Valentin Danilovich Belousov
(1925 – 1988)

This issue is a tribute in honor of his 80th birthday

This year it has been 80 years since V. D. Belousov's birth. He was a famous scientist which made a great contribution to the theory of binary and n-ary quasigroups and loops, theory of algebraic nets and theory of functional equations on quasigroups. In the opinion of many famous mathematicians he was the leading specialist in theory of quasigroups during the sixties and the seventies of the previous century. A. D. Keedwell wrote about him: "*V. D. Belousov, prolific as a researcher, who, like Albert, Bruck and Artzy, engaged in work which was ahead of its time.*"

V.D. Belousov studied many general questions on quasigroups and loops: derivative operations of loops; groups of regular mappings; nuclei of quasigroups; autotopies and antiautotopies, characterized groups of inner permutations, normal subquasigroups, isotopy and crossed isotopy and different groups associated with quasigroups.

In many papers special classes of quasigroups and loops are investigated: IP-quasigroups, F-quasigroups, TS-quasigroups, CI-quasigroups, Stein quasigroups, I-quasigroups, Bol loops, G-loops etc. Belousov's articles contain definitions of new classes of quasigroups and loops, for example, PI-quasigroups, P-quasigroups, S-loops, M-loops, linear quasigroups over groups.

Very important Belousov's results are connected with distributive quasigroups. He proved that every distributive quasigroup is isotopic to a commutative Moufang loop.

In a series of papers transitive distributive quasigroups are described. Simultaneously he found a class of left-distributive quasigroups non-isotopic to groups and characterized connections between some of such quasigroups, Moufang and Bol loops. Loops isotopic to left-distributive quasigroups are studied too. The series of papers is devoted to different systems of binary operations defined on the same set. In particular, Belousov studied systems of quasigroup operations satisfying some laws of distributivity, associativity, mediality and transitivity. Positional algebras of partial quasigroup operations investigated by him are called now *Belousov algebras*.

A large cycle of Belousov's articles is connected with different types of functional equations on quasigroups, such as the functional equations of generalized associativity, distributivity, mediality and Moufang. Belousov had published a number of works devoted to study of n-ary quasigroups. Now these works form the foundation of the theory of n-ary quasigroups.

Quasigroups have many applications in discrete mathematics, especially in the theory of Latin squares. A similar connection between n-ary quasigroups and n-dimensional cubes holds. In connection with this fact V. D. Belousov studied the problem of extensions of quasigroups and systems of orthogonal binary and n-ary operations. He established the connection between orthogonal systems of operations and orthogonal systems of quasigroups (OSQ) and studied the parastrophy transformation of these OSQ.

The first description of minimal identities connected with the orthogonality of parastrophes of binary quasigroups is given too. Some interrelations between the orthogonality of quasigroups and closure operations in k-nets are proved.

All ideas mentioned above are now in elaboration by numerous Belousov's pupils and many other mathematicians. He was a supervisor about of 30 of Ph. D. thesis. Now these pupils work in many countries.

He was not only a famous scientist. He was a very good lecturer. As a Corresponding Member of the Academy of the Pedagogical Sciences of the USSR (section Mathematics) he was an organizer of the scientific life in Moldova.

As a person, V. D. Belousov was full of generosity and warmth. Contact with him was very pleasant. Belousov wrote epigrams, liked music, especially Moldavian folk music and music of V. A. Mozart. He had a large library of science (in many languages) and also a fiction literature.

Valentin Danilovich Belousov devoted his life to science, a life that will always be an example and inspiration to his followers.

Galina B. Belyavskaya
Wieslaw A. Dudek
Victor A. Shcherbacov