

100th anniversary of the publication of *Flora of Bulgaria* by N. Stoyanov and B. Stefanov

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Abstract. This is a concise review of the floristic studies in Bulgaria since the first fragmentary notes by foreign travelers and researches (on the turn of the 18th century) and up to the publication of the *Flora of Bulgaria* by Nikolay Stoyanov and Boris Stefanov (1924-1925) a century ago. The book had stirred then a wide-ranging response and great interest among the European botanists. It was the first work of the kind on the interesting and rich flora of the northeastern part of the Balkan Peninsula. The *Flora* was also of great importance for the Bulgarian botanists for rendering a strong impetus to the development of floristic, phytogeographical, phytocoenological and other botanical studies in Bulgaria. By 1966, the *Flora of Bulgaria* by N. Stoyanov and B. Stefanov had undergone three supplemented and improved editions, while in its fourth edition (1966-1967) participated Boris Kitanov. It has retained its importance ever since for determination of the plant species occurring in Bulgaria.

Key words: B. Stefanov, Bulgaria, flora, history, N. Stoyanov

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In comparison with the other European countries, floristic researches in the Balkans and particularly in Bulgaria had started rather late: at the end of the 18th and the beginning of the 19th century. Until the Liberation of the country in 1878, they were carried out exclusively by foreigners. That comparative lateness and delay of the studies could be explained by the five centuries of Ottoman rule, which entailed some other concrete reasons mentioned by Stefanov (1930): Bulgaria's remoteness from the cultural centers of Europe; difficult access to the mountains and various regions combined with lack of fundamental

living conditions and risk for the lives of travelers and researchers; absence of local specialists who were best fit to tackle the investigation of their country floristically and in terms of natural sciences.

The first more concrete but fragmentary data on the Bulgarian flora could be found in the descriptions by D. Sestini, E.D. Klark, J.D. d'Urville, and J. Sibthorp, the latter regarded as founder of the Balkan floristic studies.

The scientific circles gained a more thorough and comprehensive idea about the composition and richness of the Bulgarian flora from the investigations of



Fig. 1. Acad. Nikolay Stojanov (21.11.1883–09.10.1968).

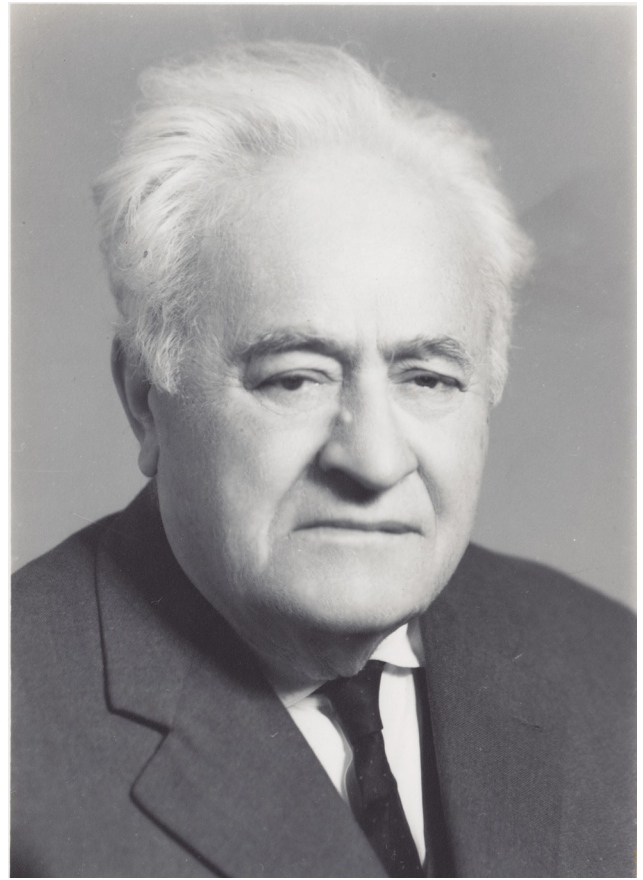


Fig. 2. Acad. Boris Stefanov (8.06.1894–12.12.1979).

