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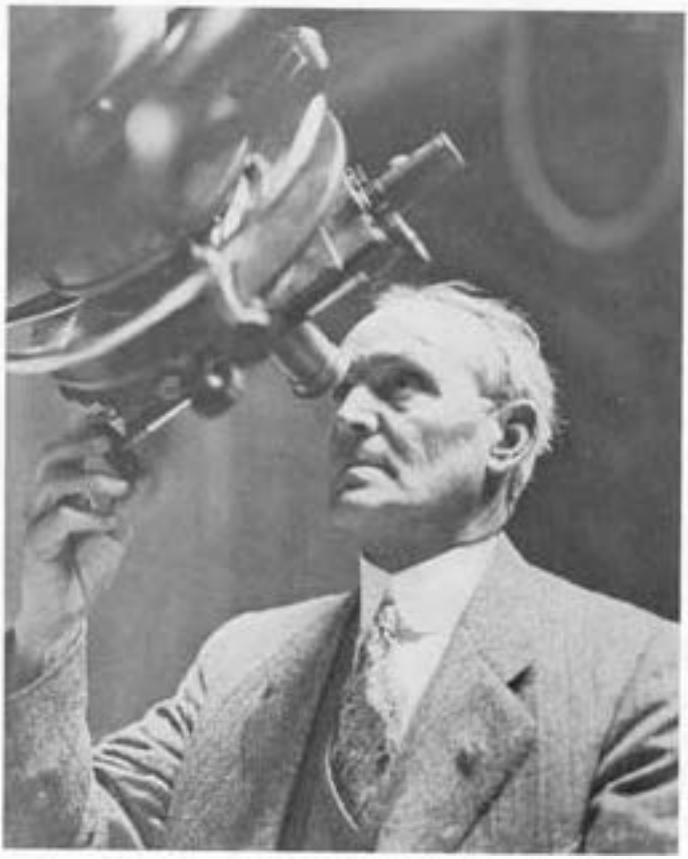
ROBERT GRANT AITKEN

1864—1951

A Biographical Memoir by

WILLIAM H. VAN DEN BOS

Biographical Memoir



Robert G. Aitken

Photo courtesy of Lick Observatory

ROBERT GRANT AITKEN

December 31, 1864—October 29, 1951

BY WILLEM H. VAN DEN BOS

ROBERT GRANT AITKEN was born on December 31, 1864, in Jackson, California, and died on October 29, 1951, in Berkeley, California.

His father, Robert Aitken, came to America from Scotland and his mother, Wilhelmina Depinau, was the daughter of German immigrants.

His early education followed classical rather than scientific lines, as his mother wished him to enter the ministry. In 1880 he entered the Oakland High School and in 1883 Williams College, still with the ministry in view. However, he also took courses in biology and astronomy and did some work in the observatory under Truman Safford. He graduated in 1887, but as a result of his reading he felt —though he remained a deeply religious man to the end of his days —that he could not become a preacher of the orthodox, doctrinaire theology of the day. He accepted a position as house master in the Hopkins Academy, Oakland.

In 1888 Aitken married his high school classmate, Jessie L. Thomas, and accepted a position as head teacher in Livermore College, where he stayed until 1891, when he was appointed professor of mathematics in the (then) University of the Pacific. Here he found a little observatory, equipped with a good 6-inch Clark refractor and a small reversible transit. He made the acquaintance of Barnard and Holden of the Lick Observatory, and at last his future career began to take shape.

In June, 1894, he spent a fortnight on Mount Hamilton as Holden's guest and a year later repeated his visit, this time accompanied by his family. He remained at Lick for the next forty years, retiring in June, 1935. Starting as Assistant Astronomer, Aitken was promoted to Astronomer in 1907, Associate Director in 1923, and Director in 1930.

At first his time was devoted to all kinds of routine work and to the observation of comets, asteroids, satellites, double stars, and orbit computation, but double stars took an ever larger part of his time and it is as a double star astronomer—and assuredly as one of the greatest of them—that Aitken will be remembered.

When Aitken started his career at Lick, the dominant figure in double star astronomy was Sherburne Wesley Burnham. Burnham—like Dawes and Dembowski and many other well-known double star observers, an amateur astronomer—initiated the second era of double star astronomy, which began with the last quarter of the nineteenth century. After the pioneer work of the Herschels and Struves, the mistaken opinion had taken hold that, as far as finding new double stars was concerned, the skies were exhausted. Burnham soon showed that, even with a 6-inch refractor, many double stars remained to be found. When he had the opportunity of using telescopes of greater power, culminating in the Lick 36-and Yerkes 40-inch refractors, his discoveries continued unabated, and it became clear that the number of double stars as yet undiscovered but within the grasp of such powerful instruments considerably exceeded the known pairs.

