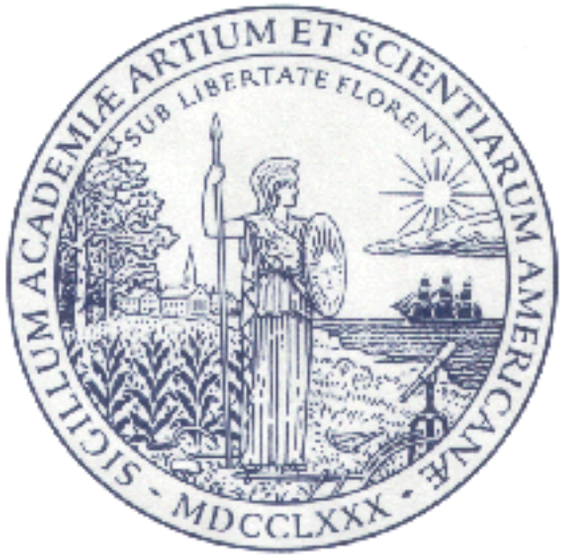

ARTHUR SEARLE (1837–1920).

Fellow in Class 1, Section 1, 1877.

Arthur Searle, who died October 23, 1920, was born in London on October 21, 1837. His father, Thomas Searle, was an American citizen and a descendant of Governor Thomas Dudley of Massachusetts. His mother, Anne Noble, came from Derby, England, being English by birth as well as by ancestry. Thomas Searle seems to have been naturally fitted for the life of a scholar and a man of letters, but the restricted means of the family deprived him of a college education, and forced him into mercantile business at an early age. At the time of his marriage in 1834 he was a partner in a firm of London bankers. It was during this sojourn in England that his son Arthur was born in 1837, and two years later his other son George. As a consequence of a commercial panic Thomas returned in 1840 to America with his family to look after business interests. His wife soon died, and two years after in 1843 he himself passed away, leaving the care of the two boys to his elder brother and a sister in Brookline, Mass.

Both boys were sent early to private schools in Brookline and Roxbury, partly for the reason as Searle afterward suspected, to make life easier for their elders, not accustomed to such lively youngsters. The last school days were passed at the Brookline High School. Entering Harvard College at the age of fourteen years, he was graduated in 1856, as the second scholar of his class. In 1859 he received his Master's degree. Arthur, though only six years old at the time of his father's death, had found in him a companion and an instructor. Under such influence, the scholarly aspirations of the father seemed to have been as seed to find fruition in the son's life. The boy had an alert mind. At the age of seven he began his habit of psychological introspection by the discovery, while meditating on some subject, that it was he himself who was thinking. Thus, he became aware of the personal identity that was Arthur Searle. Before this time he had made his first experiment in physics, namely, as to the effect of centrifugal force acting on a bit of wood placed inside the whirling rim of his aunt Becky's spinning wheel. At eleven years he was interested in the revolution in France, and began to have political opinions, which were always conservative. But anything of a scientific nature fascinated

him. The electric telegraph, anaesthetic surgery, the discovery of the planet Neptune in 1846, all appealed to his mind. Nor was he less gifted in other respects. His avidity for knowledge gave him even then the reputation of being a "walking dictionary." As a schoolboy, mathematics could be easily acquired while feeding his rabbits, and at college he found that he had already performed the chemical experiments which were being taught from a text-book without any provision for laboratory practice by the students. All branches of knowledge inside or outside the college curriculum interested him intensely, and he studied them all eagerly and thoughtfully. His first article was published in the Harvard Magazine, while he was still a student. It was on the plurality of worlds, and seemed prophetic of his future career, as he had no thought at the time of making astronomy a profession.

It was twelve years after graduation that Searle found his calling. The intervening time was a course in the university of life. Ill health led him to engage in farming for a time. Teaching, statistical work, and experience in a broker's office, all were tried. He also joined in a project to raise sheep in California, but the scheme after a brief trial was abandoned. Before returning home from California, he filled temporarily the place of an absent professor at Santa Clara.

In 1868, his brother George, who had been employed at the Harvard Observatory, resigned to study for the Catholic priesthood, and Arthur was asked to take his place. This he did, little thinking that at last he had found a permanent place with congenial occupation. The following year he was appointed Assistant, to be promoted to Assistant Professor in 1883, and Phillips Professor of Astronomy in 1887. In 1912 he became Phillips Professor Emeritus. Besides his Observatory work he also conducted astronomical courses at Radcliffe College from 1891 to 1912. He was married in 1873 to Emma Wesselhoeft, daughter of Dr. Robert Wesselhoeft of Boston. Mrs. Searle died in 1914. Two daughters survive their parents.

His earliest work at the Harvard Observatory was as a computer and observer. In the latter capacity he made observations of stars, double stars, nebulae, satellites of the planets, asteroids, and comets. These observations are contained in the Annals of Harvard College Observatory, Volumes 11, 13, 14, and 33; also in the Proceedings of this Academy, Volume 16. In 1889 he published in the Annals of

Harvard College Observatory, Volume 19, Part 1, the results, which he had gathered, of the early meteorological observations made at the Observatory from 1840 to 1888. Among these were included various miscellaneous observations relating to the aurora, lightning, meteors, earthquakes, and to some extent to the zodiacal light.

