

IVAN VLADIMIROVICH
MICHURIN

SELECTED
WORKS



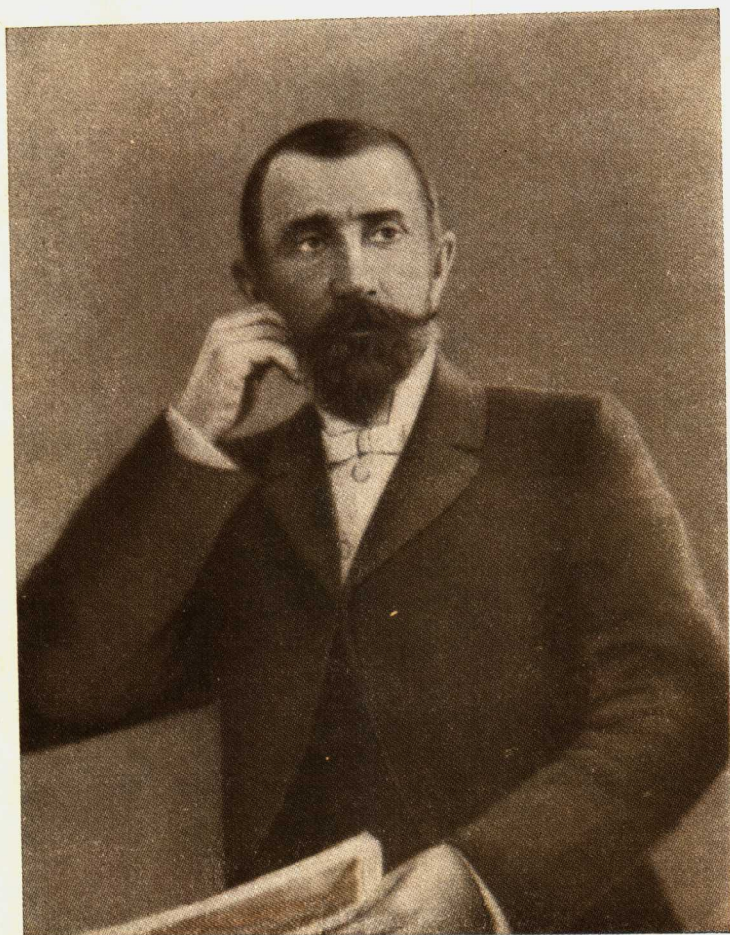
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PUBLISHER'S NOTE

The works of I. V. Michurin, both his complete works and various miscellanies, have been published in many editions in the Russian language.

Taking into account the enormous world-wide interest in the teaching of I. V. Michurin, especially in connection with the work of the session of the Lenin Academy of Agricultural Sciences of the U.S.S.R. held in July-August 1948, where Academician Lysenko's report "On the Situation in Biological Science," was discussed, the Foreign Languages Publishing House considers it timely to publish selected works of I. V. Michurin, so as to afford the foreign reader an opportunity to acquaint himself with them.

The present volume includes a part of Michurin's theoretical and methodological works, pomological descriptions of a number of varieties bred by him and a series of articles reflecting the great public activity of this remarkable scientist.

For the convenience of the readers the articles are arranged according to theme; within the thematic sections they are given in chronological order.



P R E F A C E

The name of the famous Russian scientist in the field of biology, Ivan Vladimirovich Michurin, is known all over the world. He is known as a daring innovator in science, as an indefatigable researcher and as a great transformer of nature. He is particularly known and appreciated in the Land of the Soviets, the land of victorious Socialism, where there is every opportunity for the glorious growth of science, and where the creative and mighty talent of the great Russian scientist unfolded itself in all its power.

I. V. Michurin laid the foundation for a new materialistic biological science, the science dealing with the development and control of living nature. The general theory of the development of living nature and its directed alteration is the basis, the core of materialistic biology. Michurin's teaching contains within itself all of the basic elements of such a science: the principles and methods of research and the dialectical-materialistic views on the process of evolution in the plant and animal world. That is why Michurin's teaching is not of limited significance, but of general biological importance, and equally concerns all branches of biological science—horticulture, animal husbandry, medicine, physiology, ecology, and so on.

I. V. Michurin's theoretical principles are irrefutable, for they are correct inasmuch as they are founded not on mere reasoning or abstract deductions (as is the case with formal geneticists), but on numerous facts observed in life, in practice. The principles were established as a result of painstaking labour over many years, of a persistent struggle to master the laws of living nature. Step by step, with the conscientiousness of a genuine scientist and the perspicacity of a naturalist of genius Michurin penetrated the profound secrets of nature and disclosed them skillfully.