Aitken was well aware of this; also, he was convinced that the prerequisite for statistical investigations was a systematic survey, in which all stars down to a certain magnitude were to be inspected for duplicity, using a powerful modern telescope. Consequently he started such a survey in 1899, his colleague Hussey joining forces with him soon afterwards. All stars given in the Bonner Durchmusterung as not fainter than 9.0 (Aitken) or 9.1 (Hussey), down to 14 degrees southern declination or, during the more favorable sea-

son, 22 degrees, were to be tested. Some of the searches were made with the (excellent) 12-inch Lick refractor, but the great majority with the 36-inch.

When Hussey left Lick in 1905, Aitken took over his zones and finished the survey in 1915. It resulted in the discovery of about 4,400 new pairs, of which more than 3,000 were Aitken's. Nearly all of them have separations under 5″ and many, though by no means all, are very close and difficult pairs to measure.

Even this great survey has not exhausted the northern skies; a considerable number of new pairs has been discovered since its completion, quite apart from those fainter than the ninth magnitude. No survey, no matter how carefully done, can ever be exhaustive: there will always be pairs escaping discovery because their separation happens to be too small at the time of inspection, though well within the telescope's grasp at other times, or for other reasons.

Nevertheless, this type of survey is the only one capable of answering a number of questions of a statistical nature and Aitken, after its completion, embarked on some statistical investigations, the results of which he published in his well-known textbook *The Binary Stars,* the first edition of which appeared in 1918, and a revised edition in 1935. He was, however, first and foremost an outstanding observer and his major contributions to his chosen field, apart from the survey, consist of his careful and accurate measurements, kept up right through his active career, of thousands of close and difficult pairs, his own discoveries as well as others. Numerous orbits were computed when, to Aitken's cautious mind, the data of observation seemed to justify the attempt. Though in the first rank as a double star discoverer, Aitken never forgot that discovery is only the first step in a double star's history and that the mere fact whether a particular star is or is not double is of comparatively small importance; discovery must be followed up by regular remeasurement, covering decades if not centuries, so that the motion may be found and ultimately the orbit computed. It is only after this stage has been reached that the pair can supply information of great value to astro-

nomical science, such as a knowledge of stellar masses—data of fundamental importance in stellar research. The binary stars with known orbits also supply the observational material for studies of the statistical distribution of their periods of revolution, eccentricity of the orbit, semi axes major, orientation in space of orbit planes and of major axes with respect to the galactic plane, etc. Aitken deals with all these aspects of double star astronomy in *The Binary Stars,* in addition to chapters on its historical development, methods of observation and orbit computation, spectroscopic and eclipsing binaries, hypotheses on the origin of the binary and multiple stars, etc.

In 1932, shortly before the end of his active career as a double star observer, Aitken published his magnum opus: *New General Catalogue of Double Stars within 120° of the North Pole.*

In the course of the nineteenth century a vast amount of observational material on double stars and multiple stars in the form of measurements, orbits, and theoretical studies had been accumulated. This information was scattered over a large number of more or less accessible publications and periodicals, so that the task of collecting a complete set of data on a particular object became more and more difficult. The need was felt of a compact and reliable source of reference which would spare the investigator the burden of hunting blindly through a large astronomical library.

It was Burnham who supplied this by the publication, in 1906, of his *General Catalogue of Double Stars within 121° of the North Pole,* while Innes, at the Cape Observatory, had covered the southern hemisphere by his *Reference Catalogue,* published in 1899. These works were of inestimable value to any astronomer requiring information on double star matters, but they gradually became out of date and, after the lapse of another quarter of a century, the need for a supplement or revision became apparent. Aitken's friend and colleague, Eric Doolittle, had taken over Burnham's task of compilation and had kept a card catalogue up to date.

Shortly before Doolittle's death in 1920, he handed over his cards to Aitken, who brought them up to date and used them in the

preparation of his *New General Catalogue,* known to every astronomer as the ADS. This is complete to 1927 and supplies, when combined with Burnham's BDS, all the information on double stars and multiple stars up to that year which can reasonably be asked for. At about the same time, Innes, at the Union Observatory, Johannesburg, published his SDS, a loose-leaf catalogue covering the region from 19 degrees southern declination to the South Pole.

