information between the two countries. Scientific research collaboration between England and America was not easy then. It was largely due to the personal chemistry between Churchill and Roosevelt that the obstacles were cleared. Oliphant found the American obsession with security rather funny. He was given a false name of Michael Oliver, while Niels Bohr was known as Nicholas Baker to ensure that no information from the Manhattan Project reached the enemy. This was rather silly, given that Klaus Fuchs, a member of the British team of physicists working with the Americans to assemble the atom bomb at Los Alamos was sending detailed description of its design to the Russians regularly through his colleague Ruth Werner (nee Kuczynski) then living in Oxford. When Klaus Fuchs returned to England in 1945, he again used Werner to pass on vital information to the Russians that helped them build their hydrogen bomb. From 1943 to the end of the war, Oliphant was based at the University of Berkeley, California where he concentrated on the electromagnetic method for separating ^{235}U from ^{238}U.

The first ever test of a nuclear bomb, 'Trinity' took place on 16 July 1945 in New Mexico. Having helped develop the atom bomb, Oliphant was rather naïve to express his horror and dismay when it was later tested on the Japanese. A number of fellow scientists associated with the Manhattan Project, including Albert Einstein were appalled at the destructive power of the atom bomb they helped produce. About 140,000 and 70,000 Japanese died in one stroke in Hiroshima and Nagasaki, respectively in August 1945. During the cold war, Oliphant was identified as one of the 'peaceniks' opposed to the use of nuclear weapons of mass destruction.

In 1950 Oliphant returned to Australia, where he directed his efforts to the establishment of the Research School of Physical Sciences at the Australian National University in Canberra. During his 13-year tenure, he promoted research of the highest quality and developed the institution into one of the best in the world. For his anti-nuclear stand, he became very unpopular with the Governments of both the US and Britain. The US snubbed him by not granting him a visa to attend a conference on Nuclear Physics in Chicago in 1951, while Britain totally ignored him in monitoring of the nuclear weapons tests that it carried out in Australia. Given their misgivings about nuclear weapons, the Australian public however was extremely supportive of Oliphant's stand against the French government's brazen action in testing its nuclear weapons in the Mururoa atoll in the Pacific. 'The French are like a bandit with a sawn off shotgun' was his assessment of the French government's absolutely callous and utterly irresponsible behaviour in the South Pacific, so far away from home and so close to Australia. In 1959, Oliphant was appointed Knight of the British Empire.

On his retirement, Oliphant was appointed the Governor of South Australia from 1971 to 1976. In Cervantes' *Don Quixote de La Mancha*, Don Quixote tells Sancho Panza that it is a tradition among masters to promote their servants to governors in the kingdoms they conquer, and that in most cases, the adventure in becoming a governor ends in nightmare. In Australia, retired generals or admirals, who are known more for their pompousness than ability, usually hold this post. It is therefore all the more surprising that South Australia chose Mark – a distinguished and very outspoken scientist – who disliked pomposity. Mark's tenure as the Governor of South Australia did not turn out to be another nightmare. Instead, he became extremely popular with his fellow Australians, for his courageous stand against the abuse and misuse of nuclear power. He was appointed a Companion of the Order of Australia in 1977. In his passing, the scientific community has lost not only one of the last of the giants who contributed so brilliantly to the development of nuclear physics but also an underdog who stood up for what he believed. His only daughter survives him.

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