MODERN PROBLEMS OF RADIOBIOLOGY, RADIOECOLOGY AND EVOLUTION

Abstracts

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ABSTRACTS

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The Collection contains Theses of the reports presented at the Timofeeff-Ressovsky Centennial Conference dedicated to problems in Genetics, Radiobiology, Radioecology, Self-Organization of Matter and Biological Evolution. The Theses are published in the authors' wording.

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PRINCIPLE OF INVARIANCE AND INDETERMINACY IN EVOLUTION OF THE LAND SNAILS

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Evolution of biological systems displays uniformity in morphological transformation ways and modes. In the land snails, shells demonstrate definite number of colored spiral bands, which may differ within a population; some specimens may lack them at all. Color phenes reveal genetic determination; 14 examined species of the order *Geophila* show monogenic inheritance in concern to the "banding" trait. In the course of divergent evolution within the closely related species, elementary systems of color traits demonstrate loose "switching" of dominance, i.e. substitution of the dominating morphs. Thereupon goes "encoding" by common phenes of any number of species at the expense of numerous variations within each morph, and channelling of the main variants for phenotypic manifestation of variability. Species of the suprafamily *Helicoidea* had formed during the Cretaceous first half at the territory corresponding to modern North America. Expanding eastwards, ancestors of one american family gave rise to contemporary european representatives of the suprafamily. In Eocene, species of two other american families spread south-westwards, to the territory of the present South-Eastern Asia, where they gave rise to a new pair of families; the latter subsequently gave birth to still another new family (Shileiko, 1979). In North America, 246 autochthonous species of this suprafamily showed the following distribution pattern in regard to the shell coloration types: the unbanded forms number 32.5 %; unbanded and one-banded specimens - 1.2%; those wearing one-many bands – 9.3 %; banded-polymorphic forms – 26.4 %; banded- monomorphic forms – 30.5 %. In the Eurasia, Philippine Isles, and in Australia, 276 species of this suprafamily exhibit the following distribution by the same trait cohorts: 28.4; 4.6; 7.8; 21.6; 37.7. These examples conform to the postulate of the fundamental invariance, standing behind all transformations occurring in nature (Dogel, 1936; Takhtadjan, 1948; Prigozhin and Stenger, 1986). At the verbal level, principle of indeterminacy is also realized here, as only one or another side of a complicated phenomenon can be described in regard to a certain aspect of study (Gumilev, 1990).

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