In his scientific-research work Michurin always kept in mind Engels' view that in dialectics "... nothing is final, absolute, sacred. It reveals the transitory character of everything and in everything; nothing can endure before it except the uninterrupted process of becoming and of passing away, of endless ascendancy from the lower to the higher." In citing this most important precept of Engels, I. V. Michurin states:

"This principle has always been and remains the basic principle of all my work. It has been emphasized in all of my numerous experiments on the improvement of existing varieties and on the origination of new varieties of fruit and berry plants."

Incidentally, many scientists who have no positive accomplishments to their credit either in theory or in practice "... have declared that plant organisms existing on the face of the earth do not change, that one cannot improve on nature, but I declare that all the diversity of plant forms has originated from a very limited number of plants as a result of an endless process of change taking place in nature, and I advance numerous facts to prove that man can and should improve on nature. ..." (I. V. Michurin.)

Michurin's teaching proceeds from the basic principle that new properties of plants and animals acquired under the influence of external conditions of life can be transmitted hereditarily. This means that qualitative change in the nature of plant and animal organisms depends on the conditions of life.

The main point in Michurin's teaching, therefore, is not crossing or hybridization, as is deliberately asserted incorrectly and falsely by the representatives of bourgeois formal genetics. *The main point, the basic principle in Michurin's teaching is the role played by environment, the purposeful and directed training of hybrids.*

Michurin regarded hybridization merely as the source of variability of properly selected parental forms necessary for obtaining new and desired properties in hybrids.

Michurin pointed out time and again that the work of a breeder does not end but only begins when hybrid seeds are obtained. The young organism resulting from the cross of the initial parental pairs is distinguished by its destabilized heredity and hence possesses great plasticity. By applying Michurin's diverse methods of training, it is possible to alter such an organism in the direction desired by the breeder.

Michurin pointed out that if an improper method of training is used, we may obtain a complete wilding from the best hybrid of cultivated varieties, and, contrariwise, by applying the required methods of training we may obtain a good new variety from a hybrid seedling possessing undesirable qualities. "*After all, it appears,*" Michurin stressed, "*that the hybrid's constitution depends only one-tenth on the parents and nine-tenths on the influence of the environment.*"

Darwin discovered the law of development of the organic world and established a proper conception of the evolution of living organisms. But he could not indicate *how to control evolution so as to create new forms of plants according to plan for the benefit of man. This task devolved upon Michurin.*

By developing the positive aspects of Darwin's teaching Michurin raised materialistic biology to a new, higher stage and thereby laid the foundation of Soviet creative Darwinism.

Already at the early stages of his work, Michurin completely refuted by numerous experiments the false theory of the well-known horticulturist Grell according to which old plants of southern varieties that had borne fruit many times could be acclimatized in more northerly regions.

Michurin proved by experiments that the acclimatization of plants is indeed possible, but "... only by planting the seeds. No foreign variety, if

not already able in its native environment to endure temperatures as low as the minimum temperature of its new home, can be acclimatized by transplanting complete specimens, cuttings, layers, and so on."

Michurin here for the first time propounded the theoretical principle that *the nature of a variety begins to be formed from the very first days of the seed's development, and that during this period it can be most easily changed in the desired direction by the conditions of training.*

Michurin's long and persistent efforts to find improved methods for extending the northernmost bounds of fruit cultures led him to apply hybridization of *geographically distant forms of plants with subsequent directed training of the hybrid seedlings.* And the farther away from their native place were the plants he took for hybridization, the more fully were combined in the hybrids the positive qualities of their parents, and the more readily did such hybrids adapt themselves to the severe conditions of the central zone of Russia, where I. V. Michurin lived and worked.

Michurin created the majority of his standard varieties precisely by the hybridization of geographically distant races and species of plants. Almost every variety bred by him serves as vivid proof of the correctness of his teaching that living beings, particularly young hybrid organisms, vary greatly under the influence of external conditions.

One of the greatest discoveries made by I. V. Michurin is the completely proved proposition that the variability of organisms arising both by sexual and asexual, vegetative means is governed by the same laws, and that there is no difference in principle between sex and somatic cells. Michurin proved this principle of major importance by his numerous experiments and researches on the vegetative hybridization of plants.

The sex cells, Michurin pointed out, in the final analysis are formed at a definite stage of the development of the organism from the very same somatic cells which go to build up its entire body. Hence, there is the closest interaction between vegetative and sex cells.

By means of vegetative hybridization, Michurin created fruit varieties of excellent quality. Along with his other varieties, bred by means of sexual hybridization, they are now propagated as standard plants in the majority of districts and regions of the Soviet Union.

Vegetative hybrids provide indisputable material for the proper understanding of that highly important property of organisms—their heredity. By controlling environmental conditions it is possible to change varieties in the desired direction, to perfect and to create new varieties possessing the heredity which we need.

