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80 YEARS SINCE THE BIRTH OF AGU AARNA

On the 11th of October, 1995 an outstanding scientist and public figure, a long-standing rector of Tallinn Technical University, an academician of the Estonian Academy of Sciences, Agu Aarna would have been 80.

Agu Aarna was born in 1915 in Tallinn to the family of a railway man. After leaving Tallinn Technical School in 1934, he studied at Tallinn Technical University as a student of the Military Technical School, and at Dresden Technical University as a Humboldt grant-aided student. He graduated from the latter in 1944 when the battles of World War II had already reached German soil. However, the Soviet Union did not recognize the war-time degree in organic chemistry given by the German university. In order to acquire recognizable higher education, A. Aarna had to graduate from a university once more, this time in the Soviet Union. During his lecturing at Tallinn Technical University (then Tallinn Polytechnical Institute) A. Aarna graduated from that same university.

The main part of Agu Aarna's life work concerns precisely technical higher education and Tallinn Technical University. In 1951-1965 he was the head of the Chair of Fuel Technology (later the Chair of Technology of Organic Compounds), and in 1959-1970 also a scientific supervisor of the Laboratory of Oil Shale Chemistry. A. Aarna worked almost 17 years (1960-1976) as the rector of Tallinn Technical University. Since 1979 until his death on December 11, 1989 he was a professor emeritus at the Institute of Chemistry of the Estonian Academy of Sciences, at the same time heading the Council of the Estonian Program of Complex Utilization of Oil Shale.

A. Aarna obtained a Ph. D. degree (Soviet Union candidate degree in applied science) in 1948, and a D. Sc. degree in the same field in 1955. He obtained the title of professor in 1956 and was elected an academician of the Estonian Academy of Sciences in the field of organic chemistry in 1961. A. Aarna was also a honorary doctor of Budapest Technical University and a foreign member of the Finnish Chemical Society.

The range of A. Aarna's fields of activity was surprisingly wide. It included his work as a rector, professor, top scientist, organizer and popularizer of science, and an outstanding public figure. As the deputy editor-in-chief of the journal "Oil Shale" he was, from the publication of the first issue of the journal until his death, its main organizer and its active leader.

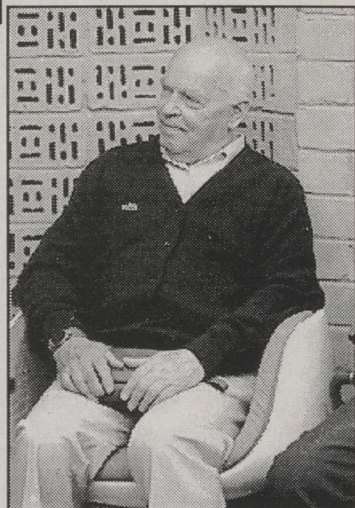
The most significant part of A. Aarna's scientific research concerned the genesis, chemical composition, and thermal destruction of oil shale, and the investigation of characteristics and processing methods of oil shale products.

Formerly, thermal destruction of kerogen was considered to represent a gradual thermolysis ending with cracking of heavy oil fractions. A. Aarna gave this process a quite different explanation: the majority of the light oil fractions forms already during the initial stage of kerogen destruction.



Professor A. Aarna with his colleagues-chemists in 1956
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↓ At a concert in the town hall



↓ K. Kikas maintaining his doctor's thesis in 1974



Scientific papers written by A. Aarna and his co-workers and published in the 50s and 60s have greatly contributed to the elucidation of the structure of the carbon skeleton in the kerogen macromolecule and to the distribution of oxygen between different functional groups of kerogen.

Agu Aarna was one of the pioneers of shale oil chemistry. For the first time in Estonia, together with Karl Kask (1913-1982), he applied chromatography in investigations of the chemical composition of shale oil. He and his co-workers proposed methods for determination of oxygen-containing functional groups in oil which have been taken into general use.

The valuable idea about shale oil as a complex polyaseotrophic system which unlike coke-oven coal tar has no dominating component originates from A. Aarna and his co-workers as well.

In the 60s there developed a new direction in A. Aarna's scientific research - problems of synthesis and processing of resorcinol adhesives. These investigations resulted in the creation and production of so-called DFK resins from resorcinol alkyl derivatives formed by retorting of Estonian oil shale. These resins are widely used for glueing linoleum, wall coatings etc., and as construction glues.

Together with his co-workers, A. Aarna has contributed to the solution of several theoretical problems in physical organic chemistry, especially in investigating thermodynamics of hydrogen bond in multicomponent mixtures containing phenols and alcohols. More than 40 Ph. D. (Soviet Union candidate's) theses have been accomplished under A. Aarna's supervision. Characteristically, he never concentrated on details; he taught basic ideas. He did not do work or think for his students. He let them do that themselves. A. Aarna did not train mere followers. He educated developers of his ideas. It is not surprising, therefore, that many of his former postgraduate students have become outstanding scientists in quite different fields.

A. Aarna was a brilliant lecturer, a silver-tongued speaker, born with gripping eloquence. His lectures were characterized by intertwining of his scientific research, a simple, yet provocative representation of the problems, and logic. Those were the factors which compelled his audience to listen to him with enthusiasm and set the students thinking the presented problems over all by themselves.

The character and talents of Agu Aarna were perhaps best characterized by his activities in the role of an administrator and organizer. It is true that there are different ways to perform this hard, sometimes even thankless task. There are organizers who light themselves up like a torch - they persuade, adjure, and press on emotions. Although it may often bring about the desired result, such an emotional approach does not seem to be the most economical one. A. Aarna belonged to those organizers who make the world go round as if by itself, who succeed in pointing out the rational way to accomplish one's purpose in such a manner that everyone who performs the task labours under the delusion that he has reached the decision himself.

A. Aarna was a born organizer, a man of action, alien to chatter and complaint. In any field of activity he was held in high regard for his erudition, sense of reality, objectivity, and steadiness, if necessary, also strictness, resolution, and determination. The complex of the buildings of

Tallinn Technical University in Mustamäe, the designing and building of which coincided with the peak of A. Aarna's rectorial activity, is undoubtedly a monument to his work as a rector.

Under the Soviet regime there were naturally a number of people who disliked A. Aarna's independent and high-principled action. Indeed, he was vulnerable under the circumstances as any criticism could always be associated with the political unreliability of a former military man of the Estonian Republic or with so-called mistakes in ideological education. It was not surprising, therefore, that A. Aarna had to defend himself against repeated political attacks which inevitably narrowed his professional sphere of action. Nevertheless, he never lacked courage or composure, retaining objectivity and humanity even in the most difficult situations.

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