Professor Otto Struve Receives Gold Medal Award

As already announced, Dr. Otto Struve, director of the Yerkes and McDonald Observatories, is the recipient this year of the Gold Medal awarded by the Royal Astronomical Society, London.

Because of the interest and justifiable pride felt by the astronomers in the United States as a result of this award, and because of the significant astronomical history set forth by Professor E. A. Milne, president of the Royal Astronomical Society, in making the award on April 14, 1944, we reprint here a part of Professor Milne's address as it appeared in *Monthly Notices*, Vol. 104, No. 2, 1944. EDITOR.

"The Council has awarded the Gold Medal of the Society to Professor Otto Struve for his work on the observation and interpretation of the spectra of stars and nebulae.

"It will be my duty and privilege shortly to lay before you the grounds for this award. But before doing so I should like to remind the Society of what an historic occasion this is, historic in the annals of the Society and historic in the annals of the Struve family. For this is the fourth time that a representative of the astronomically minded family of the Struve's has been awarded the Society's Gold Medal—four times in a hundred and eighteen years, or once in each generation.

"My predecessors in this office, when presenting Gold Medals to members of the Struve family, have begun by addressing you on the grounds of the award, leaving to the end of their discourses the remarkable family connection of the Struve's with this award. But the present occasion is so notable that I ask to be allowed to dwell on this aspect of the matter first. I should mention that your Council in making this award was totally uninfluenced by the glamour that surrounds the name Struve in the history of astronomy. The present recipient was selected in fair and indeed severe competition with other names, severe not only in these war-time conditions, where the choice of medallist is partly limited by questions of nationality, but severe also by any absolute standard. It is to the glory of our subject that there has never been any shortage of names of the standard of this, the highest award in the Society's gift, and it was partly because of the probable future abundance of astronomers worthy of receiving the Medal that your Council decided to continue the restoration of its normal practice of awarding the Gold Medal at the Annual General Meeting of the Society—a change from earlier war-time procedure fittingly initiated by the award last year to the Astronomer Royal. Professor Otto Struve, I repeat, has earned this distinction in his proper right, by the overwhelming significance and value of his brilliant observational and interpretational work in stellar and nebular spectroscopy. I shall come to this later.

First, however, I want to set his contributions in their historical setting, by mentioning briefly the astronomical contributions of his distinguished forbears so far as they concern this Society.

"Science in the last century or two has given us many examples of families in which son has followed father with a like distinction. In physics this country has given us the Strutts, the Thomsons and the Braggs. France has produced the Curies, mother and daughter. In meteorology the elder and the younger Bjerknes are famous. Coming nearer to our own subject, the notable and continuously able family of Darwin has given to astronomy a son perpetuated in our George Darwin lectureship, whose son in turn we are happy to number now amongst our Fellows. In astronomy, amongst contemporary names we can claim the Plasketts, and amongst the giants of old the Herschels. But perhaps no family can vie with the Struve family in its devoted pursuit of, and its achieved distinction in, astronomy.

"Wilhelm Struve, great-grandfather of our Medallist, was born in 1793 and died in 1864. After working first at Dorpat, he founded in 1839 the Pulkova Observatory, which he directed for nineteen years. He was awarded the Gold Medal of the Royal Astronomical Society in 1826, in the early days of the Society, for his work in discovering and measuring double stars. It was on April 14 of that year—note the date—that J. F. W. Herschel, acting as proxy for Wilhelm Struve, received the Gold Medal at the hands of Francis Baily, the then President; Gold Medals were also presented in their own right to J. F. W. Herschel and to his collaborator J. South. The work of Wilhelm Struve had been accomplished at Dorpat, with the aid of a telescope made by Fraunhofer. Double stars were then a study of recent date, the subject having been opened up by Sir William Herschel, who, beginning with a knowledge of only four double stars, went on to determine a great many cases of relative orbital motion in close pairs. His work had been continued by his son and by South, working together, and independently by Wilhelm Struve. I have already referred to the Herschels as giants of old, and this bracketing of their names with that of Wilhelm Struve shows that he too is to be regarded as amongst the giants of old. Baily concluded his address of presentation to Wilhelm Struve, even more prophetically than he can have anticipated, by saying: "His services in the cause of science assure us that the name of Struve will be imperishable in the annals of astronomy."

"The grandfather of our Medallist was also an Otto Struve. The son of Wilhelm, he was born in 1819 and died on 1905 April 14. He followed his father in the directorship of the Pulkova Observatory, though not immediately; he directed it from 1862 to 1890. Like his father before him, he won our Gold Medal before becoming Director of Pulkova—the year was 1850, during his father's directorship. The grounds of the award were a paper on "The Determination of the Constant of Precession with regard to the Proper Motion of the Solar Sys-

tem." It had been again Sir William Herschel who, in 1783, first drew attention to the proper motion of the solar system towards the constellation Hercules, by considering the directions of the then available proper motions of the stars. The subject was taken up by Otto Struve the elder, who made use of some 265 double stars and 174 wider pairs observed at Dorpat, together with other stars. From their proper motions between 1755 and his own epoch he isolated the geometrical precessional motion. His great problem was how to correct the observed proper motions for the solar motion, which is of course more important for the nearer stars. Struve attempted to connect distance and magnitude, and, adopting 0".2 as the annual parallax of a star of the first magnitude, found the Sun's annual motion to be 1½ times the radius of the Earth's orbit. This was a very creditable estimate, the true value being about four times the radius of the Earth's orbit. On this occasion, 1850 February 8, the Gold Medal was presented by Airy.

"The third generation in the Struve family to receive the Gold Medal was represented by Hermann Struve, elder son of Otto Struve, grandson of Wilhelm Struve and uncle of our present Medallist. He was born in 1854 and died in 1920. He founded the Berlin-Babelsberg Observatory in 1913. He was awarded the Gold Medal of this Society in 1903 for his work on the satellites of Saturn. This was an arduous and comprehensive performance, involving comparisons of the satellites in pairs made over many years, and a huge labour of arithmetic. He deduced the true position of Saturn's equator, and from the orbits of the satellites themselves went on to determine the changes in their orbits, and so to the masses of the satellites and the shape of the planet. He confirmed Clerk Maxwell's theoretical work on the smallness of the mass of the rings. H. H. Turner, who presented the Medal on this occasion (1903 February 13) described him as "master of all his weapons, from the 30-inch telescope to the complexities of the gravitational analysis." Turner went on: "It is natural that our thoughts should stray to-day from the present occasion to the past; from the man himself to his father, who was awarded our Medal half a century ago; and to *his* father, who received it a quarter of a century before that. For the third time we welcome the name Struve to our list of honour, and a welcome as cordial awaits an unlimited number of those who in the future may produce work of the same quality as their forefathers. We are glad to think that its value to him will be enhanced by the knowledge that it ranks him with his venerable father [then still living at the age of eighty-four] and his famous grandfather."

"That welcome then hypothetically held out by Turner we extend in actual fact today to the fourth generation, to the great-grandson of Wilhelm Struve, to Otto Struve the second. He has been faithful to his family tradition, and is ranked with his progenitors. *Our* Otto, as I may now call him, is the son of Ludwig Struve, who was the younger brother of Herman Struve and the second son of Otto Struve the first.