I. V. Michurin elaborated the doctrine of development on the basis of the interrelations between the organism's historical past and its heredity. *He considered the organism in indissoluble connection with environment, in unity with it. Michurin considered as decisive the role of the external conditions in the formation of the organism.* "It appears," Michurin wrote, "that some people who imagine themselves to be experts in the laws operating in the plant world, naively question my assertion about the influence of

environment on the process of formation of new forms and species, alleging that it has not been yet scientifically proved.

"... First of all it is interesting to know whether they really believe that all of the 300,000 different kinds of plant species originated solely by means of hereditary transmission of parental characters (without any influence whatever on the part of environment)... Why, such a conclusion would be an utter absurdity. Indeed, it cannot be supposed that the entire vegetable kingdom existing on the globe at the present time originated from the first individual living plant organisms by means of cross fertilization in the course of tens of millions of years, without the influence of the environment the conditions of which so often and so greatly changed in the course of the centuries and millenniums that have passed."

By not limiting itself to deepening and developing Darwinism Michurin's teaching has played and continues to play an enormous role in exposing the antiscientific character of the various reactionary idealistic theories of the opponents of materialistic biology.

For many years the idealistic reactionary trend of Weismannism (Mendelism-Morganism) held sway in biological science.

The struggle against this antiscientific trend was waged by the only correct one—the materialistic trend of Michurin.

A sharply intensified struggle which divided the biologists into two irreconcilable camps, took place around the old and fundamental issue: *can plant and animal organisms inherit characters and properties which they acquire during their life?* In other words, *does the qualitative alteration of the nature of a plant or animal organism depend on the various conditions of life, i. e., on environment that influences it?*

The Michurin materialistic-dialectical trend in biology cites numerous facts in affirmation of such dependence. The Weismann (Mendel-Morgan) idealistic-metaphysical trend baldly denies such dependence, without adducing any proof thereof.

In August 1948 a session of the Lenin Academy of Agricultural Sciences of the U.S.S.R. devoted to a discussion of the situation in biological science was held in Moscow. At this session the Weismann (Mendel-Morgan) trend in biology was completely exposed and ideologically routed, as an antiscientific, reactionary, idealistic-metaphysical trend, divorced from life and sterile in practice, in contrast to the Michurin trend, which represents the creative development of Darwin's teaching, and is a new and higher stage in the development of materialistic biology. "The keynote of this discussion was Michurin's famous motto: 'We cannot wait for favours from Nature; we must wrest them from her.' This injunction of Michurin's, it may be said, is infused with the Bolshevik spirit, and is a call not only to scientific workers but also to the millions of practical farmers to engage in active creative work for the benefit and glory of our people." (V. M. Molotov.)

Michurin's teaching—the only progressive biological science in the world—has developed and become strong in the U.S.S.R., the land of victorious Socialism. That is no accident. "The Michurin teaching," Academician

T. D. Lysenko has said, "is inseparable from the practical collective-farm and state-farm activity. It is the best form of unity of theory and practice in agricultural science."

Michurin himself wrote that without the Soviet system he would have been "an unknown hermit of experimental horticulture in tsarist Russia."

Recalling pre-revolutionary times, Michurin wrote: "Before the Revolution my whole path was strewn with derision, neglect and oblivion.

"Before the Revolution I used to be insulted again and again by the judgments of ignoramuses, who declared all my work to be useless, to be mere 'fancies' and 'nonsense.' The officials from the Department of Agriculture shouted at me: 'You dare not do it!' The official scientists declared my hybrids to be 'illegitimate.' The clergy threatened me: 'Don't commit blasphemy! Don't turn God's garden into a brothel!' (that is how hybridization was characterized)."

I. V. Michurin, however, persistently strove to realize his aims. Being an ardent patriot of his country and an enthusiastic innovator, he devoted himself utterly to the service of his people. "I worked hard to fulfil the aim I had set," Michurin wrote later, "though I was without means, had no established standing, was completely isolated from society, and was engaged in a constant struggle against poverty and stagnation, making the best of the meagre resources which, along with painstaking and at that time absolutely unpaid scientific work, I was able to earn by my personal labour as a railway clerk and precision mechanic."

Knowing of Michurin's outstanding work and of his financial difficulties, the Department of Agriculture of the United States in the years 1911-13 repeatedly proposed that he emigrate to America, or that he at least sell the entire collection of his varieties, initial forms, and hybrids, on very favourable terms, of course. Michurin, however, each time declined the proposals. He considered that his accomplishments and collections should not serve to enrich capitalists, but should become the property of the people.

The first to direct attention to Michurin's work was V. I. Lenin. Despite the fact that the Civil War was raging and that the country's economy was in ruins, the Soviet Government in the very first months of its existence rendered Michurin the necessary aid. His nurseries at Kozlov (now called Michurinsk) were twice visited by the chairman of the Central Executive Committee, M. I. Kalinin.

