Professor D. E. Rutherford

OBITUARY

D. E. RUTHERFORD

Professor D. E. Rutherford died suddenly at his home on 9th November 1966. His untimely death, at the age of 60, has deprived Scotland of a man whose personality and talents have had a distinctive influence on the growth of mathematics in this country and elsewhere. Our Society, in particular, gratefully records the services he has rendered as President for the sessions 1940-41 and 1963-64, as a member of the Committee for fifteen years, and as Local Secretary to the St. Andrews Colloquia of 1934 and 1938, whose successes owed a great deal to his initiative and skill in organisation.

Daniel Edwin Rutherford was born at Stirling on 4th July 1906. The family later moved to Perth, and he attended Perth Academy until 1924. Having won a bursary that enabled him to become a student at St. Andrews, he graduated B.Sc. in 1927, M.A. in 1928 and gained a first class Honours degree in Mathematics in 1929. He shared the award of the Guthrie Scholarship for that year and, with characteristic enterprise, decided to pursue his further studies abroad. At Professor Turnbull's advice he went to Amsterdam, where under the guidance of R. Weitzenböck he obtained the degree of Dr.Math. for his work on modular invariants, subsequently published as a Cambridge Tract (**1**). Written by so young a mathematician, this book showed a remarkable power of exposition and ability to understand the diffuse literature on this subject; it has recently been reprinted by an American company. He also spent one semester at Göttingen. Apart from the invaluable mathematical experience that his sojourn on the Continent gave him, he acquired an excellent command of Dutch and a good knowledge of German, as well as a taste for foreign travel.

On his return to Scotland Rutherford held junior posts at Edinburgh (1932-33) and St. Andrews (1933-34), and in 1934 was appointed to a lectureship at St. Andrews. Under the terms of this appointment his main task was to develop the teaching of Applied Mathematics. Although by training and inclination an algebraist—almost all his researches lay in this field—he accepted this challenging assignment with zeal.

In academic matters, as in other spheres of life he was always eager to break new ground and he at once began to modernize the syllabus by introducing novel courses in pure and applied mathematics. Rutherford was a gifted and devoted teacher. His lectures were carefully prepared; he delivered them fluently in a somewhat quiet voice but at a speed which enabled the audience to take good notes. With students he was generally popular, partly because he retained a certain youthfulness throughout his life but also because he remained conscious of being an alumnus of the same University.

His services to St. Andrews were not confined to the teaching of mathematics; he took an active part in University administration and was a respected member of several important committees. During the war he held a commission in the R.A.F. and organised the teaching programme for the Initial Training Wing stationed at St. Andrews.

Whilst St. Andrews is greatly indebted to him, it is equally true that he was deeply attached to his alma mater and to its ancient and captivating city. He declined offers of a chair beyond the borders of Scotland and, with the exception of a year's visit to the University of Notre Dame, he preferred to live and work at St. Andrews. His promotion to a Readership in 1952 was well-deserved, but full recognition of his gifts and merits was delayed until 1964, when he was elected to the newly established Gregory Chair in Applied Mathematics.

Rutherford's most significant contribution to mathematical literature lies in his books and in his outstanding work as editor of the University Texts, published by Oliver and Boyd. This series of text-books, which has gained universal recognition, was initiated jointly with A. C. Aitken, but in recent years had become increasingly Rutherford's responsibility. Each volume bears witness to his sound judgement of the students' needs and to his expertise in style and typography. Three books in the series are from his own pen (**2, 4, 5**) and record his long experience in the teaching of applied mathematics; his text on Vector Methods became a standard work soon after its appearance. The volume on abstract algebra (**6**), of which E. M. Patterson is a co-author, shows Rutherford's endeavour to keep the undergraduate syllabus in algebra lively and up to date. In addition, he was the founder and editor of the University Mathematical Monographs, also published by Oliver and Boyd. This is a series of more advanced books, to which he contributed a volume on Lattice Theory (**7**).

Rutherford's most important work is the monograph on Substitutional Analysis (**3**). At Turnbull's suggestion he had studied the brilliant but difficult papers of Alfred Young on the symmetric group and decided to give a systematic account of their contents. The result was a book that not only made Young's ideas accessible to a wide class of readers but also contained many original contributions to the subject. Rutherford's description of the explicit representations of the symmetric group is particularly valuable and has been found useful in physical applications.

Despite his numerous commitments and duties he never abandoned his interest in research. He was principally attracted by clear-cut algebraical problems which were amenable to direct attack, and he solved them by the skilful use of the appropriate methods. During the last years of his life he turned to the study of Lattice Theory and Boolean Algebra. From this period dates the volume on Lattice Theory, already mentioned; it is an attractively written text-book of the basic theory together with applications to logic and other topics. In several research papers he dealt with matrices in a Boolean algebra (**22, 24, 25**).

The Royal Society of Edinburgh, to which he was elected in 1934, recognised

his achievements by the award of the Keith Prize in 1953 and, posthumously, of the Makdougall-Brisbane Prize in 1966.

Rutherford had many interests outside mathematics, but interest for him invariably meant activity. He pursued his hobbies and recreations with zest, and in many of them reached a remarkable degree of proficiency. In his younger days he played rugby and hockey, before he had to be satisfied with tennis and badminton. He relished all forms of outdoor life, and was a keen gardener and fisherman. Of the arts, painting was nearest to him; he used to entertain his friends by rapidly drawn and strikingly true portraits of them, but he expressed himself best by water-coloured landscapes, several of which were exhibited in Edinburgh and Dundee. He was also fond of music and enjoyed playing the piano, on which he was largely self-taught, and even tried his hand at composition.

In his dealings with people he was quiet and direct, showing a dislike for pomposity and superficial politeness. On the whole, he was a man of few words, but his convictions, and especially his firm commitment to a Christian life, were fully reflected in his actions: whenever the need arose, he could be relied upon to render practical and effective help. His untiring efforts on behalf of refugees will be gratefully remembered by those who benefited from his care. He offered generous hospitality to friends, colleagues and students. Charmingly received by Mrs. Rutherford, his guests shared in the relaxed atmosphere of a happy home. But those who knew Dan Rutherford intimately will, above all, cherish the memories of their visits to Glen Lyon. The small cottage, which he owned for several years, was equipped for all kinds of recreation, but also with a blackboard for serious mathematical study, which often continued until late at night after a refreshing day on the hills or by the river. In this setting he was the most delightful companion in work and in leisure, communicating to his fellows his rich personality, his humour and his energy, his love of nature and of art.

The Society's sincere sympathy is extended to Professor Rutherford's widow and their two daughters. W. LEDERMANN

The writer is indebted to Professor E. T. Copson for some biographical and bibliographical details.

LIST OF PUBLICATIONS

Books

(1) *Modular Invariants* (Cambridge Tracts in Mathematics, No. 27, 1932; repr. Stechert-Hafner Inc., New York, 1964).

(2) *Vector Methods* (Oliver and Boyd, Edinburgh, 1939).

(3) *Substitutional Analysis* (Edinburgh University Press, 1948).

(4) *Classical Mechanics* (Oliver and Boyd, 1957).

(5) *Fluid Mechanics* (Oliver and Boyd, 1959).