



PROFESSOR A. K. MACBETH

## OBITUARY

ALEXANDER KILLEN MACBETH, 1889–1957

Alexander Killen Macbeth was born on 11 August 1889 at Drumbuoy, Strabane, Co. Donegal, and died on 29 May 1957 at Adelaide, South Australia. He was educated at Queen's University, Belfast, and at University College, London, where he was an 1851 Exhibition Scholar. He returned to Belfast to a staff position and then went, in 1919, to St. Andrews as a Senior Lecturer in Chemistry. From 1924 to 1928 he was Reader in Chemistry at Durham; in the latter year was appointed to the Angus Chair of Chemistry in the University of Adelaide, which he occupied until his retirement in 1954, when he was created Professor Emeritus. He held the degrees of M.A. and D.Sc. of the Queen's University, Belfast, and was elected to the Fellowship of the Australian Academy of Science in 1955. In 1946 he was awarded the C.M.G. for his services to the University of Adelaide and to industry during the war.

He actively pursued research up to his retirement and published papers in many fields. During a rather barren period for organic chemistry in Australia he produced a steady stream of work and a number of his former students now occupy prominent positions. His tenure of the Adelaide Chair was in a difficult period, coinciding as it did first with the depression and then with the Second World War. Despite this, he organised a thriving department, starting initially with one Liebig condenser and a few flasks. He set about with characteristic energy and perseverance to improve the situation and saw built, largely to his own plan, a new chemistry school opened in 1933. He showed the same characteristics during the war in organising the production of drugs such as sulphamerazine, phenacetin and caffeine in improvised equipment and improvised factories.

He carried his energies into wider fields than his own department. He served on the University Council for twelve years, and was a Dean of the Faculty of Science. He served for ten years on the Council of the Presbyterian Girl's College and was a member of several Government committees concerned with foods and drugs and poisons. He took a great interest in pharmacy and was Chairman of the Board of Studies in Pharmacy for 21 years. He is justly regarded as the most important influence in recent years on the education of pharmacists in South Australia and was largely responsible for the University courses in that subject.

His earliest researches were with A. W. Stewart on the ultra-violet absorption of organic compounds, which led to his later pioneer work on the use of this technique in the determination of structures. He next investigated, using spectroscopic techniques, the reaction between tetranitromethane and unsaturated compounds. In the course of this work an explosion seriously injured his hands and nearly terminated his career. Characteristically he

investigated the cause of the explosion and published a cautionary note. A further extension of the work on polynitro-compounds was the observation of the presence of "positive" halogen in chloro- and bromo-nitroform, which led to a study of the reactivity of halogenated compounds in general.

At St. Andrews, Irvine was at the height of his researches on carbohydrates and under this influence he carried out researches on glycosides, monosaccharides and glycogen. During this period he was associated with E. L. Hirst and also, briefly, with Robert Robinson. In Durham he continued his previous work, but when he came to Australia the direction changed. Owing to inadequate resources, long distances from sources of chemical supply and separation from colleagues, he found that the most fruitful type of work was concerned with Australian natural products. In this he was, in a sense, following the pioneer steps of Rennie. He investigated initially naphthaquinone pigments and some monocyclic terpenes from the genus *Eucalyptus*. He used ultra-violet spectra extensively and successfully, and was able to elucidate the structure of droserone and to synthesise related methyl-naphthazarins. His terpene work included studies in relation to the biosyntheses and interconversions of oil constituents. After the war, with a number of able young collaborators he extended the terpene work in a study of the mechanism and stereochemistry of the Ponnendorf reaction and the preparation and study of stereoisomeric cyclohexane derivatives obtained from oil constituents such as cryptone.

With the exception of a few meteoric professors who briefly flashed across the Australian firmament he could justly be described as the first Australian organic chemist with a modern outlook. His work was in no way provincial, although mainly concerned with Australian products. He used all the experimental tools of his trade well, including physical methods. He used synthesis when he needed it and was well aware of the importance of stereochemistry and biosynthesis, both very contemporary subjects in 1957. Considered on an international scale his achievements were, like the man himself, rather modest but nevertheless quite definite. His example showed what could be done in Australia and his outlook and clear teaching inspired his students, among whom, to select three at random, are J. R. Price, G. M. Badger and J. A. Mills. In their work is to be found a very clear trace of his influence. Both world chemistry and Australian chemistry in particular would have been much the poorer without his contribution.

A quiet man, Macbeth nevertheless had very definite ideas of his own. Although friendly in manner he was not an easy man to know well; his sincerity and obvious high regard for principle were clear to all. He liked the things of nature and his farm was a great source of pleasure to him. He will be remembered with affection by those who knew him, and will take an honoured place with the founders of scientific teaching in Australia. He is survived by his widow, a son and three daughters.