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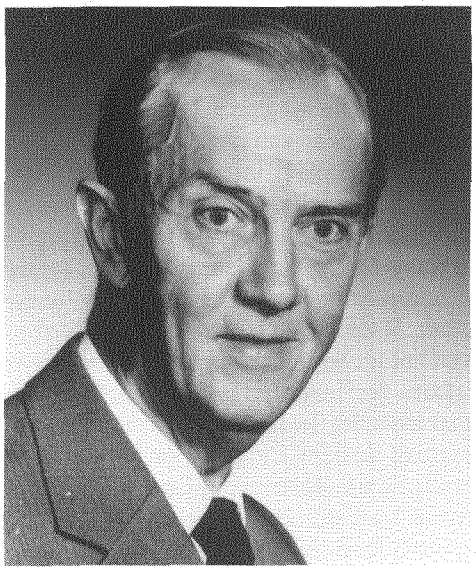
IN MEMORIAM

Olaf Schmidt
(1913–1996)



Olaf Henrik Schmidt was born in Sommersted, Denmark, on December 12, 1913. From 1929 to 1932 he attended the Gymnasium in Haderslev, and from 1932 to 1938 the University of Copenhagen. He received the degree of cand. mag. in mathematics (with physics, chemistry, and astronomy as minor subjects) with highest honors in 1938. During the year 1938–1939, he taught mathematics at Østre Borgerdyds Gymnasium, Copenhagen and did research in ancient mathematics and astronomy under the direction of Professor Otto Neugebauer.

In the summer of 1939, Olaf Schmidt followed Neugebauer to the United States and became an instructor in mathematics and a research assistant at Brown University. Because of the occupation of Denmark by the Germans, he was forced to stay in the United States much longer than he had planned. He studied Sanskrit and ancient astronomy, and in May 1943, he became a Doctor of Philosophy in the Department of Mathematics at Brown University, with a thesis *On the Relation between Ancient Mathematics and Spherical Astronomy*. In this thesis, he showed that the central problem in ancient astronomy originated in the observation of horizontal phenomena and consisted in finding the arc of the equator which was

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rising or setting during the same time as a given arc of the ecliptic. This treatise is written in Schmidt's characteristically clear and precise way. It has been used by many scholars in the field and, although written more than 50 years ago, is still the best extant work on this topic. The thesis is now being published by the Institute for Research in Classical Philosophy and Science of Princeton, New Jersey.

Although the years in the United States were scientifically fruitful, Olaf Schmidt considered them as lost or useless years since he was alone, having left his fiancée back in Denmark. After the end of the war, he took the first ship to Scandinavia and married. For four years, he worked as an amanuensis at Danmarks Tekniske Højskole, then in Copenhagen. After another stay at Brown University and at the Institute for Advanced Study in Princeton, he finally became a member of the Mathematical Institute of the University of Copenhagen in 1953. His duties were teaching and doing research in mathematics and history of the exact sciences. He became a full professor in 1965.

Olaf Schmidt was a careful, friendly, and very pedagogical teacher, and a brilliant and sharp thinker. He was also modest and unafraid of explaining things thoroughly. He admired and respected the ancient scientists, analyzing their problems and results by means of modern science and, at the same time, trying to understand them on their own terms. Since our modern mathematical notation implies much knowledge which was unknown to the ancient mathematicians, he never used modern notation in his lectures but invented a notation that came as close as possible to ancient mathematical thought. In his own words: "I want my representation to be such that an imaginative ancient Egyptian or Greek sitting in the back row of this room and listening to my lectures would nod his head as if saying: 'yes, that is right, that is fairly what I meant when I wrote it.'"

Many generations of mathematics students have benefited from Olaf Schmidt's lectures on Euclid's *Elements*, on Apollonius or Archimedes, or on Egyptian and Babylonian mathematics and Babylonian astronomy. These lectures were a treasure of new insights and exciting results of his own research. Here are some examples:

—In the old Egyptian mathematical texts, a rational number was written as an integer plus a sum of different unit fractions. Divisions performed by the Egyptians were therefore complicated. Olaf Schmidt showed that there are three standard methods for performing an "Egyptian" division, and that in principle every division of one rational number by another rational number can be carried out by the Egyptian methods.

—In connection with the $2/n$ Table of the Papyrus Rhind, Olaf Schmidt explained methods for finding "nice" expressions for the fractions $2/n$ in terms of unit fractions.

—Olaf Schmidt provided an axiomatic foundation of Euclid's geometry: On the basis of the first book of Euclid's *Elements*, he constructed a set of axioms which are rigorous according to modern mathematics and which suffice as a basis for all theorems in Books I–IV of the *Elements*.

—With reference to the theories of magnitude of Euclid and Archimedes, he pointed out that it is possible to prove the main theorem of Book XII of the

Elements, to the effect that circles are to one another as the squares of their diameters, within the framework of Euclid's axioms. Archimedes, however, introduced some additional axioms which enabled him to go beyond the limits of Euclid's *Elements* and prove that the surface of any sphere is four times its greatest circle.

Many students chose Olaf Schmidt as a master's degree supervisor because of his friendly and helpful attitude. Carefully and conscientiously, he met one hour a week with each of these students to discuss and guide their work. The themes he proposed covered a variety of topics ranging from Egyptian or Babylonian astronomy to Ptolemy's *Almagest* and Newton's *Principia*, and from Euclid, Apollonius, Archimedes, and Diophantus to Huygens and Fermat.

For many years, Olaf Schmidt was Secretary and Treasurer of Selskabet for de eksakte videnskabers historie—the Danish Society of the History of the Exact Sciences—and Secretary to the Danish National Committee for History and Philosophy of Science. He was Editor of *Centaurus* from vol. **7** (1960) to vol. **22** (1986). He hated polemics and struggles, but he did not keep his knowledge to himself. He was always willing to give advice to younger historians of science and to correct errors in articles submitted to *Centaurus*.

In 1956, Olaf Schmidt was among the first to travel to the camps of Hungarian refugees in Vienna. There, he selected students whom he could invite to study in Denmark, and he later supervised their education. Frequently invited to his home, many of these new citizens of Denmark maintained close relationships with him for many years.

When his beloved wife died very early, in 1967, he was left with his two young daughters, and the family grew even closer. Quickly he learned cooking and housekeeping. After a fine dinner served by Olaf, one of his former college friends admiringly exclaimed: "Behind this excellent food I suppose to have been deep literary studies." Family life always had a high priority. Each Sunday for many years—until the beginning of this year—Olaf invited his daughters with their growing families for dinner at his home.

Olaf Schmidt was not only humble and considerate, but also extremely self-critical. Often, when Neugebauer urged him to publish new results, Schmidt hesitated. He felt that he did not understand everything completely. Neugebauer used to shrug his shoulders and comment on his friend's attitude with the following quotation from Goethe's Faust: "Zwar weiss ich viel, doch möcht' ich alles wissen."

After his retirement in 1984, Olaf Schmidt lived a withdrawn life. He still received many historians of science at his home. I myself feel deeply indebted to my teacher whom I had the privilege to know for almost 30 years. Through his lectures and the interesting problems he posed to me, he introduced me to the exciting domain of the history of astronomy and transmitted his deep insight into the questions and working methods of ancient mathematics and astronomy. I gratefully remember countless occasions at his home, where I could also discuss my newest results with him.

Olaf Schmidt died on June 7, 1996. He often said: "All good things in life last

too short." But his was a long and fulfilled life, and many of us will agree that knowing him was one of the good things in our lives.

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