the Hungarian naturalist E. Frivaldszky. Within the period 1833-1870, he managed to organize eight expeditions for studying the flora and fauna of the Balkan Peninsula and West Asia, and the first two were directly related to Bulgaria. After Frivaldszky, the investigations of V. Janka, A. Boue and J. Pančić (the first foreign botanist who visited Bulgaria after the Liberation) had further contributed to the knowledge of the Bulgarian flora. Within that period, two very important works were also brought out: *Spicilegium florum Rumelicae et Bithynicae* by A. Grisebach (1843) and *Flora Orientalis* by E. Boissier (1867-1888), which comprised all reports about the Bulgarian flora made so far by the above-cited authors.

Of the foreign researchers, the greatest merit should undoubtedly go to the Czech botanist Josef Velenovský. In the course of 38 years, from 1884 to 1922, he had published 30 articles on the flora of Bulgaria, including his two big recapitulative works: *Flora Bulgarica* (1891) and *Flora Bulgarica. Supplementum I* (1898). Publica-

tion of those two *Floras* by J. Velenovský marked the end of the classic period in the investigation of the Bulgarian flora. Along with this, they also indicated the start of the most active floristic researches in Bulgaria joined by the Bulgarian botanists S. Georgiev, A. Yavashev, B. Kovachev, A. Toshev, I. Urumov, B. Davidov, and I. Neichev. The last decade of the 19th century was highlighted too by the studies of some foreign researchers, including J. Bornmüller, K. Vandas, K. Polák, E. Formánek, J. Wagner, A. Degen, E. Halácsy, etc.

Considerably better opportunities for floristic investigations in Bulgaria emerged after World War I, which coincided with some other positive developments in the Bulgarian botany. First was the arrival of the young and talented botanists Nikolay Stoyanov (Fig. 1) and Boris Stefanov (Fig. 2) into the field of science. Their first contributions already marked a qualitatively novel stage in the development of Bulgarian botany. In the course of two or three postwar years, they organized a great number of scientific trips in various parts of the

country and published a number of new taxa for science and scores of new for the country Mediterranean, Euxinian, Alpine and other rare plants.

The major event in that period, as well as in the entire history of the Bulgarian botany so far, was the publication of the *Flora of Bulgaria* (Fig. 3) by N. Stoyanov and B. Stefanov in 1924-1925 (Hayek 1924; Stefanov 1933; Kitanov & Velinova 1955; Jordanov 1963; Stanev & Zhelev 2006; Stanev 2010, 2013, 2015).

Publication of the *Flora* by the two young authors (when they began to write it, Stoyanov was about 37-38-years old, and Stefanov was 25-26-years old!) was preceded by a *List of Plants Occurring in Bulgaria*, followed by *Gramineae in Bulgaria* and *Papilionaceae in Bulgaria*, which served, so to speak, as a dress rehearsal for writing the *Flora*.

Flora of Bulgaria comprised and summarized all data on the Bulgarian flora reported ever since, with all that vast bulk of material critically analyzed by the authors and reflecting both their own observations and investigations, as well as the modern chorological and taxonomic knowledge and trends obtaining among the European botanists. The *Flora* consisted of 1367 pages and was illustrated by 1455 drawings, some of them original and drawn very successfully by Daki Jordanov, who had started then his scientific career as Assistant Professor to Professor S. Petkov at the Physics and Mathematics Department of Sofia University. The high level of the publication further benefited from the treatments and monographs of some “difficult” and polymorphic genera by prominent European specialists: A. Hayek (*Centaurea*), W. Becker (*Viola*), W.B. Turrill (*Onosma*), H. Handel-Mazzetti (*Onobrychis*, *Taraxacum*), H. Zahn (*Hieracium*).

