

'shoddy', in the form of waste from woollen mills, is used as a valued manure. Most of them are very sensitive to frost and unlikely to persist as weeds. P. Greenfield showed a living plant of *Cystopteris dickieana*, a fern known only from sea-caves near Aberdeen, where it may be extinct.

The organization of the work of revising the Flora of Warwickshire was demonstrated by P. S. Green. This included printed cards for recorders to use in sending in records, outline maps, circulars to contributors setting out instructions for collecting material of critical groups, and the "Flora Bulletin" for circulating information about the progress of the work. Coloured drawings of plants by Miss W. M. A. Brooke, Dr. J. T. Burgess (prepared 1879-1900), Miss H. D. Garside, Miss M. Knox, Rev. W. Keble Martin, Mrs. B. H. S. Russell and Miss P. Woodlands (from the Glasgow Natural History Society), and photographs, maps, manuscripts, books and herbarium specimens from other contributors were also displayed.

The general impression which the exhibition meeting left in my mind was that work on British field botany is progressing faster than ever before. This is no doubt primarily due to the renewed interest in taxonomy at the universities, as evidenced by the exhibits. But their research is also assisting the work of other centres of study and it is helping the amateur botanist to direct his energies to more profitable channels. As a result, field botany in Great Britain has had an exceptionally successful season.

J. E. LOUSLEY

<sup>1</sup> Burt, B. L., *Kew Bulletin*, 2, 266 (1950).

<sup>2</sup> Druce, G. C., *Notes R.B.G., Edin.*, 12, 112 (1904).

<sup>3</sup> Druce, G. C., *Rep. Bot. Soc. and E.C.*, 9, 95 (1930).

<sup>4</sup> Babington, C. C., *Ann. Nat. Hist.*, Ser. 2, 8, 505 (1851).

<sup>5</sup> *Watsonia*, 1, 63, 89, 102, 135, 149, 284, 345, 366 (1949-50); 2, 18 (1951).

<sup>6</sup> Walters, S. M., *Watsonia*, 1, 13 (1949).

<sup>7</sup> Raven, J. E., *Watsonia*, 1, 357 (1950).

<sup>8</sup> Thellung, A., and Hegi, G., in Hegi, G., *Ill. Fl. Mittel-Europa*, 5 (2), 1430 (1926).

## OBITUARIES

### Dr. R. G. Aitken

WE have learned with much regret of the death on October 29, in his eighty-seventh year, of Dr. Robert Grant Aitken, director emeritus of the Lick Observatory, California. Born at Jackson, California, on December 31, 1864, Aitken was educated at Oakland High School and Williams College, Massachusetts. During 1891-95 he was professor of mathematics and astronomy in the College of the Pacific. In 1895 he joined the staff of the Lick Observatory, where he was to remain throughout his active career. William Joseph Hussey, professor of astronomy at Leland Stanford University, was at that time a volunteer observer at the Lick Observatory, and in 1896 he also was appointed to the staff. Aitken and Hussey almost at once embarked on a systematic survey of all stars down to magnitude 9.0 on the *B.D.* scale in the portion of the sky from the north pole to 22° south declination for the detection of double stars.

The survey was made at first with the 12-in. refractor, the great 36-in. refractor being used only to verify the duplicity of all discoveries. But soon the survey and the measures were made solely with the larger telescope. After Hussey left the Lick

Observatory in 1905 to become director of the Detroit Observatory, Aitken carried on the survey alone, and eventually completed it to 18° south declination; the South African double-star observers taking over the responsibility for the remaining portion of the sky. In the course of this work, Aitken discovered 3,103 new double stars; Hussey, in his portion of the survey, had discovered 1,327. Throughout the survey an upper limit of separation of 5" was fixed, but for more than half the new discoveries the separation was less than 1".

Aitken did not restrict himself to discoveries of new binary systems. He re-measured each of his own stars at two subsequent epochs in order to detect orbital motion, while stars of special interest were observed more frequently. In the course of his work a large number of measures of known binaries, and particularly of those showing orbital motion, were made. He also computed a large number of orbits.

His observations were characterized by a high standard of accuracy, and the measurements of even the closest pairs were affected by only small accidental errors. Of special interest is the pair Aitken 88, which he discovered in 1901; the period of this binary system is only 12.2 years and the maximum separation 0.17". Aitken observed it right round its orbit and computed the orbital elements, no other observations of this difficult pair being obtained by any other observer.

The homogeneous material obtained in this great survey was used by Aitken for various statistical studies. It is of interest to note that about one star in eighteen of those examined was capable of visual resolution as a binary star.

In 1932 Aitken published the "New General Catalogue of Double Stars within 120° of the North Pole". This work was planned to supplement the "General Catalogue" published by Burnham in 1900. On his retirement from the Yerkes Observatory, Burnham had turned over the material that he had collected for the revision and extension of his catalogue to Prof. Eric Doolittle, director of the Flower Observatory. After the death of Doolittle in 1920, the whole of the material was taken over by Aitken in accordance with a promise he had made to Doolittle in 1919. In this great work is given for each pair the earliest available measure and all later measures except those quoted or referred to by Burnham. The wider and fainter pairs were omitted, however, as unlikely to be physical doubles. Aitken set a limit of separation of 10" for a pair with apparent magnitude of 9.0, with appropriate limits for brighter and fainter pairs. About thirty per cent of Burnham's pairs were thereby excluded, yet the new catalogue has 17,181 entries as compared with Burnham's 13,665.

In 1918 Aitken published "The Binary Stars", an authoritative and comprehensive survey of every aspect of double-star astronomy, which has proved invaluable both as a text-book and as a work of reference. A revised and enlarged edition was published in 1935.