The zodiacal light was the subject of his first independent investigation. Beginning in 1874 he continued his observations of the zodiacal light and the Gegenschein until 1895, when the increasing use of electricity for street illumination made such work impossible in Cambridge. The results of these observations are contained in the Astronomische Nachrichten, Volumes 99, 102, 109, 116, 124, and 126, *Proceedings*, Volume 19, *Memoirs*, Volume 11; and the Annals of the Harvard College Observatory, Volumes 19, Part 2, and 33, Nos. 1, 2, and 3. Summaries of information written by him on the subject appear in the Monthly Weather Review and elsewhere.

The several lines of his inquiry dealt with the permanence, position, and magnitude of the ordinary western zodiacal light; the normal distribution of light in the zodiac and vicinity; and the position, parallax, and brightness of the Gegenschein. His studies led him to favor the hypothesis ascribing the phenomenon to light reflected from small meteoric bodies. He published a statement on the "Meteoric Theory of the Gegenschein" also in the English periodical, Observatory, August, 1899. Although he considered the meteoric hypothesis as the most probable explanation, he felt that his series of observations should be extended to reach a definite conclusion. The research should include the orbital movements and the light of asteroids and periodic comets. He expressed the hope that younger observers more favorably located might carry out his plan.

In the Observatory he was frequently engaged in the business management, particularly during the interim between Director Winlock's death and Professor Pickering's appointment. It was at this time that he published Volume 8 of the Harvard Annals, containing his account of the history of the Observatory from 1855 to 1876, with a description of the buildings, instruments and of work done. The volume included also a series of illustrations of Sun, planets, and other celestial objects, which had been drawn mostly by Trouvelot during Winlock's directorship.

Professor Searle spent ten years — from 1888 to 1898 — in making

the meridian circle observations for the Zone Catalogue of 8337 Stars between 9° 50′ and 14° 10′ of South Declination in 1855 for the Epoch 1900.0. The results fill Volumes 62, 65, 66, 67, and 70 of the Harvard Annals. The Catalogue itself, contained in Volume 67, was published in cooperation with the Astronomische Gesellschaft. The reduction and publication of these observations with the superintendence of other computers consumed most of his time and energy until he retired in 1912. With his customary modesty, he regarded this not as a personal undertaking but as a large piece of routine work. Nevertheless, the various investigations related to meridian circle observations, which he undertook in the course of the work, show his skill and ingenuity in meeting such problems. They are indicated in the Introduction to the Catalogue just mentioned. Reference may be made here to "Results of Accessory Series of Observations made with the Meridian Circle," and "Comparison of Results obtained with different Forms of Apparatus in Meridian Observations," in the Annals of Harvard College Observatory, Volumes, 33, No. 11, and 41, No. 7. In 1908 he published in the Harvard Annals, Volume 60, No. 1, "Geometrical Methods in the Theory of Combining Observations." In the Annals, Volume 29, No. 6 are his observations of β Persei, and surrounding comparison stars.

Besides various articles in periodicals, he published "Outlines of Astronomy" in 1874, followed by a second edition in 1875. In 1910 his "Essays I–XXX" appeared, which, among other topics, discussed "Space and Time," interesting in the light of the theory of relativity.

Professor Searle became a Fellow of the Academy in 1877, at the same time with Professor Charles R. Cross, who recently died. His scientific papers presented to the Academy, and not already mentioned are in the *Proceedings*, Volumes 19, 24, and 55. The last paper "Orbits Resulting from Assumed Laws of Motion" was a result of an extensive investigation begun in 1882, forming an important part of a treatise which he had practically completed at the time of his death. Reading this paper on the balanced effect of "inward" and "outward" forces on a moving body, one is carried back to the initial physical experiment, which he performed in his childhood with the help of his aunt's spinning wheel.

He was very much of a mathematician, and when any question of the sort arose he was consulted. The results will be found in various

places. For example, in the paper on "Stellar Photometry" published in the *Proceedings*, Volume 11, the discussion of the path described by stars at various declinations in the field of a telescope when the axis is not properly adjusted, was prepared by him. Not only a mathematician, he was proficient in many languages. "A Note on the Battle of Pharsalus" was the result of re-reading Caesar's "De Bello Civili," which he did for recreation. He amused himself in writing verse both in Latin and in English. One of these poems written at the time of his wife's death has been published since his own death; the Latin version in the Harvard Graduates' Magazine, the English version in Popular Astronomy.

Professor Searle was the most modest of men. His extremely retiring disposition probably accounts for his not accepting Dr. Gould's invitation in 1869 to go as his assistant to Cordoba. Later, he might have been appointed director of another observatory, if he had been willing. His life flowed in a quiet stream. It was as he would have it. The turmoil of strenuous life did not attract him. From youth he was not keen for even the ordinary pleasures of society, and yet he had many warm friends, and a host of acquaintances. All who knew him well, were delighted with his conversational powers. His sense of humor and the merry twinkle in his eye as he recounted some episode were passports to friendliness. His philosophical studies made his thinking clear. When he spoke, it was as one having the authority of careful thought. In discussing any subject he had a succinctness of expression which swept away all intricacies and left the matter in outlines readily understood. He was of a type, not so common at the present day, of a scholarly gentleman, versed in many branches of learning, and keenly susceptible to the delights of music, of art, and the manifestations of nature.

EDWARD S. KING.

WILLIAM THOMPSON SEDGWICK (1855–1921).

Fellow in Class II, Section 3, 1886.

William T. Sedgwick, a Fellow of the American Academy of Arts and Sciences since 1886, died suddenly in Boston, January 25, 1921, at the age of 66 years, while still in the full tide of his activities as a