Flora of Bulgaria by N. Stoyanov and B. Stefanov showed its authors as typical upholders of the Central European polytype school, whose representatives A. Engler, P. Ascherson, P. Gräbner, G. Hegi, etc. regarded the species as the basic taxonomic unit, in many cases including a great number of smaller taxa: subspecies, varieties and forms. Furthermore, contrary to J. Velenovský, Stoyanov and Stefanov accepted the system of A. Engler and K. Prantl set forth in their classical work *Die Natürlichen Pflanzenfamilien*, with best scientific backing and accepted by almost all other botanists.



Fig. 3. The title page of the 1st edition of *Flora of Bulgaria* by N. Stoyanov and B. Stefanov.

Their own theoretical interpretation of the species and smaller taxa Stoyanov and Stefanov formulated concisely in the Introduction to the *Flora*. They considered the species a summation of individuals representing an unbroken chain of transitions, where the final forms marked the limits of possible variation. The fact that not all transitional forms were discovered and studied aggravated the proper differentiation of species and often led to description of “small” species, which with time had been referred to lower taxonomic units. While the contents of those units – subspecies, varieties and forms – were viewed according to Charles Darwin, who maintained that variety was a subspecies in the process of setting, while the subspecies was a variety coming close to the species, thus their differentiation was mainly based on the degree of qualitative manifestation of the morphological differences and, therefore, they were subjective in character. Quite often, what some authors viewed as a subspecies, others interpreted as a variety, etc. On the

other hand, in spite of its conditional and subjective character, the acceptance of “large”, “Linneaus” species, which included a number of smaller taxa, presented an opportunity to track down the origin and generic interrelations. That explained why many of the species described by earlier authors for the flora of Bulgaria were demoted to varieties (and even to forms). Thus, already in the first edition of the *Flora of Bulgaria*, as mentioned above, and chiefly under the influence of P. Ascherson & P. Gräbner and G. Hegi, N. Stoyanov and B. Stefanov applied the so-called “stationary principle” by N. Stoyanov. Along with this, they hinted on their preference for the “dynamic principle” in taxonomy. The latter trend was expressed stronger in the second edition of the *Flora of Bulgaria* (1933) and motivated all future taxonomic treatments by N. Stoyanov¹.

Here, mention deserves the fact that despite a number of improvements in terms of the taxonomic treatment, chorological information and nomenclature, the three following editions of the *Flora of Bulgaria* (1933, 1948, 1966-67) retained the structure and characteristics of the first edition (1924-1925). According to the classification of P. Davis и V. Heywood, *Flora of Bulgaria* should be assessed as a regional key or a regional field flora, and not as a regional scientific flora (like *Flora of the Republic of Bulgaria* which started to come out in 1963), owing to the fact that it lacked any pronounced critical or taxonomic elements supported by due arguments, notes, chromosome number data, etc.

¹ For the later ideas of N. Stoyanov and B. Stefanov about the nature, origin and limits of the species and smaller taxonomic units, analyzed in a number of their publications, see Stanev, S. [2010, pp. 343-345, 351-353. Biological treatment of the species based on reproductive isolation, genetic interpretation of speciation (evoked by gene and chromosome mutations) and inequality of the biological species (including acknowledgement of the geographic, apomictic and aggregate species, i.e., acknowledgement of “small” and “big” species)]; all those postulates behind the modern taxonomic treatments were still uncertain and undeveloped during the active period of taxonomic studies carried out by Stoyanov and Stefanov.

From a contemporary viewpoint, one could call attention to a number of weak points in the four editions of the *Flora of Bulgaria*: on the one hand, absence (or incompleteness) of the citation entries, description of the taxa, floristic and geographic scheme, etc., and on the other, unsuccessful attempts at matching in volume some species belonging to the genera with a poorly expressed polymorphism with species from strongly polymorphic genera and genera with agamic complexes, which is explained by the subjective approach in taxonomic decision-making ensuing from the above-mentioned species concept. However, it should be immediately pointed out here that in the first, as well as in the following editions of the *Flora of Bulgaria*, a biological concept of the species, recognizing their inequality and enabling the species with different volume and biological value to be included in a *Flora*, was subsequently introduced in taxonomy in the result of the active development of biosystematics research. By the way, it was particularly that introduction of the modern biological concept that made the *Flora of Bulgaria* too outdated with time and called for compilation of the multivolume *Flora of the Republic of Bulgaria*.