The observation of double stars is of great importance for the information it provides about the masses of the stars. It remains one of the few fields of work in which observations (except for wide pairs) must be made visually. The glamour of astrophysics has unfortunately resulted in the almost complete neglect of double-star observations, at least in the northern hemisphere. Aitken was one of the great exponents

of double-star astronomy in all its varied aspects; throughout his active career he pursued it with single-minded detachment, using to the full the advantages provided by the great 36-in. refractor and the excellent conditions for observation on the summit of Mount Hamilton.

Aitken was appointed associate director of the Lick Observatory in 1923 and director in 1930; he retired in 1935 with the title of director emeritus. After his retirement he continued to take a keen interest in astronomy. He was in great demand as a lecturer and was very active in the affairs of the Astronomical Society of the Pacific; at the time of his death he was chairman of its Board of Directors. He was elected an associate of the Royal Astronomical Society in 1913; he was awarded the Catherine Bruce Gold Medal of the Astronomical Society of the Pacific in 1926 and the Gold Medal of the Royal Astronomical Society in 1932. He married in 1888 Jessie, daughter of Captain W. R. Thomas, and there were three sons and a daughter of the marriage.

H. SPENCER JONES

### Prof. C. K. Tinkler

THE death on October 25 of Prof. C. K. Tinkler, formerly professor of chemistry in King's College of Household and Social Science, University of London, will be felt as a loss in many circles, particularly in the world of women's education—a world in which he ranked as a pioneer.

Prof. Tinkler was born in 1881 and received his early education at Caterham School. It was here that he first met V. H. Mottram, who on his appointment in 1920 as professor of physiology in King's College became his colleague and close associate. Tinkler graduated from the University College of North Wales, Bangor, and afterwards went to the University of Edinburgh to work under Prof. J. J. Dobbie. In 1904 he became a lecturer in the University of Birmingham, and during the following eleven years worked intensively both in teaching and research. He published many papers on alkaloids of the berberine type and cognate compounds, made a study of fuels, and in collaboration with a fellow lecturer published a book much valued in the petroleum industry, "The Chemistry of Petroleum", by Tinkler and Challenger.

In 1915 he was appointed a reader in the University of London and head of the Chemistry Department of King's College of Household and Social Science, then the Home Science Department of King's College for Women. It was to the work and development of this College that he devoted the remaining thirty-two years of his professional career until his retirement in 1947.

To understand fully the main achievements of Prof. Tinkler's life it is necessary to look back at the history of the College with which he was so closely identified. At the time of his appointment, the College was in its infancy. Only seven years previously, in 1908, a course dealing with the scientific and social aspects of the household and institution had been run for the first time in a department of King's College for Women, a branch of King's College, Strand. In those days the idea that there could be any connexion between pure science and the mundane affairs of the kitchen and laundry was revolutionary, and still more revolutionary the idea that a liberal academic education for women could be based on subjects within their own sphere. Never-

theless, a few great men of vision, Sir John Atkins, Sir Cooper Perry, Sir Herbert Jackson and Prof. A. Smithells, were convinced of the scope and necessity for this type of education for women; they devised and initiated the course, and collected by private enterprise sufficient money to acquire a site on Campden Hill, Kensington, and to begin building a college. If any justification of their faith be required, it is to be found in the universal acceptance to-day of their ideas and in the progress and expansion that have taken place in every aspect of the field they sought to cover: for example, in the science of foods, detergents, house-heating and ventilation, and even in the study of the social and economic relationship of the home to the community and the nation.

It was by a stroke of good fortune that Prof. Tinkler became a member of the small staff in 1915, for he was imbued by the same ideas, and threw himself whole-heartedly into the task of developing the course and establishing the College and its work. His arrival took place at the opportune moment when the first instalment of the building, including the laboratories, was erected but not yet equipped. Here then was a situation calling for those qualities with which Prof. Tinkler was well endowed—organizing ability, initiative and enthusiasm born of his ever-increasing and infectious faith in the whole project.

Success came with the years: in 1920 a professorship was conferred upon him by the University of London, in 1921 the course was recognized by the University by the granting of the degree of B.Sc. (Household and Social Science), and in 1928 the College was recognized as an independent school of the University and given its present title. In the development, Prof. Tinkler was the leading spirit. His personality, combined with wisdom and knowledge, rendered him an invaluable committee member, an able representative of the College in the outside world, and the man to whom people instinctively turned for guidance in all matters, whether academic, practical, or administrative. Within his own department he applied himself from 1915 onwards to the task of devising a suitable course in chemistry to dovetail with the other subjects in the curriculum. In collaboration with Miss Helen Masters he created a course in applied chemistry unique in its scope and to the present day regarded as a model in home science departments throughout the world. The results of original work were embodied in this course from time to time. The practical work and some of the better established aspects of theory were published in two volumes: "Applied Chemistry", by Tinkler and Masters.

As a teacher, Prof. Tinkler excelled. He possessed a great store of knowledge of a wide range of practical matters and had a remarkable gift of clear exposition and a rare capacity for bridging the gap between the academic and practical aspects of his subject.

AGNES JACKMAN

THE death is announced of Mr. J. E. Southcombe, a director of Germ Lubricants, Ltd., at the age of sixty-six. He graduated at the University of Liverpool in 1907, and after a short period of teaching in Ireland returned to Liverpool to do chemical research. He collaborated with the late Henry M. Wells in an investigation of the properties of 'fatty oils', and their use as compounding agents with mineral oils for lubrication; and afterwards specialized on 'boundary phase' lubrication problems.