Subsequently, in 1928 well-equipped laboratories were established in the Michurin nursery. This nursery was reorganized into a selection and genetics station, and later, in 1931, into the Michurin Central Genetics Laboratory.

For his outstanding services in creating new plant forms, the Soviet Government conferred on I. V. Michurin the Order of Lenin and the Order of the Red Banner of Labour. In 1932, the city of Kozlov, in which Michurin had lived and worked, was by a decision of the Presidium of the Central Executive Committee of the U.S.S.R. renamed Michurinsk.

Since that time the city of Michurinsk has become the largest scientific-research centre for the transformation of living nature, the largest centre for

disseminating Michurin's general biological ideas and the building up of progressive, Soviet agrobiological science. Bitterly recalling the gloomy period of his hard life and work under tsarism, I. V. Michurin remarked that "... Only under the Soviet system did I gain recognition in my own country. The first to take notice of my work was Vladimir Ilyich Lenin.

"Now that I am surrounded by the care and attention of the Party, led by Comrade Stalin, I have the opportunity to work even more productively in the great cause of renovating the earth."

On the eve of the 60th anniversary of his scientific activity I. V. Michurin sent a letter to Comrade Stalin, in which he summarized, as it were, the aid rendered him by the Party and the Government.

"The Soviet system," Michurin wrote in that letter, "has transformed the small undertaking which I started on a mean garden plot sixty years ago for breeding new fruit varieties and creating new plant organisms into a vast Union-wide centre of industrial fruit breeding and scientific plant breeding, with thousands of hectares of orchards, magnificent laboratories and facilities and dozens of highly skilled researchers.

"And myself, a lone experimenter unrecognized and ridiculed by the official savants and bureaucrats of the tsarist Department of Agriculture, the Soviet system and the Party which you lead have made the director and organizer of experiments with hundreds of thousands of plants.

"The Communist Party and the working class have given me everything I need—everything an experimenter can desire for his work."

I. V. Michurin was particularly deeply affected by the warm telegram of greetings received from Stalin on the 60th anniversary of his scientific activity. The telegram reads as follows:

"Most sincerely congratulate you, Ivan Vladimirovich, on the occasion of your sixtieth anniversary of productive labour for the good of our great motherland.

"Wish you health and new achievements in work of transforming fruit growing.

"I press your hand warmly.

J. STALIN."

Michurin's teaching has yielded excellent results.

Firstly, Michurin himself originated about 300 new varieties of fruit and berry plants. But that is not all. He pushed the notorious Humboldt zone far to the north. He made plants grow and bear fruit in regions where, not long before his day, man had never dreamed of seeing trees bending under the weight of juicy fruits. Grapes in Chelyabinsk, apricots in Siberia, pears in the Altai Mountains. Like the magician in the fairy tale Michurin scattered over the vast expanses of the Soviet Union green massifs of fruit orchards and decorated them with hitherto unseen varieties.

But this, too, is not all.

The huge million-strong army of his followers, the Michurinites, is the most precious capital created by the great transformer of nature. It is they

who are mastering the great heritage bequeathed to them by Michurin. It is they who are decorated with that brightly shining mark of honour—the star of Hero of Socialist Labour, of labour glorified and honoured on the socialist fields of the Soviet State.

The resolution of the session of the Lenin Academy of Agricultural Sciences of the U.S.S.R., which was held in August 1948, placed on record the great fruitful work of its president, Academician T. D. Lysenko, who headed the struggle to expose and to rout ideologically Mendelism-Morganism, and who took over the banner of Michurin materialistic biology. Academician Lysenko is successfully and fruitfully advancing Michurin's teaching. He is working on the most profound theoretical problems of modern biology. At the same time he is furnishing brilliant examples of the solution of practical tasks that arise in agriculture. Thus, having elaborated the theory of the phasal development of plants, T. D. Lysenko has, on the basis of this theory, worked out a valuable agrotechnical method known as vernalization which is now being applied in practice on millions of hectares of land. Among other agrotechnical methods which are the results of Lysenko's creative work are the sowing in stubble of winter crops in Siberia, summer planting of potatoes in the southern areas, cluster planting of kok-saghyz and forest belts, wide-row sowing of millet, topping of cotton plants, and so on.

"... The future belongs to Michurin," Academician Lysenko stated in concluding his report at the session of the Lenin Academy of Agricultural Sciences of the U.S.S.R., "*V. I. Lenin* and *J. V. Stalin* discovered I. V. Michurin and made his teaching the possession of the Soviet people. By their great paternal attention to his work they saved for biology the remarkable Michurin teaching. The Party, the Government, and *J. V. Stalin* personally, have taken an unflagging interest in the further development of the Michurin teaching. There is no more honourable task for us Soviet biologists than creatively to develop Michurin's teaching and to follow in all our activities Michurin's style in the investigation of the nature of the development of living beings."

Academician P. N. Yakovlev





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