All notes and contentions about the *Flora of Bulgaria* have been made from the position of the present-day knowledge in the field of taxonomy and the obtaining ideas about the character and structure of the various *Floras*. At the time, though, in volume and scientific interpretation, the book was the most important work on the flora of Bulgaria and one of the greatest accomplishments of the Balkan florists. It aroused the interest of foreign botanists and won many positive and awed appraisals from the most outstanding floristic experts in that part of Europe: A. Hayek, J. Mattfeld, K. Krause, etc. The names of the two young Bulgarian botanists gained wide esteem in the scientific circles, as well as international recognition. For instance, in his review of the *Flora of Bulgaria* by N. Stoyanov and B. Stefanov in the *Österr. Bot. Z.* (1924: 156) A. Hayek, the author of the three-volume *Prodromus Florae peninsulae Balcanicae* (1924–1933), the first volume of which saw light almost simultaneously with the *Flora of Bulgaria*, wrote that in the terms of systematics the book was

well sustained scientifically and of enormous import for the knowledge of the Balkan flora. Another telling fact of the great interest on the part of the European botanists in the *Flora of Bulgaria* was the interest of some German publishing houses to have it translated in Latin (the language in which came out then *Flora Bulgarica* and *Flora Bulgarica. Supplementum I* by J. Velenovský. Unfortunately, that idea was not carried out in practice.

Undoubtedly, the publication of the *Flora of Bulgaria* was particularly important for the Bulgarian botanists. It greatly facilitated the challenging determination of plants according to the *Floras* by J. Velenovský, A. Grisebach, E. Boissier, G. Hegi, P. Ascherson & P. Gräbner, and by other books of limited access. On the other hand, the quoted locations of the species occurring in Bulgaria and their geographic areas rendered an opportunity for greater precision and critical approach in the future chorological contributions, taxonomic treatments and phytogeographic analyses. It was particularly for those reasons that the *Flora of Bulgaria* by N. Stoyanov and B. Stefanov rendered such a strong impetus to the future floristic, taxonomic, geobotanical, and phytogeographic studies of the flora and vegetation in Bulgaria. The number of publications by Bulgarian authors marked a sharp increase and overweighed for good the analogical studies by foreign authors, which used to prevail earlier over the Bulgarian ones in the overall history of the Bulgarian botany (there were certainly other reasons for that, already mentioned in the beginning of this article).

As it has been already mentioned, in 1933, the second edition of the *Flora of Bulgaria* saw light, followed by the third in 1948 and the fourth in 1966-1967. In comparison with the first edition, the citation entries and data on the geographic areas of the plant species were removed in the following editions. On the other hand, they were revised and supplemented by determination tables, taxonomic treatments of the genera and chorological information. The latter was facilitated both by the experience accumulated by the authors, as well as by the numerous publications on their part and by other botanists of new data about the composition and distribution of plants occurring in Bulgaria.

Within the century of its existence, the *Flora of Bulgaria* has played an enormous part in the study of Bulgarian plant diversity and development of Bulgarian botany. Since 1963, publication of the multi-volume *Flora of the Republic of Bulgaria* has started (publication of its last, 12th volume, is forthcoming). That capital work supported by a great number of specialists and marking a higher stage in the knowledge of the Bulgarian flora does not diminish the importance of the good old *Flora of Bulgaria*. It still remains a valuable manual for botanists, foresters, agronomists, pharmacists, teachers, students, Nature lovers, etc. for determining the wild-growing plant species distributed in the country. It would be nice to witness the publication of a new, updated fifth edition of the *Flora of Bulgaria*, with contributions from modern taxonomists and florists, similarly to the classical manual in botany by E. Strasburger, which is brought out at regular intervals.

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