At the present time the need for a further revision is once more felt and the publication of a reference catalogue covering the whole sky and based on the two card catalogues kept at Lick and Johannesburg is contemplated. However, when such a publication materializes, it will in no way render the ADS obsolete, just as the publication of the ADS did not make the BDS obsolete. The ADS is, and will remain, a lasting monument to Aitken's life work. Even a superficial study of it reveals the quantity and quality of Aitken's own contribution as a double star observer.

Aitken received many honors, such as Sc.D. from the University of the Pacific in 1903, Williams College in 1917, and the University of Arizona in 1923, LL.D. from the University of California (Los Angeles) in 1935, the Lalande Gold Medal from the French Academy of Sciences in 1906, the Bruce Gold Medal from the Astronomical Society of the Pacific in 1926, the Royal Astronomical Society's Gold Medal in 1932. In the same year, 1932, he delivered the Darwin Lecture to the Royal Astronomical Society, taking as his subject "What we know about double stars," a masterly exposition which should be carefully studied by anyone interested in double star problems.

Aitken was a member of and held official positions in several learned societies: the Astronomical Society of the Pacific, of which he was President in 1898 and 1915, and Editor of Publications from 1897 to 1908 and from 1911 until his death, Secretary and member of various committees for many years; the American Astronomical Society, of which he was Vice-President from 1929 to 1931 and President from 1937 to 1940; the American Philosophical Society; the National Academy of Sciences, in which he was chairman of its

section of astronomy from 1929 to 1932; the American Association for the Advancement of Science, in which he was President of the Pacific Division in 1925, Vice-President and chairman of Section D in 1926; the Royal Astronomical Society, of which he was an associate; the British Astronomical Association; the Rittenhouse Astronomical Society; Phi Beta Kappa; and Sigma Xi.

When, after the first World War, the International Astronomical Union came into being in 1919 and organized its various commissions, it was a foregone conclusion that Aitken would become the first President of Commision 26, Double Stars. He was succeeded in this function by Hertzsprung in 1928, but remained a member of the Commission until his death. After his retirement he was elected Honorary President of the Commission, a gesture by his colleagues which the Grand Old Man of double star astronomy greatly appreciated.

In infancy Aitken's health was rather delicate as a result of a severe attack of pneumonia, and he did not go to school until he was nine years old but in his later years he had a strong constitution, which enabled him to work as hard as he did—long nights of visual observing with a large telescope are a strenuous form of sport. Even in old age he recovered from a serious illness as well as from the effects of a street accident when, as a result of his deafness, he was run over by an automobile in the streets of Berkeley.

His deafness was an affliction of long standing, although with the help of a hearing aid he was able to follow a lecture and to enjoy a concert. He was very fond of good music and, not being a performer, obtained great satisfaction from his player-piano.

The death of Mrs. Aitken in 1943, a few years after they retired from Mount Hamilton to Berkeley, affected him greatly, but he obtained strength from his conviction that the separation would be temporary and short. He took a deep interest in the welfare of his children—three sons and a daughter survive him—, his eight grandchildren, and nine great-grandchildren, and was happy that many of them lived near enough to him so that he could see them often.

Aitken was not in the least like the scientist of fiction in his ivory tower; he took a deep and active interest in civic matters and in the popularization of astronomy, to which he devoted even more of his time after retirement. He was in demand as a lecturer and a regular contributor of popular articles on astronomical subjects in the Leaflets of the Astronomical Society of the Pacific.

KEY TO ABBREVIATIONS

A.J. = Astronomical Journal
A.N. = Astronomische Nachrichten
A.S.P.L. = Astronomical Society of the Pacific Leaflets
L.O.B. = Lick Observatory Bulletin
L.O.P. = Lick Observatory Publications
M.N. = Monthly Notices of the Royal Astronomical Society
M.A.A.A.S. = Memoirs of the American Academy of Arts and Sciences
P.A. = Popular Astronomy
P.A.S.P. = Publications of the Astronomical Society of the Pacific
P.N.A.S. = Proceedings of the National Academy of Sciences
S.F. Argonaut = San Francisco Argonaut
S.F. Bulletin = San Francisco Bulletin
S.M. = Scientific Monthly

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